Shiatsu and Acupressure

A review of the effectiveness of evidence

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Preface

Commissioned by the Shiatsu Society UK, this piece of work is not in itself research, rather it is an examination and assessment of all the research that has been done into Shiatsu and acupressure. Why has this been done?

- It is an up-to-date gathering together of research into Shiatsu and acupressure, providing a much-needed overview of the field.
- The review shows the extent and some of the potential scope of the possible applications of Shiatsu and acupressure.
- It alludes to the challenges facing the researcher in the field of 'energy medicine'.
- It demonstrates the criteria needed for research, so that reading the review is equivalent to an education in how research can be done according to recognised standards and procedures.
- The review is in itself an unbiased and rigorous work of scholarship, which assesses its own strengths and limitations according to accepted guidelines. It shows the clear intent of the Shiatsu community to look at its work impartially, which can only increase the respect in which it is held in wider scientific circles.

It is clear that if Shiatsu is to achieve the degree of recognition and respect that is accorded to acupuncture, the Shiatsu community must acquire two linked resources – a body of research results; and a body of literature that not only describes and illuminates Shiatsu in its own vivid and poetic terms but also incorporates the science which lies behind both Shiatsu bodywork and the research into its effectiveness.

The Importance of Research

The way forward for Shiatsu is clear. After its initial enthusiastic adoption by the public in the '70's and '80's it has reached a plateau. The public has educated itself widely in the many forms of complementary medicine and now expects Shiatsu to justify its claims for effectiveness.

Many research studies have been carried out on acupuncture, which has a longer written history and stronger public profile than Shiatsu, most of these studies in China, where the cultural and social situation favours research efforts of this nature, and they cost less.

In the West, the situation is very different. The vast majority of clinical trials, which cost a great deal, are funded by pharmaceutical or biotechnology companies, even if they are sponsored by a governmental or public organization. These companies can easily fund the expensive process of controlled studies, as is required by the evidence-based medical movement; Shiatsu is not in that position.

The number of patients enrolled in a study has a large bearing on the ability of the study to evaluate the effect of the intervention reliably. This is described as the 'power' of the trial. The larger the sample size or number of participants in the trial, the greater the statistical power. BUT more patients make for a more expensive trial. Hence the greater power of the studies funded by the pharmaceutical companies. And, of course, in a trial which involves bodywork (a more complex procedure than the simple taking of a tablet) the larger the trial, the greater the variations between the procedures and therapeutic abilities of the practitioners.

To return to the question of size of study and expense of funding, the current situation in the West means that most future research into Shiatsu will have to be done by the Shiatsu community itself, and we will have to educate ourselves in research methodology accordingly. Research can only prove

the effectiveness of Shiatsu if it is done according to recognised procedures which allow comparisons with studies of other therapies already approved by the NHS or a similar body.

The energy in the Shiatsu community is positive and powerful, and this Review gives us all much information about carrying out research. Nonetheless, there are certain challenges which we will be called upon to encounter along the way, and which can only increase our understanding of our therapy.

The Placebo Effect

While any double-blind controlled trial of pharmaceuticals involves the administration of a dummy drug in such a way that neither researcher nor subject knows it is a dummy, practitioners of any form of 'energy medicine' know that it cannot be applied in a 'sham' way as if administering a tablet, so that we can see that in some of the studies 'sham' acupressure works nearly as well as the "real" acupressure.

The aim of a double-blind controlled trial is to measure the effectiveness of the drug or treatment method against placebo, but to some extent the practice of any form of contact therapy *is* arguably placebo. The simplest of touches can have measurable effects. A study showed that when a nurse laid a hand on patients awaiting surgery while they read a pre-operative pamphlet it had measurable effects on their blood pressure (Whitcher and Fisher, 1979). Although the study was designed to show the difference between the ways in which men and women reacted to the touch, we can see the powerful effect of simple bodily contact, and the ideal of 'objectivity' is immediately compromised.

Given that in a recent trial to evaluate the effectiveness of the herb, St. John's wort, as compared with an anti-depressant and placebo it was the placebo that produced the best results, it is clear that the placebo effect is a powerful healing agent (Shelton et al., 2001). I am reminded of a cartoon I saw many years ago of two old ladies in a doctor's waiting room, discussing their ailments – one is saying to the other, 'Have you tried placebos? I hear they're marvellous'. In fact, as we know that we work with the body's self-healing power, we should perhaps be proud to acknowledge the placebo component of Shiatsu rather than struggling to disassociate ourselves from it.

However, it is clear that the much-vaunted 'double-blind controlled clinical trial' results can not be achieved for Shiatsu, no matter how rigorous the research procedures.

Differences between Shiatsu and Acupressure

The majority of the research studies examined in this review have been conducted on the use of acupressure rather than Shiatsu – in other words, the treatment under consideration has been the use of particular points selected for a certain health condition and applied according to certain guidelines.

In many of these studies the health condition for which the points were used was a category defined by orthodox Western medicine, such as asthma, bronchiectasis or hemiplegia, rather than the patterns of disharmony for which the points might have been prescribed in context (e.g. Damp Phlegm in the Lungs or Kidneys Failing to receive Qi). This is poor patient sampling procedure from the TCM point of view, although it might make any results more convincing to western eyes scrutinising the results.

It is obvious, however, that this is a much easier form of treatment to study than the more fluid form of, for example, Zen Shiatsu, in which the session is tailored to a Hara diagnosis which varies from receiver to receiver, and can vary from session to session, although some studies use 'individualised acupressure' as a category of treatment, which is likely to be more variable. Acupressure is more likely to yield quantitative data, as its methods can be more strictly controlled. Acupressure, and other forms of Shiatsu which use more long-term forms of diagnosis, is therefore better adapted for use in

specific conditions, although the receiver may be less likely to experience it as qualitatively life-enhancing than the more fluid, less results-focused Shiatsu styles. We are fortunate that our therapeutic discipline contains both possibilities.

So, while the life-enhancing, non-prescriptive styles of shiatsu can lead us to engage further with questions such as 'what is health?', it seems that if we want quantitative research results we would do well to incorporate a few symptomatic points in our sessions, and also teach them to our receivers to use in between treatments (a valuable extra research resource). We do not need a profound knowledge of point functions, as few points have been exhaustively researched and many have multiple functions. This would be a positive way of utilising Shiatsu's connection with the rich tradition of East Asian medicine, and of producing quantifiable symptomatic effectiveness within a nurturing and intuitive session.

Research Criteria

The final challenge is to master the methods of doing research. Here we are helped by three sets of guidelines, which are listed in the Review, the STRICTA (Standards for Reporting Interventions in Clinical Trials of Acupuncture), CONSORT (Consolidating Standards of Reporting Trials) for randomized trials and TREND (Transparent Reporting of Evaluations with Nonrandomized Designs) for non-randomized ones. The detailed requirements of each of these are listed in the Review, but here is a brief summary of the factors which can influence the results of the kind of research that would provide evidence of effectiveness of shiatsu versus usual care or no other treatment:

- In order to determine the success or not of the trial, the expected outcome (for example, diminishing the frequency or the severity of migraines, or both) needs to be specified at the outset. For more qualitative research there still needs to be a question or hypothesis, although necessarily less specific.
- How were the research subjects selected? Did they volunteer? Were they paid? Did they pay? Have they had Shiatsu before?
- Are the research subjects matched in any way, e.g. similar age, same gender, same ethnic or cultural background, same health condition (Eastern or Western)?
- What is the sample size? Does it change? e.g. do any receivers drop out?
- Is there a control group? If so, the same information needs to be given about the control subjects. What alternative treatment, if any, is offered to the control group, when, where and how?
- Is there more than one practitioner, and if so, what are the differences and similarities between practitioners and their way of working?
- Is the treatment carried out at the same place each time? If the settings or context are different, what are the main differences?
- What is the degree of preparation/ explanation given to research subjects and is it the same each time?
- What is the style/ method of treatment and does it differ from receiver to receiver?
- Are any other modalities used, e.g. exercises, meditation, self-acupressure?
- Is there any follow-up?

These guidelines refer only to the research methodology for controlled studies where comparisons are being made. Those that are controlled studies (i.e. studies where one group receives the treatment under scrutiny and one does not; both are compared) are assigned a grading according to specific criteria. The presentation of the research is also subject to certain guidelines, listed in the Review.

The review process is designed to evaluate the research according to the same criteria used in examining the effectiveness of a medical intervention. These criteria allow assessment of controlled

studies, which were used in the research into acupressure but not Shiatsu. In consequence, the evaluation of Shiatsu as an evidence-based treatment is as prosaic and stark as a review of a pharmaceutical intervention. This lens used to evaluate Shiatsu studies thus appears critical to those unfamiliar with either the vastness of the application of Shiatsu or the struggle within scientific history to attain objective data. We have before us a large gathering of literature in the format of a quantitative, evidence evaluation, rather than a qualitative appreciation of what Shiatsu has to offer.

Conclusion

This Systematic Review marks the beginning of a new phase of development for Shiatsu worldwide. Having moved on from its former association with the bath-house, Shiatsu has taken different philosophical and theoretical directions. The Shiatsu community is now able to know itself, to recognize its different schools and styles as ornaments and manifestations of its great human diversity, rather than as enemies or competitors. It has moved into exploration of science and philosophy, both Eastern and Western, in its attempts to understand the power and effectiveness of Shiatsu touch. It has consolidated its links with the written East Asian medical tradition from which it originally arose, without abandoning its intuitive and feeling components.

It is now time to take a further step, demonstrating to the wider world not only the effectiveness of Shiatsu but also the ability of its practitioners to examine what they do within specific criteria. If defining the limitless space of Shiatsu experience within pre-drawn boxes is what is required in order to bring Shiatsu to more people in the world, then that is what we will do: and this review is the first manifesto of our intent.

Carola Beresford-Cooke
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Contents

Glossary of terms and abbreviations

Abbreviations

COPD: Chronic obstructive pulmonary disorder

RCT: Randomised controlled trial

STRICTA: STandards for Reporting Interventions in Controlled Trials of Acupuncture

VAS: Visual analogue scale

Glossary

Attrition rate: The rate at which participants are 'lost' during the course of a study. (Also called 'loss to follow up'). Participants that are 'lost' during a study are often called dropouts and are usually untraceable.

Bias: When a point of view prevents impartial judgment on issues relating to the subject of that point of view. In clinical studies, bias is controlled by blinding and randomisation.
A systematic distortion of research results due to the lack of objectivity, fairness, or impartiality on the part of the evaluator or assessor. Alternatively, there are disparities in research or test results due to using improper assessment tools or instruments across groups.
A systematic error or deviation in results or inferences from the truth. In studies of the effects of health care, the main types of bias arise from systematic differences in the groups that are compared (**selection bias**), the care that is provided, exposure to other factors apart from the **intervention** of interest (**performance bias**), withdrawals or exclusions of people entered into a study (**attrition bias**) or how outcomes are assessed (**detection bias**). Reviews of studies may also be particularly affected by **reporting bias**, where a biased subset of all the relevant data is available.

Blinded study: A study done in such a way that the patients or subjects do not know (is blinded as to) what treatment they are receiving to ensure that the results are not affected by a placebo effect (the power of suggestion).

Blinding: The process of preventing those involved in a trial from knowing to which comparison group a particular participant belongs. The risk of bias is minimised when as few people as possible know who is receiving the experimental intervention and who the control intervention. Participants, caregivers, outcome assessors and analysts are all candidates for being blinded. Blinding of certain groups is not always possible, for example surgeons in surgical trials.

Bonferroni correction for Type 1 error: This is an example of a multiple comparison techniques. It adjusts the Type 1 error level to compensate for multiple comparisons between three or more groups or two or more response variables.

Carryover effect: The persistence, into a later period of treatment, of some of the effects of a treatment applied in an earlier period.

Control group: The subjects in a controlled study who do not receive the treatment.

Controlled study: A study that uses the method of comparison to evaluate the effect of a treatment by comparing treated subjects with a control group, who do not receive the treatment. (See also uncontrolled study)

Convenience sample: A group of individuals being studied because they are conveniently accessible in some way. This could make them particularly unrepresentative, as they are not a random sample of the whole population. A convenience sample, for example, might be all the people at a certain hospital, or attending a particular support group. They could differ in important ways from the people who haven't been brought together in that way: they could be more or less sick, for example**.**

De qi: Unique sensations, including aching, soreness, pressure, tingling and numbness which may indicate efficacy of acupuncture/pressure according to Traditional Chinese Medicine.

Double-blind: In a double-blind study, neither the subjects nor the people evaluating the subjects know who is in the treatment group and who is in the control group. This mitigates the placebo effect and guards against conscious and unconscious prejudice for or against the treatment on the part of the evaluators.

Duplicate bias: A study that has been published more than once using the same data but written as a separate study.

Hawthorne effect/bias: This can be summarized as "Individual behaviours may be altered because they know they are being studied." This means that the act of measurement, itself, impacts the results of the measurement. In science, dipping a thermometer into a vial of liquid can affect the temperature of the liquid being measured. In the same way, the act of collecting data, where none was collected before creates a situation that did not exist before, thereby affecting the results**.**

Intention to treat analysis: A strategy for analysing data from a randomised controlled trial. All participants are included in the arm to which they were allocated, whether or not they received (or completed) the intervention given to that arm. Intention-to-treat analysis prevents bias caused by the loss of participants, which may disrupt the baseline equivalence established by randomisation and which may reflect non-adherence to the protocol. The term is often misused in trial publications when some participants were excluded.

Inter-rater reliability: The degree of stability exhibited when a measurement is repeated under identical conditions by different raters. Reliability refers to the degree to which the results obtained by a measurement procedure can be replicated. Lack of inter-rater reliability may arise from divergences between observers or instability of the attribute being measured.

Intervention group: A group of participants in a study receiving a particular health care intervention. Parallel group trials include at least two intervention groups.

Language bias: Exclusion, in a meta-analysis of controlled trials, of those published in languages other than English.

Mean: The sum of a list of numbers, divided by the number of numbers. This is also often referred to as the average.

Meta-analysis: A statistical procedure to combine a number of existing studies. Through such a procedure, effects which are hard or impossible to discern in the original studies because of a too small sample size can be made visible, as the meta-analysis is (in the ideal case) equivalent to a single study with the combined size of all original studies. A weakness of the method is that problems

with any of the studies will affect the result of the meta-analysis, so a good meta-analysis of bad studies will still result in bad data.

Null hypothesis: A statement concerning one or more parameter(s) that is subjected to a statistical test; a statement that there is no relationship between the two variables of interest; the belief that any apparent relationship between or among variables in one or more research samples has been caused by sampling error; the hypothesis that is tested when seeking to gain statistical support for a research hypothesis.

Order effects: Where the effects of two different interventions (A, B) are both being studied for all participants divided into two groups (1, 2). The order in which these interventions are administered may have an effect on the outcome e.g. group 1 has intervention A followed by B and group 2 has intervention B followed by A.

Placebo: An inactive substance or procedure administered to a participant, usually to compare its effects with those of a real drug or other intervention, but sometimes for the psychological benefit to the participant through a belief that s/he is receiving treatment. Placebos are used in clinical trials to blind people to their treatment allocation. Placebos should be indistinguishable from the active intervention to ensure adequate blinding.

Placebo effect: The belief or knowledge that one is being treated can itself have an effect that confounds with the real effect of the treatment. Subjects given a placebo as a pain-killer report statistically significant reductions in pain in randomised studies that compare them with subjects who receive no treatment at all. This very real psychological effect of a placebo, which has no direct biochemical effect, is called the placebo effect. Administering a placebo to the control group is thus important in studies with human subjects; this is the essence of a blind experiment.

Powered sample size: The sample size calculated for a study will ensure that it is sufficient in order to detect a significant difference.

Practice effect: The effect of receiving an intervention for a second time. This can also be referred to as a learning effect. When you split the subjects, the group that gets the control first has the practice effect added to the intervention, whereas the group that gets the intervention first has the practice effect added to the control treatment. So when you average the difference scores, the practice effect disappears and you are left with the treatment effect, provided the two groups have the same number of subjects.

Pragmatic design: A trial that aims to test a treatment policy in a 'real life' situation, when many people may not receive all of the treatment, and may use other treatments as well. This is as opposed to an explanatory trial, which is done under ideal conditions and is trying to determine whether a therapy has the ability to make a difference at all (i.e. testing its efficacy).

P-value: The probability (ranging from zero to one) that the results observed in a study (or results more extreme) could have occurred by chance if in reality the null hypothesis was true. In a meta-analysis, the P-value for the overall effect assesses the overall statistical significance of the difference between the intervention groups, whilst the P-value for the heterogeneity statistic assesses the statistical significance of differences between the effects observed in each study.

Probability samples: Samples in which each element in the population has a known chance of being selected into the sample.

Purposive sample: A non probability sampling technique wherein investigators use their judgment and prior knowledge to choose people for the sample who would best serve the purposes of the study.

Random Sample: A random sample is a sample whose members are chosen at random from a given population in such a way that the chance of obtaining any particular sample can be computed. The number of units in the sample is called the sample size, often denoted as ‘n’.

Randomised block experiment: This study design splits the experiment into a number of "mini-experiments" or blocks for convenience, or to increase power. Typically, each block has one experimental unit of each treatment.

Randomised control trial (RCT): A clinical trial in which chance is deliberately introduced in assigning subjects to the treatment and control groups. For example, write an identifying number for each subject on a slip of paper, stir up the slips of paper, and draw slips without replacement until half of them have been drawn. The subjects identified on the slips drawn could then be assigned to treatment and the rest to control. Randomising the assignment tends to decrease confounding of the treatment effect with other factors, by making the treatment and control groups roughly comparable in all respects but the treatment.

Sample with low attrition rate: This indicates that there was a low level of drop outs from the group of study participants (See **Attrition rate**)

Single blind study: A study in which one party, either the investigator or participant, is unaware of what medication the participant is taking; also called single-masked study.

Single-group pre-test post-test design: There is no control group in this type of study. The results are therefore measured by:
Pre-test - a means to measure existing knowledge or ability prior to the implementation of an instructional activity, innovation or program
Post-test - a means to measure knowledge or ability after an instructional activity, innovation or program is implemented, using one or more research methods. Also sometimes referred to as a "post-assessment."

Three armed RCT: A randomised clinical trials where there are three groups receiving different treatments / interventions for comparison.

Type I error: Error that occurs when the null hypothesis is rejected when a true relationship between variables does not exist; also called alpha (α) error.

t–distribution: A statistical distribution describing the distribution of the means of samples taken from a population with unknown variance.

t-test: The t-test employs the statistic (t) to test a given statistical hypothesis about the mean of a population (or about the means of two populations). The most common t-test is a test for a difference of two means

Uncontrolled study: A study in which there is no control group; i.e., in which the method of comparison is not used: the experimenter decides who gets the treatment, but the outcome of the treated group is not compared with the outcome of a control group that does not receive treatment.

Nomenclature of points

It is necessary in an academic report of this kind to name points strictly as they appear in published papers. This is why the same points appear with different abbreviations across this report; for example Pericardium 6 appears as P6, PC6, Pc6 and HP6.

The various abbreviations as they appear in the report are listed below:

Heart meridian points are abbreviated as: Ht; HT, He

Small Intestine meridian points are abbreviated as: Si; SI

Pericardium meridian (also known as Heart Protector, Heart Governor and Heart Constrictor) points are abbreviated as: P; Pc; PC; HP, Pe

Triple Heater meridian (also known as Triple Warmer) points are abbreviated as: TH; TW

Spleen meridian points are abbreviated as: Sp; SP

Stomach meridian points are abbreviated as: ST; St

Lung meridian points are abbreviated as: L; LU; Lu

Large Intestine meridian points are abbreviated as: LI; Li

Kidney meridian points are abbreviated as: K; KI; Ki, Kid

Bladder meridian (also known as the Urinary Bladder) points are abbreviated as: UB; BL; Bl, B

Liver meridian points are abbreviated as: Liv; LIV; LR

Gall Bladder meridian points are abbreviated as: GB

Conception Vessel meridian (also known as Ren Mai) points are abbreviated as: Ren; CV, Rn

Governing Vessel meridian (also known as Du Mai) points are abbreviated as: Du; GV

Chinese point names are given in some abstracts and the meridian/number format has been inserted where appropriate.

Extra points not on a meridian, abbreviated to Ex. The “Third Eye Point” between the medial ends of the eyebrows on the bridge of the nose is a popular Extra point, named Yintang or Extra 1.

1. Executive Summary

The aim of this evidence review was to identify and appraise scientific publications on the effectiveness of Shiatsu and acupressure. It is hoped that this report will help to determine the direction of future research for the Shiatsu profession.

Two comprehensive searches were conducted (2006, with an update in 2010) using the following databases; MEDLINE, Cochrane, EMBASE, CINAHL, AMED, PsycINFO/PsycARTICLES, BNI, Blackwell Synergy, Ingenta, Science Direct and Index to Theses. In line with NICE guidance on informing guidelines regarding treatment effect, only systematic reviews and research studies were included.

Acupressure and Shiatsu use the same points and are based on the meridian system of Traditional Chinese Medicine, although acupressure is just one of the techniques used in Shiatsu practice, within the context of an energetic evaluation and whole meridian system treatment. On this basis, it was agreed that acupressure studies should be included in the review, as they may provide information for Shiatsu practitioners using points for a specific condition.

The combined results from the two searches initially identified 1714 studies (604 in the 2006 review and an additional 1103 in the 2010 review). After applying exclusion criteria and quality assessment 9 Shiatsu and 80 acupressure publications remained for review and appraisal. The 9 Shiatsu publications comprised three uncontrolled studies, three controlled non-randomised, one within-subjects trial, one observational study and one randomised controlled trial (RCT). For acupressure, six were systematic reviews, two meta-analyses, 47 RCTs, five crossover trials, five within-subjects trials, seven controlled non-randomised, seven uncontrolled trials and one prospective study. In addition 56 studies were included as background information.

The Shiatsu studies covered a diverse range of health issues (chronic stress, schizophrenia, promoting well-being and critical health literacy, angina, low back and shoulder pain, fibromyalgia, chemotherapy side effects/anxiety and inducing labour), but evidence was very limited. Apart from one large-scale observational study, the methodological quality of these studies was generally poor. The evidence base for musculoskeletal and psychological problems is promising and may be a good area to focus future efforts, given the popularity of Shiatsu for these conditions in the UK.

Studies on acupressure provided fairly strong evidence for its use in the treatment of pain, especially dysmenorrhoea, lower back pain and labour pain. Evidence for acupressure for nausea and vomiting was inconsistent, with the strongest evidence for post-operative nausea. There was strong evidence for acupressure in improving sleep in institutionalised elderly. Evidence for stroke, mental health issues and chronic respiratory conditions was inconclusive, with the strongest evidence for chronic obstructive pulmonary disorder (COPD). Weak evidence was identified for patients with renal disease, visual impairment and cancer therapy side effects other than nausea and vomiting. The remaining acupressure studies provided evidence of variable quality on its effect on consciousness/anaesthesia, weight loss/gain and a range of other health issues. Many of the conditions with the strongest evidence are those which conventional medicine struggles to treat, or result from conventional treatment, highlighting the potential benefit of an integrated treatment approach.

The methodological quality of studies and the health issues investigated for both Shiatsu and acupressure were heterogeneous and therefore study results could not be pooled. The main methodological limitations of the studies included: small sample sizes; insufficient details on sampling and follow up; high drop out rates; uncontrolled design; lack of blinding and poor reporting.

The amount and quality of research appeared to have improved recently. Improved reporting may be due to the publication of a range of guidelines such as CONSORT and STRICTA.

Much of the evidence was for protocol-based acupressure using set acupoints, which has limited application to Shiatsu practice. The nature of shiatsu, as distinct from acupressure, is that it is a complex intervention whose techniques, including diagnostic, and effects are implemented within the individual therapeutic relationship between the practitioner and client in every treatment and are invariably different each time. This requires a complex and project specific methodological design which may include a combination of methods modified to suit the particular research question and research conditions. Alternative study designs such as pragmatic, whole systems, observational, mixed-methods, or qualitative studies may address this issue. The research base for Shiatsu still remains very much in its infancy and the profession will need to work closely with its practitioners and researchers in order to build up evidence of effectiveness. Specialised randomised trial designs may be most appropriate, such as those based within whole systems research, three armed (placebo and sham), mixed-methods or preference trials, pragmatic designs, and randomisation by TCM diagnosis.

Recommendations following this review include:

- Promote research investigating the effectiveness of Shiatsu as an intervention
- Encourage practitioners to engage in research, including randomised controlled trials, observational and epidemiological studies, which is well designed and reported (in particular practitioner variability, randomisation procedure and setting)
- Investigate the appropriateness of various research methodologies for Shiatsu research, including pragmatic studies, alternative RCT designs such as preference trials, TCM diagnosis allocation, whole systems research, three armed, and mixed-methods designs.
- Clarify the relationship between Shiatsu and acupressure for marketing and public awareness
- Consider the development and piloting of an adverse event reporting system for Shiatsu
- Explore clinical effectiveness of Shiatsu in an integrated setting
- Identify specific topic areas for initial research investment, potentially psychosocial and musculoskeletal.
- Develop an evaluative framework for integrated Shiatsu practice, perhaps using pragmatic trial designs.
- Improve research resources for the profession

2. Introduction

The word SHIATSU is Japanese and means pressure ("ATSU") with fingers ("SHI"), i.e. "finger pressure". The term has been used over the last 200 years to describe the practice of a manual therapy which incorporates gentle manipulations and stretches combined with pressure techniques exerted through the fingers, thumbs, elbows, knees and feet. Shiatsu is an oriental medicine which has its roots in Chinese medicine and may even have pre-dated acupuncture. It embraces the philosophy of Yin and Yang, the energy meridians, the five elements and the concept of Ki, or energy. Practitioners perform an energetic evaluation of the person's life-energy system followed by a rebalancing of the entire system through the application of Ki balancing techiques to the meridians. These pressure points are known as "tsubos" in Japanese and are points that allow the therapist to act on the energy meridians. In Shiatsu pressure is usually applied on these points and meridians.

However, more recently Shiatsu is known as a form of bodywork which primarily developed in Japan. It has been recognized by the Japanese Government as a therapy in its own right during the last 50 years[1]. It is now practiced in many European countries and was one of eight non-conventional, complementary medicine disciplines named in the Collins Report (Lannoye et al 1997).[2]

Shiatsu has a number of different styles, philosophical approaches and theoretical bases. The Shiatsu Society UK encourages an eclectic outlook so that practitioners and students become familiar with and respect the different forms and styles of Shiatsu, The approaches most commonly found in Britain are Zen Shiatsu (most common), Macrobiotic Shiatsu, Healing Shiatsu, Tao Shiatsu, Seiki, Namikoshi Shiatsu and Hara Shiatsu.

Shiatsu can balance, restore and maintain the body's energy balance and prevent the build up of stress. Shiatsu is usually used in the first instance for maintenance of health and for personal wellbeing. It is also used to treat a wide range of conditions - from specific injuries to more general symptoms of poor health - and is a deeply relaxing experience. Shiatsu is usually used to complement Western medicine and often for longterm health maintainence. Some of the most common symptoms which may be amenable to treatment by Shiatsu include: headaches, migraine, stiff necks and shoulders, backaches, coughs, colds, menstrual problems, respiratory illnesses including asthma and bronchitis, sinus trouble and catarrh, insomnia, tension, anxiety and depression, fatigue and weakness, digestive disorders and bowel trouble, circulatory problems, rheumatic and arthritic complaints, sciatica and conditions following sprains and injuries.

Acupressure is the treatment through stimulation using finger pressure of specific pressure points, as defined within the meridian system of Traditional Chinese Medicine (TCM). This concept of affecting the balance of energy through tsubos on the meridians is similar to acupuncture where needles are placed at these specific points. Shiatsu practitioners are trained in the anatomical location, functions and uses of over 150 pressure points on the body. Shiatsu training and theory does include the use of tsubos within the context of the energetic evaluation and treatment used by the practitioner on the whole meridian system. However, Shiatsu includes energetic evaluation, works with the whole meridian system, uses a whole person perspective and uses its own diagnostic system rather than working from a pre-determined medical diagnosis.

This review includes studies on both Shiatsu and acupressure, but it should be noted that the two treatments are not synonymous, although some Shiatsu practitioners incorporate acupressure as a technique. Evidence for the efficacy of acupressure may be used to support claims about the efficacy of some aspects of Shiatsu for specific conditions[3].

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[1] Lundberg .P (1992) *The New Book of Shiatsu*. New York: Fireside Books.

[2] European Parliament (1997*). The Collins Report, Resolution on the Status of Non-Conventional Medicine*. Strasbourg (disseminated by the European Parliament, May 1999).

[3] Bewley D (2006) Director Shiatsu Society, letter to Committee of Advertising Practice, June 2006.

3. Aim

The aim of this report was to systematically review the evidence base for the effectiveness of Shiatsu and acupressure by identifying relevant systematic reviews and controlled studies, and appraising the quality of the research published during 1990 to 2010.

4. Objectives

The objectives of the review were:
To inform future research directions for the Shiatsu profession in order to build their evidence base.
To support evidence driven practice, marketing and advertising of Shiatsu.
To support the development of Shiatsu training and education.

5. Methods and search strategy

5.1 Databases

Two separate reviews were conducted in 2006 and 2010 (with identical methods). The results from both reviews are combined in this report, with some comparison of results from the two searches in order to highlight changes over time. The first search was conducted in February 2006, with updates in March, April, June and August 2006. The second search was conducted in November 2009 with an update in April 2010. All search results were collated in individual Reference Manager® databases for review. All publications identified from a comprehensive search of the literature between January 1990 and April 2010 were included.

Search engines and journal databases accessed are listed below (Table 1)

Table 1 - Search engines and journal databases accessed:

Via PubMed:
MEDLINE
Via OVID:
EBM reviews (includes all Cochrane Library resources)
Allied and Complementary Medicine (AMED)
British Nursing Index (BNI)
Cumulative Index to Nursing & Allied Health Literature (CINAHL)
EMBASE
MEDLINE in process & non indexed
OVIDMEDLINE
PsycINFO[1]
PsycARTICLES[2]
Science Direct[1]
Blackwell Synergy[1]
Ingenta Select[1]
Wiley Interscience[1]
Due to changes in database names and availability databases varied between the two searches: 1. Used in 2006 search but not in 2010 2. Used in 2010 search but not in 2006

The following databases were also searched:

1. Index to Theses
http://www.theses.com/

2. ZETOC (British Library electronic table of contents)

The Shiatsu Society UK provided a copy of a commissioned report[4]

In addition, information and unpublished data was collected from the Shiatsu Society UK. The references of retrieved information were checked to identify any further studies. Any duplicates identified by systematically searching the database were removed. The availability of a Chinese researcher for the update permitted a sample search of Chinese databases. This was carried out only for 2010 and due to the poor quality of research articles retrieved it was felt that earlier Chinese articles may be of insufficient quality and also time constraints operated.

5.2 Definition of search terms

Shiatsu was used as the main search term for most searches as it is included in the MeSH term 'acupressure' in MEDLINE. MeSH is the National Library of Medicine's (NLM) "controlled vocabulary used for indexing publications for MEDLINE/PubMed. MeSH terminology provides a consistent way to retrieve information that may use different terminology for the same concepts" See Appendix 1
More information on MeSH can be found at:

http://www.nlm.nih.gov/mesh/meshhome.html

The full details of searches carried out are given in Appendix 2.

5.3 Selection and assessment of the evidence

The stages used to assess the evidence are given in Appendix 3 and are shown graphically in the flowchart Figure 1. Abstracts were retrieved and reviewed against the inclusion criteria (Appendix 3) and if accepted into the review they were retrieved for classification and appraisal. Two reviewers independently categorized the evidence and an independent adjudicator was used if there was any disagreement about inclusion.

In line with the NICE guidelines manual, section 6[5], only reviews and trials were included as this review aimed to answer questions of effectiveness rather than prevelance, cost benefit or reasons for use. Studies could be classified into one of the following: a systematic review, randomized controlled trial, a case control trial or a one group, uncontrolled study. Resource limitations necessitated limiting the types of evidence included and qualitative studies were excluded.

As part of the review process, the references of any systematic or literature reviews and meta-analyses were checked against the search results to ensure accuracy of searches. It was during this process, that it was found that a small number of these references, relating to acupressure studies, had not been captured in any of the above searches. By obtaining MEDLINE abstracts in citation format, it became clear that acupressure was also included in a second MeSH tree and therefore not all of the acupressure citations in MEDLINE had been included in the initial searches in February 2006. See Appendix 4 for the second MeSH tree description and subsequent search details.

[4] Mackay H & Long A (2003) The Experience and Effects of Shiatsu: Findings from a Two Country Exploratory Study. University of Salford, UK
[5] NICE (2009) The guidelines manual, available at http://www.nice.org.uk/media/5F5/22/The_guidelines_manual_2009_-_Chapter_6_Reviewing_the_evidence.pdf

All relevant studies were appraised and their methodological quality assessed. The categorisation of the quality, weight and direction of evidence for each study was graded using criteria developed and adapted from Ip et al (2007).[6] This review took the standpoint, stated in the NICE guidelines manual, that well-conducted randomised trials are more likely to accurately estimate the effects of interventions than non-randomised studies by addressing internal validity and causality[7].

A (good): Least bias and results are valid; a primary study that uses a high quality study design and adheres mostly to the commonly held concepts of high quality
B (fair/moderate): Susceptible to some bias, but not sufficient to invalidate the results; a primary study that does not meet all the criteria in category A
C (poor): Significant biases that may invalidate the results; a primary study with serious errors in design, analysis or reporting

This grading was used to indicate the contribution to the evidence base, and was based on:

- The rigour of the study conducted as determined using the critical appraisal checklist in Appendix 7 (using criteria from Greenhalgh T & Donald A, Evidence Based Health Care Workbook, BMJ Books 2000 and Centre for Reviews and Dissemination)
- STRICTA score for quality of reporting of the intervention (acupressure only, not Shiatsu) for each study[8] (reported as a score out of 16 relevant items – item 2g, needle type was not relevant);
- Reporting of the study from a number of established quality appraisal checklists: CONSORT guidelines for RCTs[9]; CASP guidelines for systematic reviews and cohort studies[10]; and TREND statement for non-randomised studies[11]. Study design (according to the hierarchy meta-analysis > systematic review > RCT > controlled trial > uncontrolled trial), as discussed in the NICE guidelines manual, section 6[12].

Criteria from Waddell[13] were used to draw conclusions from groups of articles reporting on the health condition:

Category 1: Generally consistent finding in a range of evidence from well-designed experimental studies
Category 2: Either based on a single acceptable study, or a weak or inconsistent finding in some multiple acceptable studies.
Category 3: Limited scientific evidence, which does not meet all the criteria of acceptable studies, or an absence of directly applicable studies of good quality. This includes published and unpublished expert opinion.

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[6] Ip S, Chung M, Raman G, Chew P, Magula N, DeVine D, Trikalinos T, Lau J.(2007) Breastfeeding and Maternal and Infant Health Outcomes in Developed Countries. Evidence Report/Technology Assessment No. 153 AHRQ Publication No. 07-E007. Rockville, MD: Agency for Healthcare Research and Quality.

[7] NICE (2009) The guidelines manual, available at http://www.nice.org.uk/media/5F5/22/The_guidelines_manual_2009_-_Chapter_6_Reviewing_the_evidence.pdf

[8] Macpherson, H., Altman, D. G., Hammerschlag, R., Youping, L., Taixiang, W., White, A., & Moher, D. (2010), Revised STandards for Reporting Interventions in Clinical Trials of Acupuncture (STRICTA): extending the CONSORT statement, PLoS.Med, 7 (6): e1000261.

[9] Hopewell, S., Clarke, M., Moher, D., Wager, E., Middleton, P., Altman, D. G., & Schulz, K. F. (2008), CONSORT for reporting randomised trials in journal and conference abstracts, Lancet, 371(9609): 281-283.

[10] http://www.sph.nhs.uk/what-we-do/public-health-workforce/resources/critical-appraisals-skills-programme

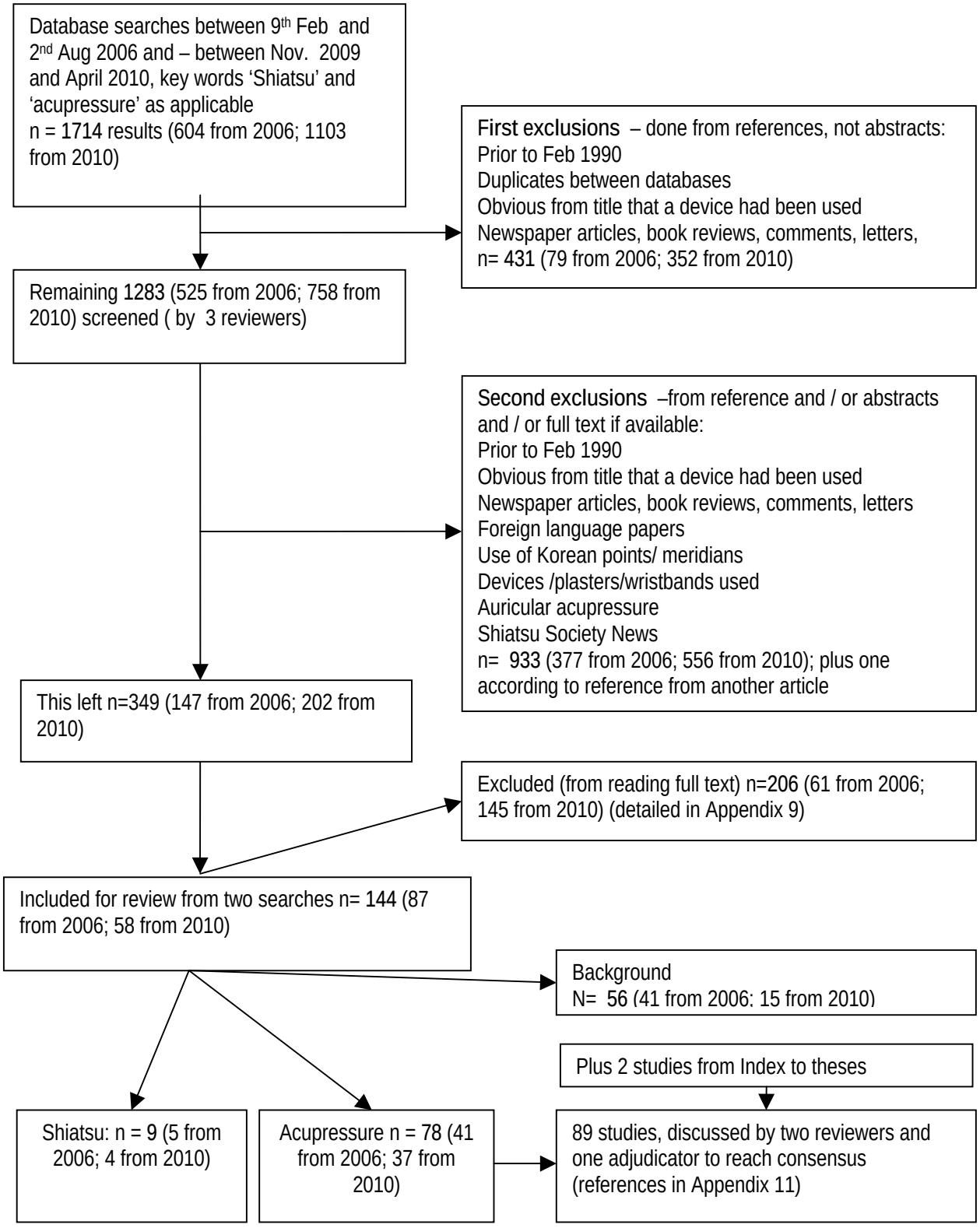
[11] Des, J., Lyles, C., & Crepaz, N. (2004), Improving the reporting quality of nonrandomized evaluations of behavioral and public health interventions: the TREND statement, Am J Public Health, vol. 94(3): 361-366.

[12] NICE (2009) The guidelines manual, available at http://www.nice.org.uk/media/5F5/22/The_guidelines_manual_2009_-_Chapter_6_Reviewing_the_evidence.pdf

[13] Waddell G, Feder G, McIntosh A, Lewis M, Hutchinson A. (1996) Clinical Guidelines for Management of Acute Low Back Pain (Low Back Pain Evidence Review). Royal College of General Practitioners. London.

Relevant information was extracted independently by 2 reviewers using a standardised extraction form (Appendix 5) and critical appraisal checklist (Appendix 7). Any disagreements were moderated by a third reviewer.

5.4 Figure 1: Flowchart of evidence review process



6. Results and Analysis

After carrying out the database searches and combining the 2006 and 2010 results, a total of 1714 publications were identified which had a keyword of 'Shiatsu' and/or 'acupressure' (Figure 1). After duplicate items and those which are obviously newspaper articles etc were removed 1283 items were left. Two further stages of exclusions then took place, according to the criteria given in Appendix 3, through discussion and consensus within the research team. Firstly abstracts and some full text articles were screened, and 933 articles excluded. The full texts of the remaining 349 were screened and of these 205 excluded. These 205 articles are detailed in Appendix 9, including reasons for exclusion. Full texts of the remaining 144 publications, plus 2 theses, were further screened by two reviewers.

After applying exclusion criteria and quality assessment, 9 Shiatsu and 80 acupressure publications, including two theses, remained for review and appraisal. In addition 56 studies were used as background information but not fully appraised; 27 referred to Shiatsu (or Watsu) and 30 to acupressure. Details of these studies can be found in Appendix 10.

The 89 included studies were critically appraised by two reviewers using the checklist in Appendix 7. Evidence tables of these publications were constructed (Appendix 8.2). Data collected on each study included: study design, setting, sample, health issue, analysis of results, conclusions and comments on quality.

The 9 Shiatsu publications comprised three uncontrolled studies, three controlled non-randomised, one within-subjects trial, one observational study and one randomised controlled trial (RCT). For acupressure, six were systematic reviews, two meta-analyses, 47 RCTs, five crossover trials, five within-subjects trials, seven controlled non-randomised, seven uncontrolled trials and one prospective study. Three Shiatsu and three acupressure studies used a pragmatic design (treatment individualised or usual practice rather than a protocol).

It was felt inappropriate to combine the Shiatsu and acupressure studies in case there were differences in the techniques. Additionally in many studies the theoretical application was unclear due to poor reporting. Pooling of data or a meta-analysis of all included studies could not be carried out due to heterogeneity in study methodology, the range of health conditions studied, variety of interventions and outcome measures employed.

Tables 2 and 3 give the number of included Shiatsu and acupressure articles by health issue. Appendix 8.1 contains a table summarising the studies for each health condition.

Table 2: Shiatsu studies by health issue

Health Issue	Number of studies		Grading (cannot be summarised due to lack of studies)
	2006	2010	
Angina	1		C
Back/neck pain	1	1	B/C
Fibromyalgia	1		C
Cancer	1		C
Inducing labour	1		C
Mental health		1	C
General (range of conditions)		1	Ungraded
Chronic stress		1	B
Total	**5**	**4**	

Table 3: Acupressure studies by health issue				
Health condition	**Number of articles**			**Overall grading (1 is highest quality)**
	2006	**2010**	**Total**	
Pain				1
Dysmenorrhoea	3	4	7	
Labour pain	3		3	
Back/neck pain	4		4	
Minor trauma	1	1	2	
Pain at injection site		2	2	
Headache		1	1	
Dental		1	1	
Nausea and vomiting (N&V)				
Post-operative	4	1	5	1
Pregnancy	3	2	5	2
Chemotherapy	3	1	4	2
Sleep and alertness	2	4	6	1
Mental health				2
Anxiety/stress	1	2	3	
Dementia		2	2	
Renal disease	5		5	2
Respiratory (COPD, asthma etc)	4	2	6	2
Measures of anaesthesia/consciousness	3		3	3
Stroke		3	3	2
Eyesight		2	2	3
Cancer side effects (other than N&V)		2	2	2
Weight (loss/gain)		2	2	2
Other				Inconclusive
Cardiovascular	2	1	3	
CFS		1	1	
Diabetes		1	1	
Gagging	1		1	
General (nursing practice)		1	1	
Gastrointestinal motility	1	1	2	
Mechanism (healthy volunteers)		1	1	
Nocturnal enuresis	1		1	
Sexual dysfunction		1	1	
Total	**41**	**39**	**80**	

Full details of each included study, comprising methodology, design, sample, intervention, results, conclusion and critical appraisal comments, can be found in Appendix 8.2, and a summary table of studies by health condition in Appendix 8.1. A narrative summary of the studies is given below, which discusses the evidence found for Shiatsu and acupressure grouped according to the health condition investigated.

6.1 Shiatsu

As described in Section 2, the boundary between acupressure and Shiatsu is often ill-defined. This review has categorised studies according to the name given to treatment by study authors. Therefore, despite being named 'Shiatsu' and included in this section, some of the studies below could be described as acupressure. The Shiatsu studies identified investigated quite separate health issues and did not use comparable methodology and therefore could not be pooled. Five studies were accepted in the 2006 review and 4 in the 2010 review. These studies appear in alphabetical order in Appendix 8.2 and are discussed and summarised individually below. The A/B/C grading refers to the contribution the study makes to the evidence, which takes into account study design, rigour and reporting.

Ballegaard et al (1996) investigated the effect of Shiatsu, with acupuncture and lifestyle adjustment, on patients with angina pectoris, using a pragmatic design. The focus of this study was on cost benefit rather than efficacy. 69 consecutive patients were treated and compared with those from a separate trial of two invasive treatments for angina[14]. Incidence of death/myocardial infarction (MI) was 7% in this sample, compared to 21% and 15% in the comparison group (undergoing coronary-artery bypass grafting and percutaneous transluminal coronary angioplasty respectively). There was no significant difference in pain relief between groups. Additionally a cost-saving of $12000 per patient was estimated. This was a convenience sample and was not powered. The main flaws were the absence of an equivalent control group and lack of blinding. The comparison group were from the USA and the study was done in Denmark, additionally 56% of the participants would have been excluded from the one of the comparison groups. Also, it is difficult to isolate the effects of acupressure from co-interventions of acupuncture and lifestyle adjustments. These limitations mean the contribution to the evidence from this study is C graded.

Brady et al (2001) administered Shiatsu massage to a convenience sample of 66 volunteers complaining of lower back pain. This was a single-group pre-test post-test design. Pain and anxiety significantly decreased after treatment ($p<0.001$), which did not change when demographic variables were controlled for. Using a study design with no control group and a volunteer sample that paid for treatment limits the validity of these results, giving a C grading. 13 patients had previously received Shiatsu, further limiting the generalisability of findings.

Sundberg et al (2009) conducted a pilot RCT of Shiatsu for back and neck pain, as part of an integrated model of healthcare over 12 weeks. 80 participants (primary care patients) were randomised into treatment or control (standard care only). The study was underpowered to detect any statistically significant effects but provided pilot data for a larger trial. The study was very well reported and had good follow up. However the pragmatic nature of the trial means the effects of Shiatsu cannot be isolated. Combined with the lack of power this study is graded as B, and cannot provide definitive evidence.

Faull (2005) conducted a pilot study to compare the effectiveness of Watsu (water Shiatsu) to Aix massage for fibromyalgia syndrome (FMS). 17 female participants were randomly assigned to receive either Watsu then Aix or vice versa, with a 3 week break between treatment blocks. A significant

[14] King SB, Lembo N J, Weintraub W S et al (1994) A randomised trial comparing coronary angioplasty with coronary bypass surgery. *New England Journal of Medicine*, 331(16):1044-50

improvement was seen after treatment with Watsu (p=0.01) for SF-36 subscales of physical function, bodily pain, vitality and social function, but not for Aix. This was only a pilot study and used a very small volunteer sample, only 13 of whom completed the study. No control group was used, although the counterbalanced design should reduce carryover effects of using repeated measures design. However, order effects may have occurred due to high dropout rate from Watsu first group (4 out of 8). This study was graded as C.

Lichtenberg et al (2009) conducted a before and after pilot study on the effects of Shiatsu for schizophrenia in Israel. Although this study did show significant improvements on scales relating to illness, psychopathy, anxiety, depression and others (p values ranged from 0.0015 to 0.0192), it is graded as C as a pilot study it had a very small and self-selected sample (n=12) and was uncontrolled, limiting the quality and generalisablity of the results.

Lucini et al (2009) conducted a non randomised controlled trial of Shiatsu for chronic stress in Italy. 70 volunteer patients chose from 3 treatments, active treatment (relaxation and breathing training), passive treatment (Shiatsu) and sham treatment (stress management information). Results found both active and passive treatments significantly reduced stress compared to sham (p=0.003 and p=0.032). Although this incorporated the influence of treatment preference, results were biased as more stressed patients were more likely to choose sham. The sample size was unpowered and there was little information on dropouts or generalisability and it is not clear if outcome measures were validated, giving a B grading.

Iida et al (2000) investigated the relaxation effects of Shiatsu on anxiety and other side effects in patients receiving cancer chemotherapy. Nine patients were divided into strong anxiety or weak anxiety groups and all were given Shiatsu massage on the hands and feet. The strong anxiety group showed a significant decrease in anxiety after intervention (p=0.09). The weak anxiety group showed a significant increase in the relaxation score (p=0.01). There was a slight relief of physical symptoms in both groups but significance is not stated. This is a very small study, limiting the validity of results, aggravated by the further division of the sample into two groups, reasons for which are not clear, so it could only be graded as C. The use of the t-test on such a small sample will only detect differences that are huge, and may be the reason why few effects were seen. No control group was used.

Ingram et al (2005) investigated the effects of Shiatsu on post-term pregnancy in 142 women attending a consultant clinic appointment at 40 weeks gestation. Two groups were used, a Shiatsu group who received thumb pressure on points GB21, Li4 and Sp6 and who were taught breathing techniques and exercises. The control group received no intervention. The Shiatsu group was significantly more likely to labour spontaneously than the control (p=0.038) and had a longer labour (p=0.03). The main flaw was that groups were selected according to which midwife was on duty (only one midwife was trained in Shiatsu), although groups were homogenous for maternal age, parity and delivery details. The frequency of use of self-administered Shiatsu was not monitored. As a preliminary audit this study gives some useful results, although Shiatsu was not compared to a sham treatment, so this was a C graded study.

Long (2008) conducted a prospective observational study of 948 patients of Shiatsu practitioners in 3 different countries. Significant improvement in symptoms, especially for tension or stress and structural problems (effect size 0.66 to 0.77) were demonstrated. This study is of greater quality than other Shiatsu studies as the sample size was powered and it used a longitudinal and pragmatic study design. For a longitudinal observational design, this study had a good response rate (67% of patients on average returned all questionnaires). Recruitment of patients was through practitioners, who received a rigourous training and kept a recruitment log. Confounding factors are reported and outcomes were accurately measured. However, data on nonrespondents or those who refused to participate were not reported so evaluation of response bias is problematic. As this study was not designed to test effectiveness it was ungraded.

Apart from the study by Long (2008) there was insufficient evidence both in quantity and quality on Shiatsu for consensus on its use for any specific health condition or symptom.

6.2 Acupressure

The studies described as giving acupressure as an intervention are given in Appendix 8.1 by health condition (as described below) and in Appendix 8.2 in alphabetical order. The quality of the evidence provided by each study was graded A/B/C according to study design, rigour and reporting.

6.2.1 Pain

Pain was the most common issue addressed by acupressure studies. These included studies on dysmenorrhoea (7 studies, 3 from 2006 and 4 from 2010 searches), labour pain (3 studies, all 2006 search), lower back pain (3 studies, all 2006 searches), minor trauma (2 studies, one each from 2006 and 2010 searches), pain at injection site (2 studies, both 2010 search), and one each on headache (2010 search), neck pain (2006 search) and dental pain (2010 search). Eight of the 17 studies were RCTs, with control groups and random assignment; 2 had a non-randomised control group or within-subjects control, one systematic review, the remainder did not have a control and/or random assignment.

Dysmenorrhoea

Chen and Chen (2004) randomised 69 students with primary dysmenorrhoea into an intervention group who received acupressure at Sp6 and a control group who rested. Acupressure significantly reduced menstrual pain ($p<0.05$). The placebo effect was not controlled for as a sham treatment arm was not included. 12 STRICTA items were reported. The generalisability of the findings is limited as the participants were volunteers and aged 17-19. However, because the sample size was powered, 72% completed the study, and a control group was used, this was graded as A.

Jun et al (2006) carried out a controlled trial of acupressure compared to light touch at Sp6 for primary dysmenorrhoea, also on a sample of students. Sample size (58) was powered. The severity of dysmenorrhoea was significantly reduced in the acupressure group compared to control ($p=0.000$) and this effect lasted for up to 2 hours after treatment ($p=0.032$). Allocation to study groups was performed sequentially not randomly, although groups were homogenous in their baseline demographics and the factors affecting dysmenorrhoea. 12 STRICTA items were reported. Students and data collectors were blinded. In both this and the study above, Hawthorne bias may be present as it is possible (although not stated) that the participants were students of the researchers. Due to lack of randomisation this was graded as B.

Pouresmail and Ibrahimzadeh (2002) carried out a three-armed RCT of 216 high school students (aged 14-18 years), to compare the effects of acupressure, acupressure at sham points and Ibuprofen on primary dysmenorrhoea. Results indicated that all three techniques significantly reduced pain ($p<0.01$). Both acupressure and Ibuprofen were better than placebo. This is a high quality study with random group assignment and a large sample with a low attrition rate. However, reporting is limited with only 5 CONSORT items and 6 STRICTA items reported, the validity of the outcome measures was not disclosed and it is not clear if blinding was used. It was therefore graded as B.

Jun et al (2007) sequentially allocated 61 young college women to receive acupressure or light touch on SP6. Dysmenorrhoea (VAS) and skin temperature at CV2 acupoint reduced in both groups but more significantly in treatment group (dysmenorrhoea $p<0.000$ directly after treatment and $p =0.032$ after 2 hours; temperature $p=0.03$). Although this was not a randomised study, groups were homogenous for baseline variables, it was double blinded, had sham control, used objective and subjective outcomes and is very well reported (including 13 STRICTA items), giving an A grading.

Cho and Hwang (2009) conducted a systematic review of RCTs of acupressure for primary dysmenorrhoea. They included 30 studies and concluded that acupressure does alleviate menstrual pain, although limited by the small number of studies. This was a grade A, well conducted review, with a wide range of sources, flow chart, good detail on inclusion criteria and quality assessment using the Cochrane handbook.

Wong et al (2010) conducted an RCT of acupressure on Sp6 for 40 university students in Hong Kong. Two classes were randomly assigned to treatment or rest only (no sham treatment). There was a statistically significant decrease in pain (VAS p = 0.003; McGill pain questionnaire p = 0.02) immediately after acupressure and in pain and distress three months later (VAS p = 0.008, McGill p = 0.012, distress scale p = 0.024). Although this was controlled, there was no blinding. Acupressure was well described (13 STRICTA items) but unpowered sample and randomisation by class gives this a B rating.

Chen and Chen (2010) conducted a large RCT of acupressure for menstrual distress/primary dysmenorrhoea with 134 volunteer university students. Participants were randomised to receive acupressure on zusanli (St36); hegu (Co4); hegu-sanyinjiao(Sp6) matched; and control (rest) (no sham treatment). Acupressure at matched points significantly reduced pain (p=0.02), distress (p=0.001) and anxiety (p=0.001) compared to control, after six months. Hegu (p=0.02) reduced pain but not distress and anxiety. Zusanli had no significant effects. Although randomisation is not described, a large and powered sample size, flow chart of drop outs and good description (including 12 STRICTA items) result in a grading of A.

Labour pain

Chung et al (2003) randomly assigned 127 parturient women to an intervention group who received acupressure at Li4 and BL67, placebo group who received light skin stroking at these points and a control group (conversation only). All groups showed a significant decrease in labour pain during the active first phase of labour (p=0.041) and acupressure was significantly more effective than control (p=0.017) but not compared to light stroking. This suggested that effects of acupressure may be due to tactile stimulation rather than meridian effects. Additionally a third of women receiving acupressure qualitatively reported that it had reduced their pain. This is a high quality three-armed RCT, graded A, as it has homogenous groups, although sample size in each group was only 42/43 and response rate was very low at the transitional phase of labour (31 out of 127). Both the outcome measure (VAS) and the acupressure procedure were shown to be reliable and valid by the researchers and 13.5 STRICTA items were reported. The three steps to ensure validity and reliability of the acupressure were 1) Protocol was established by experienced Chinese physicians and using a pilot study; 2) Intra-rater reliability test was used to control pressure force, measured for each practitioner and three experts evaluated the accuracy of the acupoint location for each practitioner; 3) Practitioners underwent a 2 hour training session and monthly meetings.

Lee et al (2004) conducted a double-blind RCT of acupressure compared to touch on Sp6 acupoint for labour pain. A volunteer sample of seventy-five women in labour were matched for five characteristics of labour and randomly assigned. There were significant differences between the groups in subjective labour pain scores immediately after the intervention (p=0.012), 30 mins after (p=0.021) and 60mins after (p=0.012). Anxiety was also significantly lower in the acupressure group compared to the control (p=0.03). Groups were homogenous. Bias may be introduced by using a volunteer sample. Blinding was used where possible (patients and data collectors) and the use of a placebo treatment controlled for the emotional supportive effects of human touch. Acupressure was very well reported, with 14 STRICTA items and was graded A.

Waters and Raisler (2003) used ice massage on acupoint Li4 during labour contractions in a one-group pre-test post-test study. As measured by the visual analogue scale (VAS), pain was reduced after the intervention. This study had a number of methodological limitations, the main flaw being the absence of a control group. In addition, no sample size is given, convenience sampling was used, only early labour pain was investigated due to the limitations of the outcome measure, and only 8 STRICTA items were reported and was graded as B.

Lower back pain

Hsieh et al (2004) conducted an RCT of acupressure compared to physical therapy for chronic low back pain. 146 participants were randomly assigned to receive four weeks of either acupressure or physical therapy (thermotherapy, infrared, electrical stimulation, exercise and traction). Mean post-treatment pain scores were significantly lower in the acupressure group ($p=0.0002$) and also after 6 months ($p=0.0004$). This is a good quality trial with a powered sample (although convenience), homogenous groups, valid outcome measures and using intention to treat analysis to protect against attrition bias. Blinding was used where possible; practitioners and patients were blinded to pre-test scores and follow-up staff were blind to treatment allocation. Although no placebo treatment was used, it can be assumed that physical therapy is usual care in Taiwan. Due to the study limitations it was graded as B.As this study was pragmatic (acupressure treatment was individualised rather than using a standardised protocol), only 5 STRICTA items were reported.

Hsieh et al (2006) conducted another RCT of acupressure compared to physical therapy for chronic low back pain, on 129 orthopaedic outpatients. The methodology was very similar to Hsieh et al 2004, comparing acupressure to physical therapy in randomised groups. This study also showed significantly lower pain and disability scores in the acupressure group compared to physical therapy ($p<0.05$). As it used the same methodology, this study is of a similar quality to Hsieh et al (2004) (B graded). Again, no placebo treatment was used and the treatment was pragmatic rather than standardised, with only 4 STRICTA items reported.

Yip and Tse (2004) randomly assigned 61 adults with sub-acute or chronic low back pain into an intervention or control group (usual care only). The intervention consisted of acupoint stimulation using an electronic device on acupoints Li10, Li11, Si10, TW15 and BL10 and acupressure with lavender oil on UB 22, 23, 25 and 40. 13 STRICTA items were reported. The intervention group showed a significant reduction in pain intensity compared to the control ($p=0.0001$) but not for duration of pain. The sample size was powered, however participants were volunteers, 16% dropped out and as dropouts were older this may have caused bias. It is difficult to isolate the effect of acupressure in this study, due to co-interventions of electrical stimulation and lavender oil, and due to the lack of a control treatment, giving a B grading.

Neck pain

Yip and Tse (2006) used the same protocol as above to treat 28 adults with sub-acute non-specific neck pain. The acupressure group showed a significantly greater reduction in pain than control ($p=0.001$). Although group assignment was random, this trial used a very small sample and no blinding or placebo. 13 STRICTA items were reported, and it is difficult to isolate the acupressure effect, so was also B graded

Minor trauma

Kober et al (2002) conducted a double-blind RCT with 60 minor trauma patients who were randomly allocated to an acupressure, sham acupressure or control group. All were treated for 3 minutes during transportation in ambulances. At the end of transport significantly less pain, anxiety and heart rate was reported in the acupressure group but not in either sham or control groups. Sampling bias may

be present as eligible patients were purposively selected by paramedics. All groups were homogenous, the trial was truly double blinded (paramedic giving treatment and patient) and intention to treat analysis was used, although there were no dropouts. With only 8.5 STRICTA items and less than half of CONSORT items reported, this study was graded B.

Lang et al (2007) conducted a double-blind RCT for minor trauma (fracture of distal radius) in ambulance transport. They randomised, by sealed envelope, 32 patients to either acupressure on Gv20 and Li4 or sham points Bl17 and Te14. On arrival at the hospital true-point acupressure group had significantly lower pain ($p=0.001$), anxiety ($p=0.022$) and heart rate ($p<0.05$). Although it was double-blind and randomised and 14 STRICTA items were reported, the sample was small and the sham may have been inappropriate, so a B rating was given.

Injection pain

Alavi et al (2007) conducted a within –subjects crossover trial of acupressure at Ub31 to reduce the pain of intramuscular injection. 64 patients were randomly allocated to receive injection with acupressure followed by injection without, or vice versa. Pain was significantly lower with acupressure ($p<0.000$). Although this is a fairly large sample with good description of intervention (11 STRICTA items reported), the lack of a control group supports a B grading.

Arai et al (2008) evaluated acupressure on Extra 1 point compared to sham for pain of needle insertion in 22 healthy volunteers. Verbal pain rating was significantly reduced compared to control ($p=0.006$) and low to high frequency ratio of heart rate variability ($p<0.05$). Although this appears to be a well designed trial with powered sample, randomisation, objective and subjective outcome measures and sham treatment, the reporting is poor, with little information on recruitment, drop out, randomisation, blinding or sham justification, with only 7 STRICTA points reported and was rated as B.

Headache

Hsieh et al (2010) conducted an RCT of acupressure (8 sessions; points not specified) compared to medication for chronic headache in 28 outpatients. Pain rating was significantly reduced post treatment ($p=0.047$) and after 6 months ($p=0.002$). Although this is a well conducted study, with power calculation, intention-to-treat analysis, blinding and long follow up, there is very little detail on intervention (only 7 STRICTA items), randomisation, recruitment or limitations, giving it a B grading.

Dental pain

Salam (2008) conducted an RCT of acupressure at Li4 compared to medication or sham acupressure for orthodontic pain of fixed appliance treatment. The medication control group reported the highest incidence of pain in back teeth and diets most affected by pain at 4 hours ($p=0.013$ and $p=0.021$ respectively) and 24 hours post-treatment ($p=0.002$ and $p=0.011$ respectively). After the second treatment, there was no statistically significant difference between groups regarding pain, up to 7 days later. Only 23 patients completed the study, despite a power calculation specifying a sample of 156. The study was well randomised and well reported, with 10 STRICTA items, but sample size and dropout of 38% mean it could only be graded as C.

Summary

Overall, the evidence for the efficacy of acupressure for pain is fairly strong and can be graded as category 1 evidence (*generally consistent findings in a range of evidence from well-designed experimental studies*) (see p. 3). Although some studies have methodological flaws, a number of fairly high quality RCTs and a systematic review (Cho and Hwang 2009) consistently show that acupressure is more effective than control for reducing pain, namely dysmenorrhoea (acupressure at Sp6) (Chen &

Chen 2004; Chen and Chen 2010; Jun et al 2006; Jun et al 2007; Pouresmail & Ibrahimzadeh 2002; Wong et al 2010), lower back pain (Hsieh et al 2004; Hsieh et al 2006; Yip & Tse 2004) and labour pain (Chung et al 2003; Lee et al 2004). The evidence for minor trauma (Kober et al 2002; Lang et al 2007) and injection pain (Alavi et al 2007; Arai et al 2008) is less conclusive and the evidence for headache is insufficient with only one medium quality study (Hsieh 2010).

6.2.2 Nausea & vomiting

Nausea and vomiting was the second most common health issue to be studied. We found 14 studies, which investigated nausea and vomiting in three main situations; post-operative including caesarean (five studies), as a side effect of chemotherapy (four studies) and during pregnancy (five studies). Nearly all studies used the P6 acupoint.

Post-operative

Chen et al (2005) investigated the use of acupressure at P6 on reducing nausea, vomiting, anxiety and pain in 104 post-caesarean women. They found that acupressure significantly reduced nausea, vomiting and retching up to 10 hours post-caesarean compared to a control group who received standard care. Anxiety and pain were also reduced. Although this study had a fairly large sample and a control group, a convenience sample was used and group assignment was not random (first 52 recruited were in intervention group). Although this may introduce seasonal/time-related bias, this was in order to prevent participants discussing the study and groups were shown to be homogenous for demographic and physiological variables and pre-test scores. 11 STRICTA items were reported and this study was graded as B.

Three reviews for postoperative nausea and vomiting were found, two systematic reviews (Lee & Done 2004; Lee and Fan 2009) and one meta-analysis (Shiao & Dune 2006). Lee and Done found 26 trials specifically using P6. Although studies were heterogeneous, they concluded that acupressure reduced the risk of both nausea and vomiting compared to sham treatment, and reduced the risk of nausea but not vomiting compared to antiemetic medication. As a Cochrane review this is a high quality systematic review, graded A, which used comprehensive search terms and combined data from the trials. It was limited to acupoint P6. Lee and Fan (2009) subsequently updated this review, again, a very high quality Cochrane review, graded A. This review identified 40 trials using P6 and again found a reduced risk of nausea and vomiting, as well as need for rescue anti-emetics. Shiao and Dune pooled the data on 33 trials using some form of acupoint stimulation versus placebo or control, 30 of which used the P6 acupoint. Two further trials compared acupoint stimulation to medication. Their results showed that all modalities of acupoint stimulation were effective in reducing postoperative nausea and vomiting compared to controls, and as effective as medication. This is a well conducted meta-analysis using comparable studies and a good selection process, also graded A. 18 of the trials were for acupressure, providing a large body of evidence in this area, although most of these used bands to apply pressure. The pooled data from these studies showed that acupressure reduced nausea ($p<0.0001$) and there was no evidence of bias.

Ming et al (2002) conducted a randomised block experiment comparing finger-pressing, wrist-band and control (conversation only) in a sample of 150 patients undergoing endoscopic sinus surgery. They found that post-operative nausea and vomiting were significantly different between the three groups ($p=0.001$ and $p<0.001$ respectively). This study has a good sample size and very low attrition (98.7% follow up) but was not blinded. Patients were matched for motion-sickness before being randomly assigned (it is unclear why this was variable was used) and groups were homogenous. 10 STRICTA items were reported. Although internal validity was high, the study was not blinded which may have introduced placebo/observer bias, but the study was given an A grading.

Chemotherapy

Acupressure for nausea as a side-effect of chemotherapy was investigated by Dibble et al (2000 and 2007), Ezzo et al (2006) and Shin et al (2004).

Dibble et al (2000) conducted a pilot RCT of 17 women undergoing chemotherapy for breast cancer in oncology outpatient clinics. Patients were randomised (stratified based on setting and treatment regimen) to receive usual care or usual care plus acupressure at P6 and ST36. No placebo treatment was used as it was felt to be unethical. 8 STRICTA items were reported. Nausea experience and intensity were significantly reduced in the acupressure group ($p<0.01$ and $p<0.04$ respectively). Results of this study are inconclusive due to the very small sample size, although groups were homogenous. The Hawthorne effect may have been present due to the extra attention given to the treatment group so a B grade was given.

Dibble et al (2007) subsequently conducted a full RCT of 160 women from 10 different community oncology programs. Self-administered acupressure on P6 was compared with placebo acupressure on SI3 and control (usual care). Acute nausea and vomiting was not affected, but delayed nausea and vomiting was significantly reduced compared to placebo ($p=0.002$ and $p<0.006$) and control ($p<0.0001$ and $p=0.006$). This study had a longer follow up (10 days) than other studies, and a good follow up rate, with intention-to-treat analysis. However there was no sample size calculation or details of randomisation. The study was double blinded but at least 5 patients broke the blind. Excellent reporting of the acupressure intervention (15 STRICTA items). Graded B.

Ezzo et al (2006) conducted a Cochrane Systematic review on 11 trials of acupoint stimulation for chemotherapy-induced nausea and vomiting. Pooled data showed that all methods combined reduced the incidence of acute vomiting ($p=0.04$), but not severity of nausea compared to control. Acupressure reduced mean acute nausea severity ($p=0.04$) but not acute vomiting or delayed symptoms, although studies did not use placebo controls. This is a well conducted review, graded A, which reports all methodological details. Data was pooled using intention to treat analysis and using original data where possible. Additionally duplicate bias and language bias were controlled for. Evidence for acupressure is however limited as the review included all acupoint stimulation (including acupuncture) only three of which were acupressure trials and which include those which used bands.

Chao et al (2009) also conducted a systematic review of acupoint stimulation for breast cancer treatment adverse effects, which concluded that the evidence for nausea and vomiting was strongest (see 6.2.11).

Shin et al (2004) compared the effects of self-acupressure on P6 with anti-emesis medication to medication alone, in a sample of 40 postoperative gastric cancer patients receiving the first cycle of chemotherapy. A significant reduction was found between intervention and control groups in the severity of nausea and vomiting, duration of nausea and frequency of vomiting (all $p<0.01$). Although these results are highly significant, a number of methodological issues are present. The sample is small and convenience sampling was used, group allocation was also not random (allocation used, first 20 patients in control group), although groups are homogenous for demographic, disease and treatment variables. Only 7 STRICTA items were reported. Again, the intervention group had additional attention, which may have introduced the Hawthorne effect. These limitations give this study a B grading.

Pregnancy

Five studies investigated nausea and vomiting in pregnancy; Habek et al (2004) and Shin et al (2007) looked at hyperemesis gravidarum (HG), which is a more severe and rare form of the nausea and vomiting investigated by Markose et al (2004), Belluomini et al (1994) and Helmreich et al (2006).

Habek et al (2004) randomised 36 pregnant women with HG to four groups; acupuncture, placebo acupuncture, acupressure and placebo acupressure. Results showed that acupressure significantly reduced the occurrence of HG ($p<0.01$). This study was double-blinded which is unusual in these studies. Sampling was not given, but group allocation was random. Statistical analysis of group composition was not performed. The main flaw with this study is the small sample, which is then divided into four groups, so the power in each group is very low. Also, the outcome measure appears to be simply the disappearance of nausea and vomiting as assessed by the patient and gynaecologist, which is subject to bias. The acupressure protocol was not controlled and was self-administered. Given these limitations, and only 11 CONSORT and 5 STRICTA items reported, this was graded as C.

Shin et al (2007) randomly assigned (using coin tossing) 66 women with hyperemesis gravidarum to P6 acupressure, placebo (non acupoint) or control (conventional treatment). P6 acupressure group had significant reductions in nausea and vomiting and ketonuria levels ($p<0.05$). This study was double blinded, controlled and sample size was powered. Outcome measures were objective and subjective and the acupressure was well described (11 STRICTA items), giving an A grading.

Markose et al (2004) conducted a one group uncontrolled study of acupressure on P6 for nausea, vomiting and dry retches in 35 women pregnant under 12 weeks. After treatment (day 7) there was a significant reduction in the frequency of nausea from day 3 (before treatment) ($p=0.008$), vomiting ($p=0.000$) and retching ($p=0.016$). This study was of poor quality as it used a very small sample, with only 4 STRICTA items reported, it was graded C. The uncontrolled design limits the use of these results. In addition, only 17 of the 35 women completed the study. Sampling procedure is not given.

Belluomini et al (1994) randomised 90 pregnant women (12 weeks gestation or less) to receive either acupressure at Pc6 or sham acupressure at a non acupoint. Both groups showed significant reduction in nausea and emesis over time, but this improvement was significantly greater in acupressure group ($p=0.0021$) than control. There were no differences in severity or frequency of emesis between groups. The sample was selected from referred patients, details of this are not clear. Only 60 out of 90 completed the study and intention to treat analysis was not used. Drop out was however similar between study groups. A randomised block design was used which can give more powerful treatment effects, but criteria for blocking were not given (may be gestational age). Groups were homogenous for pregnancy characteristics and pre-test scores. Maternal age was associated with nausea and vomiting score. Gestational age was controlled for. This study was single blind and used a sham treatment arm, with 8 STRICTA items reported. Acupressure was self administered and reliability of the practice was not monitored. This study was graded as B.

Helmreich et al (2006) conducted a meta-analysis of acustimulation for nausea and vomiting in pregnancy. They identified 13 trials with a combined significant reduction in nausea ($p<0.0001$) and vomiting ($p<0.0001$), including acupressure ($p<0.001$) but not acupuncture. This review had a focussed question and good quality assessment with 2 reviewers. Identification of studies was however very limited, with only 3 databases used and little attempt to find unpublished material, giving a B grading.

Summary

In summary, the evidence for acupressure for nausea and vomiting is somewhat inconsistent and varies with type of nausea investigated. Studies investigating post-operative nausea provide the strongest evidence, which can be as graded as Category 1 evidence (see protocol 3b) as the studies are generally well designed (Chen 2005; Ming 2002), and include two Cochrane systematic reviews (Lee & Done 2004; Lee and Fan 2009) and a meta analysis (Shiao & Dune 2006). The three trials reviewed for chemotherapy-induced nausea and vomiting (Dibble 2000; Dibble 2007; Shin 2004) give little reliable evidence, mainly due to small sample size, and although the two systematic reviews (Ezzo 2006; Chao et al 2009) gives quality evidence, little of it is on true acupressure, giving Category

2 evidence. The five studies of acupressure for nausea in pregnancy are of variable quality. Although some have small samples and/or uncontrolled study design (Belluomini et al 1994; Habek 2004; Markose 2004), a well conducted RCT (Shin et al 2007) and meta analysis (Helmreich et al 2006) provide Category 2 evidence for nausea in pregnancy.

6.2.3 Renal disease

Five studies were identified which investigated the use of acupressure for patients with renal disease. All of these studies have a number of similarities as Tsay SL was lead researcher in four and co-researcher in the fifth study.

Cho and Tsay (2004) randomly assigned 62 haemodialysis patients to acupressure and control groups to test the effect of acupressure on fatigue and depression on people with End-Stage Renal disease (ESRD). Acupressure group received acupoint massage on zusanli (St36), sanyinjiao (Sp6), taixi (Ki3) and yung chuan (Ki1) while the control group received routine care. Results showed a significantly greater reduction in fatigue ($p<0.004$) and depression ($p=0.045$) in the acupressure group than the control. Sample size was powered, group assignment random, and treatment groups were homogenous except for age. Differences in pre-test scores and age were also controlled for. The extra attention the treatment group received may have had an effect as a sham treatment arm was not included. Fifteen STRICTA items were reported. This study was graded as B.

Two articles by Tsay & Chen (2003) and Tsay et al (2003) appear to be based on the same RCT of acupressure for quality of sleep in ESRD patients, but are included as separate studies as they were published as individual papers. However, we have only described the methodology/quality once below, as details are identical. 98 ESRD patients from four hospitals were randomly assigned into three groups, acupressure (on points H17 and K11), sham (massage not on acupoints) and control (standard care). Results indicate that improvement in quality of sleep was significantly greater in acupressure compared to control ($p<0.01$). However there were no differences between the acupressure and the sham group, or the sham and control group, except that subjective sleep quality was improved in the sham group compared to the control ($p=0.003$). Blinding was used, for interviewer/data collector, usual care provider and participant, but not acupressure nurse. The outcome measures and acupressure procedure were reliable. Bonferroni correction controlled for type 1 error. Group assignment was random, and groups were homogenous for demographics, sleep affecting behaviour and ESRD related factors. Attrition was low (98 from 105). Due to lack of reporting with only 9 STRICTA items, Tsay and Chen (2003) was graded B . Tsay et al (2003) reported 14 items so was graded A..

Tsay (2004) also conducted an RCT of 106 ESRD patients, investigating acupressure for fatigue. Again, patients were randomised to three groups, acupressure, sham and control. Acupoints Ki1, St36, GB34 and Sp6 were used. Results, adjusted for differences in baseline fatigue, showed that patients in the acupressure group ($p=0.01$) and sham group ($p=0.003$) both had significantly lower fatigue scores than control. Although reduction of fatigue was greater in acupressure than sham groups, this difference was not significant, indicating that non acupoints massage also had an effect on reducing fatigue. Participants were not blinded; the researchers stated that participants knew which group they were in. Control and intervention groups were demographically and clinically homogenous and co-variables of depression and quality of sleep were controlled for in analyses. 12 STRICTA items were reported. The reliability and validity of the procedure was evaluated by expert validation, and the internal consistency of the outcome measures was good, giving the study an A grading.

Tsay et al (2004) tested the effects of acupuncture or transcutaneous electrical acupoint stimulation (TEAS) on fatigue, sleep quality and depression in a prospective RCT. They randomly assigned 106 haemodialysis patients to three groups to receive acupressure or TEAS on points Ki1, St36, GB34 and

Sp6 or control who received routine care only. Acupressure and TEAS patients had significantly lower fatigue (p=0.05 and p=0.016 respectively) and less depressed moods (p=0.009 and p=0.008 respectively) than control, adjusted for baseline differences. There were no differences between acupressure and TEAS groups. This study used random group assignment and three arms, with homogenous groups. It also had a powered sample size and low attrition rate (2 out of 108). 12 STRICTA items were reported. The reliability and validity of the procedure was evaluated by expert validation, and the internal consistency of the outcome measures was good, giving an A grading. However, no details of blinding are given and results are limited to haemodialysis patients.

Summary
These five studies provide category 2 evidence for the use of acupressure for people with renal disease (*evidence based on a single acceptable study, or a weak or inconsistent finding in multiple acceptable studies*) (see p. 3). This categorisation has been chosen mainly because they do not represent a range of studies, as all are fairly similar in design and setting and mainly led by one researcher. The individual studies provide some evidence for the efficacy of acupressure for ESRD/haemodialysis patients, but this is limited in generalisability. Although they did control for a number of factors and biases, most studies were not blinded which reduces the quality of the evidence.

6.2.4 Sleep and alertness

Five studies investigated acupressure for sleep, all in elderly long term care facilities, and one study investigated alertness.

Chen et al (1999) performed a three armed RCT testing the effectiveness of acupressure in improving the sleep quality of institutionalised residents. 246 elderly residents with sleep disturbances were matched for hypertension, hypnosis, naps and exercise then randomly assigned to acupressure (points baihui (GV20), fengchi (GB20), anmian (BL18) and shenmen (Ht7) x2), sham (1cm-3cun from real points) or control (conversation) groups. Quality of sleep improved in all three groups and improvements were significantly greater in acupressure group (scheffes post hoc comparison). This was a high quality trial, graded A, with a large sample size, systematic random sampling and random group assignment, matched to give more powerful treatment effects. The control and intervention groups were homogenous for a huge range of factors (demographics age, gender, living conditions, drug use, chronic disease, time at facility, naps, exercise, time in bed, milk tea and coffee consumption, smoking, sleep indices). The internal validity of the procedure was extensively controlled by inter-rater reliability and expert validation. 14 STRICTA items were reported. However, the study was only single-blind and the principal investigator, who knew the participants, administered treatment and collected data, which may introduce Hawthorne effect and researcher bias. Generalisability is limited as setting was a very specific home for elderly people with low income and without a son.

Chan et al (2006) conducted a single-group pilot study of a behavioural intervention, which included acupressure, for insomnia in 13 residents over 65. Sleep scores improved significantly after treatment ($p<0.05$) and acupressure and relaxation were qualitatively reported as most useful. However, as a pilot study (very small study with a volunteer sample, no control group and limited reporting) it could only be given a C rating. In addition the effects of acupressure cannot be isolated.

Hsu et al (2006) conducted an RCT of acupressure compared to light touch on shenmen (Ht7) acupoint for 50 long term care residents with insomnia. Sleep in the acupressure group significantly improved ($p<0.00$). This was however a very poorly reported and conducted study, with only 3 STRICTA items reported, giving it a C rating.

Reza et al (2010) conducted an RCT of acupressure on Ht7, K11, Sp6 and Extra54 (anmian) compared to sham points ½ cun from the real acupoints and routine care only, for 77 nursing home residents over 60. Acupressure significantly improved subjective sleep quality (p=0.028), sleep latency (p=0.001), sleep duration (p=0.007), habitual sleep efficiency (p=0.028) and sleep disturbance (p=0.013) compared to control, and significantly decreased nocturnal awakenings compared to both groups (p=0.017). No significant differences between sham and control. The sample was randomly sampled and powered. The study was three armed and triple blinded, enabling identification of specific effects but was poorly reported, with less than half of CONSORT and STRICTA reported, so graded as B.

Sun et al (2009) also conducted an RCT of insomnia in long-term care facilities, comparing acupressure on Ht7 (bilaterally) with light touch control. The acupressure group had significantly improved sleep compared to control ($p<0.05$). The sample size (44) was powered and intention-to-treat analysis used, as well as validated outcome measures and very good reporting, including 12 STRICTA items, giving an A grading.

Harris et al (2005) used a crossover design to test acupressure to modify alertness in the classroom. They randomly assigned 39 students to two acupressure treatment sequences: stimulation-relaxation-relaxation or relaxation-stimulation-stimulation. Compared to relaxation, stimulation acupressure gave a greater alertness score (p=0.019). Day of study and hours of overnight sleep also significantly affected the score. 14 STRICTA items were reported. The study was single-blind (subjects), although the majority of students could correctly discern the treatment. This did not significantly affect the results, although it came close, raising p to 0.0484. There is a chance that participants were students of the researchers, it which case the Hawthorne effect may be present. Small sample size (39) and low generalisability as all medical students (well educated, scientific researchers who were highly motivated to comply) were also issues, giving this a B grading. Group allocation was random and control and intervention groups were homogenous. Crossover design should reduce effects of retesting, carryover or time-related effects, although participants acting as their own controls can cause practise effect (especially with self-report). Validity of the outcome measure was not given. Nine students provided missing data retrospectively which may have caused recall bias. Statistical analysis was very comprehensive, accounting for effects of sequence, period, treatment and 'other covariates', masking, and co-variates, including caffeine, sleep, medication, anxiety and compliance.

Summary
Evidence for improving sleep quality in institutionalised elderly is Category 1, as findings are consistent from a number of high quality studies. Although the studies all used different acupoints, most compared acupressure to sham acupressure, supporting the action of specific effects.

6.2.5 Mental health

Five studies were identified which investigated mental- health, specifically dementia, anxiety and stress. .

Agarwal et al (2005) conducted an RCT with 76 adults undergoing elective surgery. Patients were randomised to receive acupressure at Extra 1 point or sham acupressure at an inappropriate site. 19 STRICTA items were reported. Anxiety decreased in both groups, but both returned to baseline after 30 minutes. The decrease in anxiety was greater in the Extra 1 group ($p<0.05$). Bispectral index values were also lower during treatment in both groups, and were lower for Extra 1 group ($p<0.05$). The sample size was powered, group allocation was random and groups were homogenous, but less than half of CONSORT and STRICTA were reported, giving this study an B grading. A sham treatment arm was included, although there was no other control group. The study was single-blinded (patient).

Fassoulaki et al (2007) conducted a within-subjects pilot study of 12 volunteers to evaluate the effect of acupressure on Extra 1 point on stress, bispectral index, melatonin and beta-endorphins. Compared to sham point acupressure, treatment signifcantly reduced bispectral index (p=0.0001) and verbal stress rating (p=0.008). Intervention was fairly well described (10 STRICTA items). Although randomisation was used, as this was a pilot study and there was no control group and a very small sample, it was given a B grading.

Moriarty (2007) conducted a one group before and after study of acupressure for 25 women in the 39th week of pregnancy to enhance spontaneous labour and reduce the need for induction, through psychophysiologic responses including stress, anxiety, tension and heart rate. Acupressure was given at Li4, Gb34, St36, Sp6, Kid3, Li3 and Bl60, bilaterally. Post-treatment compared to pre-treatment showed decreased maternal heart rate (p=0.003), maternal anxiety (p=0.002 and p=0.0001), maternal tension (p<0.0001) and diastolic blood pressure (p=0.033). Foetal stress was not invoked and uterine contractions did not increase. The findings have limited use due to the one group design and small, volunteer sample. However, as a thesis it was very well reported, including 14 STRICTA items, and a wide range of outcome measures were used, a validated intervention and confounders were controlled for, giving a B grading.

Yang et al (2007) conducted a pilot study of 31 older people with dementia and agitation. Participants acted as their own controls. Participants received four weeks of acupressure (2mins pressure on each of Gb20, Du20, He7, Pe6, Sp6), followed by a six week control period of no treatment. Acupressure significantly reduced agitation (p<0.001). Twelve STRICTA items were reported. As a pilot study, there was no control group, and no adjustment for non randomisation or confounders, and only 65% completed the study. This study was therefore graded C.

Lin et al (2009) conducted a larger RCT with 133 elderly residents of long-term care with dementia and agitation. This crossover trial compared 3 groups: acupressure on Gb20, Du20, He7, Pe6 and Sp6; Montessori activities and control (visitor presence). Acupressure significantly reduced agitated behaviour (p=0.001), aggressive behaviour (p=0.001), and non aggressive behaviour (p=0.02) and improved ease-of-care (p<0.001) compared to control. Institutions rather than individuals were randomised and randomisation is not explained. There is little detail of recruitment and dropout. The outcome measures and intervention are validated and limitations well described. 13 STRICTA items are reported. This was graded B due to the crossover design and missing details.

Summary
The quality of studies for acupressure for mental health issues is variable, generally graded B and few used an RCT design; reliable conclusions cannot be drawn from the existing evidence base, giving Category 2 evidence.

6.2.6 Chronic respiratory conditions

Three studies on chronic obstructive pulmonary disease (COPD) and one each on chronic obstructive asthma, chronic dyspnoea, and bronchiectasis were identified (Maa et al 1997; 2003; 2007 Tsay et al 2005; Wu et al 2004; 2007).

Maa et al (1997) investigated the effects of self-administered acupressure on reducing dyspnoea and other associated symptoms in 31 patients with COPD. Patients were those beginning a pulmonary rehabilitation program at two private hospitals and acupressure was used as an adjunct to standard care. The study was a pretest-postest crossover design; group 1 had 6 weeks of acupressure followed by sham acupressure and group 2 vice versa. Real acupressure was more effective than sham for reducing dyspnoea (p=0.009) and minimally effective for reducing decathexis (p=0.044) but had no effect on any other symptoms. This study had a small sample, although sensitivity analysis

was performed and did not identify any idiosyncratic individuals. Also, dropout was high (20 of 51), and mostly due to medical reasons, which may have biased the results. Only 6 STRICTA items were reported. In addition, the study was only single-blind and many patients could identify sham from real acupressure. These limitations give this study a B rating. The crossover design should reduce effects of retesting, carryover or time-related effects of patients acting as their own controls, which controls for heterogeneity. Outcomes were valid and reliable.

Maa et al (2003) conducted a pilot randomised trial of acupuncture and acupressure for improving the quality of life of patients with chronic obstructive asthma. 41 outpatients were randomly assigned to receive acupuncture, acupressure or control, all groups received standard care. Acupressure patients had a significantly greater reduction in health related quality of life ($p=0.05$) and in irritability ($p=0.06$) but not in any other scores. Acupressure was fairly well reported (12 STRICTA items). Again, this study had a small and purposive sample, although again, sensitivity analysis was performed and did not identify any idiosyncratic individuals. There was also a very high attrition rate (41%), which was again mostly due to medical reasons and dropout was also greater from the acupuncture group. Intention to treat analysis was not used. The study was not blinded. These limitations give this study a C rating.

Maa et al (2007) compared acupressure (zhongfu (Lu1), chize (Lu5), yuji (Lu10), fenglong (St40), zusanli (St36)) to sham acupressure (at non acupoints) and standard care for 35 patients with bronchiectasis. Sputum score ($p=0.03$) and respiratory score ($p=0.01$) improved for acupressure compared with control. Although the sample size is unpowered and had 29% dropout, it is a 'pilot' study. Reporting is good, including a flowchart, 14 STRICTA items, and good statistical analysis, giving a B rating.

Tsay et al (2005) used a two group experimental blocking design to investigate acupressure (at points Li4, PC6 and HT7) for dyspnoea, anxiety, heart rate and respiratory rate in patients with COPD. 52 patients, all on mechanical ventilation support, were matched for sex, age and length of ventilation use then randomly assigned to acupressure or control (massage and handholding) groups. Dyspnoea ($p=0.009$), anxiety ($p=0.011$), heart rate ($p=0.005$) and respiratory rate ($p<0.0001$) improved significantly in the acupressure group compared to control. This study had a powered sample although there was no information about dropout. 11 STRICTA items were reported. The groups were homogenous for demographic and clinical factors. Clinical outcome measures were used and the procedure was reliable and validated by experts. Patients, data collectors and usual care givers were blinded, but not acupressure nurses or researchers. Randomised design, blinding and a powered sample give this an A grading.

Wu et al (2004) matched 44 outpatients with COPD for age, sex, pulmonary function, smoking and steroid use then randomly assigned them to receive acupressure (points GV14, CV22 , B13, B23, L10) or sham acupressure (Sp5, Sp3, Li1). Scores from the Pulmonary Status and Dyspnoea Questionnaire modified scale showed that the true acupressure group improved significantly more than the sham group for all three subscales; dyspnoea ($p<0.05$), fatigue ($p<0.01$) and activity ($p<0.001$). Tolerance for activity also significantly improved ($p<0.001$) as did anxiety ($p<0.001$). Although this study used a small sample, the randomised block design should give more powerful treatment effects. The sham points were on different meridians and ganglionic sections, indicating the efficacy of the specific acupoints chosen. The acupressure protocol was well reported (12 STRICTA items), highly reliable and validated by the researchers, using three tests: 1) independent rating for validity to achieve 100% agreement, 2) observation of accuracy of points by TCM practitioner and 3) true and sham points compared on video for homogeneity in timing. The outcome measures were also reliable and valid. This study was graded as A.

Wu et al (2007) conducted a randomised study of acupressure (Gv14, Cv22, B13, B23, L10) compared to sham acupressure (Sp5, Sp3, Liv1) for the depressive symptoms of COPD. Compared to

sham, acupressure resulted in improvements in depression ($p<0.001$), dyspnoea ($p<0.001$), oxygen saturation ($p<0.001$), and blood pressure and heart rate ($p<0.001$). This paper reports all STRICTA items, and acupressure was reliable and valid, but less information on randomization and group comparison. Sample was powered but small. Graded A.

Summary

Overall, the evidence for acupressure for chronic respiratory conditions is Category 2 evidence (see p. 12) as there are only a small number of studies and although study designs are generally good, studies have a number of methodological flaws. All studies had fairly small samples, and three of the identified studies had a high dropout rate which is likely to have biased their results (Maa et al 1997; 2003; 2007). The respiratory condition with strongest evidence was COPD.

6.2.7 Anaesthesia/consciousness

Three studies have investigated the effects of acupressure on levels of anaesthesia or consciousness. These levels include the acoustic evoked potential (AEP), changes in which reflect the depth of anaesthesia and transition from awake to anaesthetised (Dullenkopf et al 2004); bispectral index (BIS) and spectral edge frequency (SEF) which are measures of the level of consciousness during anaesthesia/sedation (Fassoulaki et al 2003; Litscher 2004).

Dullenkopf et al (2004) used a repeated-measures, counterbalanced design to investigate the influence of acupressure at Extra 1 point on the AEP of unsedated adult volunteers. 15 volunteers received acupressure at Extra 1 point followed by acupressure on a control point the following day or vice versa, the order was chosen randomly. Only 5 STRICTA items were reported. Subjects acted as their own controls and results showed that AEP reduced significantly after 10 minutes of pressure on Extra 1 point ($p=0.0044$), but this effect only lasted for 5 minutes. Stress levels were also reduced ($p=0.0066$). This study had a very small sample and no details of sampling were given. The study design of patients acting as their own controls can cause danger of attrition, and practice effect. It can also cause carryover effects but these should be addressed by counterbalancing, as there were no differences in changes in AEP between participants who had Extra 1 or sham acupressure first. Due to lack of detail in reporting, this study was graded as C.

Fassoulaki et al (2003) used a similar repeated measures design to give 25 volunteers acupressure on extra 1 point or a control on alternate days in a randomised manner, with the aim of reducing self-reported stress levels. BIS was significantly reduced during pressure on extra 1 point ($p<0.001$) but returned to baseline after pressure release. Pressure on the control point also reduced BIS but reductions from extra 1 were greater ($p<0.001$). 10 STRICTA items are reported. Sample size is small, although it was powered. Again, sampling/follow-up details are not given. Participants were excluded if they believed in Traditional Chinese Medicine theory which may well bias results. Acupressure was given for 10 minutes on Extra 1 and for only 5 minutes in the control group, which is a major flaw. Again, patients acting as their own controls can cause danger of attrition, practice and carryover effects, giving a C grading.

Litscher (2004) conducted a crossover trial of acupressure on yintang, acupuncture, laser-needle acupuncture and sham acupressure on the BIS and SEF in 25 healthy volunteers. Participants each received all four interventions, the order of which was randomised for each patient. Interventions were well reported (12 STRICTA items). Results showed a significant reduction of BIS and SEF during acupressure ($p=0.001$). Stress was also reduced by acupressure ($p<0.001$) but also by sham acupressure ($p<0.012$). This was a volunteer sample and quite small, also participants were paid to take part. Subjects and data collectors were blinded. Again, this was graded C due to the study design (subjects as their own controls) which raises issues of bias, especially as subjects only had 20 minutes between treatments so treatment effects may overlap.

Summary
Overall, the evidence for the effects of acupressure on consciousness/anaesthesia is weak, rated as Category 3 as only three studies have been identified, all of which use a repeated measures design rather than RCT and small sample size (Dullenkopf et al 2004; Fassoulaki et al 2003; Litscher 2004).

6.2.8 Stroke

Three studies from the 2010 search investigated acupressure for stroke (McFadden and Hernandez 2010; Shin and Lee 2007; Kang et al 2009).

Shin and Lee's study (2007) aimed to investigate the effect of aromatherapy, but the study design compared aromatherapy with acupressure to acupressure only, for hemiplegic shoulder pain and motor power in stroke patients in South Korea. 30 patients were randomised using block randomisation and random number tables to receive acupressure at LI15, SI9, Te14, Gb21, SI11 and SI12, the aromatherapy group additionally with rosemary, lavender and peppermint oil. Verbal pain scores were markedly reduced in both groups at post-treatment (p=0.001) and aromatherapy significantly reduced pain compared to acupressure (p=0.01) and motor power significantly improved in both groups (p=0.005). This was a pilot study with an unpowered and small sample (although follow up was 100%) so has limited generalisability. Although randomisation is well described there is little information on trial design or acupressure treatment (only 9 STRICTA items) so this was graded as B.

Kang et al (2009) compared acupressure to control for 56 consecutive stroke patients with hemiplegia in South Korea. They showed significant improvements in function of affected upper extremities (grip p=0.020, pain p=0.017, oedema p=0.005, wrist flexion p = 0.002, wrist extension p < 0.001, elbow flexion p = 0.020, shoulder flexion p <0.001, shoulder extension p < 0.001), activity of daily living (p<0.001) and depression (p=0.001). Although this study had a good design (randomised and double blinded), the sample was small and unpowered and reporting is poor, lacking detail of follow up, limitations and generalisability and in particular acupressure treatment, including acupoints used (STRICTA score of 6). This study was therefore rated B.

Finally, McFadden and Hernandez (2010) used a randomised, controlled crossover trial to investigate individualised acupressure for heart rate and blood pressure in stroke patients in Colorado. Acupressure significantly reduced heart rate (p=0.043) but not blood pressure. Effects were not accounted for by expectation. This is a well designed study with good reporting of design, interventions (12 STRICTA items), randomisation and limitations. Placebo effects were controlled for, as well as expectancy of outcome. However, the sample of 13 was very small and not powered, and used a volunteer sample from the community, giving a B grading.

Summary
The evidence for acupressure for stroke symptoms is rated at Category 2 as although the studies use good designs and were generally well conducted, the sample sizes were too small to draw conclusive results.

6.2.9 Weight gain/loss

Two studies investigated the effect of acupressure on body weight, although for very different conditions.

Elder et al (2007) conducted an RCT of three interventions to maintain weight-loss (following a weight-loss program):'Tapas Acupressure Technique'® (TAT)[15], qi gong and control (self directed support, SDS) (no non-treatment control). TAT consists of holding a pose which applies pressure to Gb21, Bl1 and yin tang. The TAT group maintained 1.2kg more weight loss than the SDS group (p=0.09) and 2.8kg more than qi gong (p=0.00). The sample size was not powered but was fairly large at 90, with 88% follow up. A design-adaptive group allocation was used which is equivalent to randomisation, but balanced for demographic and clinical factors. It is not clear if outcomes were validated and only 10 STRICTA items are reported. This study was graded A due to the large sample and study design.

Chen et al (2007) conducted an RCT of acupressure and meridian massage for weight gain in premature babies. Nurses gave 2mins of acupressure on St36, Rn12, and Kl1 and massaged the spleen and stomach meridians and the spine (intervention very well reported, covering 14 of the STRICTA items). Compared to routine care, the acupressure group gained significantly more weight (p=0.038). Group allocation was random and matched for weight and gestation age. Although the study states double-blinding it is not clear how this was done. Despite an RCT design, given the lack of information on randomisation, allocation, drop outs, harms and ethics, and the small sample size, this was rated as B.

Summary
The evidence for weight loss/gain is Category 2 as the evidence from Elder et al (2007) is strong, but more studies are needed.

6.2.10 Visual impairment

Two studies from China and Taiwan evaluated acupressure for schoolchildren with visual impairment.

Sun (2006) randomised 40 schoolchildren with myopia to training in eye exercises which includes acupressure on Yannei, Yanshang, Yanwai, Yanxia and Fengchi (Gb31) acupoints (STRICTA score of 9 for description of treatment) or control group (no treatment). Eyesight in treatment group was significantly improved after 3 months compared to baseline ($p<0.01$) but this was not compared to control group – this study does not qualify as a real RCT and has many confounders, giving it a C grading.

Yeh et al (2007) used an intervention with multiple components for 70 schoolchildren with visual impairment. The intervention included seed patches on 6 auricular points and 8 meridian points - Ub2, Ub1, St1, St2, Ex2, Du20, Gb20, Li4, as well as interactive multimedia instructions. The treatment group had improved visual acuity compared to control group ($p<0.001$) and refractive error ($p=0.038$). Group allocation was non random and acupressure was self-administered, giving a STRICTA score of only 8 and limiting conclusion about the effect of acupressure. The sample consisted of volunteers although sample size was large. Intervention and outcome measures were reliable. Grading B.

Summary
With only 2 studies, both with significant limitations, the evidence for acupressure for improving eyesight is Category 3.

6.2.11 Cancer treatment adverse effects

Two studes evaluated the effect of acupressure for side effects of cancer treatment other than nausea and vomiting (see 6.2.2 above)

[15] http://www.tatlife.com/

Molassiotis et al (2007) conducted an RCT of 47 patients with fatigue related to cancer treatment. Patients were randomised to either acupuncture or acupressure at Li4, Sp6 and St36, or acupressure at sham points Li12, Gb33 and Bl61. Improvements were shown for acupressure and acupuncture compared to sham, in general fatigue ($p < 0.001$), physical fatigue ($p = 0.016$), activity ($p = 0.004$) and motivation ($p= 0.024$). This is a very well reported RCT, with nearly all STRICTA items (15), a flowchart and details of randomisation. The sample size was not powered. Graded A.

Chao et al (2009) conducted a systematic review of acupoint stimulation for breast cancer therapy-related adverse effects. They identified 26 studies and concluded that the quality of evidence is strong for nausea and vomiting but weak for all other adverse effects. It was well conducted, graded A, with appropriate inclusion, Jadad scale for rating and two independent raters.

Summary
The evidence for chemotherapy related adverse effects, other than nausea and vomiting (covered in section 6.2.2), was categorised as 2, as although both studies are of very high quality, only one RCT was identified and the systematic review concludes the evidence is weak.

6.2.12 Other conditions

The remaining eleven articles on acupressure investigated distinct health conditions which were not grouped but are considered separately below and provide category 3 evidence due to the small numbers of studies.

Ballegaard et al conducted two studies of acupressure for angina (1999 and 2004). The 1999 study was mainly a cost-benefit analysis of using acupressure as part of a self-care program for outpatients with angina pectoris. 105 patients were given acupressure at CV17, UB14 and UB15, along with acupuncture and a range of other lifestyle modifications based on self-care. 11 STRICTA items were reported. Three groups were used for comparison of risk; published data on invasive treatments[16 17], a random sample of the Danish population and the group used for this study. The intervention group had a 90% reduction in hospitalisation and a 70% reduction in needed surgery. Medication intake and degree of disease were significantly reduced and quality of life improved after treatment (all $p<0.0001$). The risk of cardiac death or myocardial infarction was lower in the treatment group than general population (significance not given). As this study was designed as a cost benefit analysis rather than an efficacy study, a different study design may have given different results, the main problem being the use of non equivalent control groups. Also the sample was volunteer and convenience. It is difficult to isolate the effects of acupressure from co-interventions of acupuncture and the self-care program. Ballegard et al (1999) was graded as B.

Ballegaard et al (2004) used a pragmatic study design to investigate the long-term effects of acupressure, as part of integrated rehabilitation (IR), to reduce the risk of angina pectoris sufferers dying from myocardial infarction (MI). 168 patients (103 candidates for surgery, 69 inoperable) with angina in a private clinic in Denmark received 12 sessions of IR which included acupressure at CV17, UB14 and UB15. Three historical controls were used; 1) General Danish population, 2) New York clinical database[18] and 3) Patients who underwent surgery from a study in New York[19]. The 3 year accumulated risk of death was 2% (confidence limits 0 - 4.7%) for the 103 surgery candidates,

[16] King et al (1994) A randomised controlled trial comparing coronary angioplasty with coronary bypass surgery. *N Eng J Med*, 331:1044-1050
[17] Yusef et al (1994) Effect of coronary artery bypass graft surgery on survival: Overview of 10-year results from randomised trials by the Coronary Artery Bypass Graft Surgery Trialists Collaboration. *Lancet*, 344:563-570
[18] Hannan, Racz M, McCallister B et al (1999) A Comparison of 3 year survival after coronary artery bypass graft surgery and percutaneous transluminal coronary angioplasty. *Jour Am Coll Cardiol*, 33(1):63-72
[19] Schofield P M, Sharples L D, Caine N et al (1999) Transmyocardial laser revasculisation in patients with refractory angina: A randomised controlled trial. *Lancet*, 353:519-524

compared to 6.4% (confidence limits 4.7 – 6.1%) for the Danish population and 8.4% (confidence limits 7.7 – 9.1%) for New York surgery patients. Risk of death was 7.7% (3.9-11.5%) for the 69 inoperable patients, compared to 16% (10-34%) and 25% (18-36%) for American patients treated with laser surgery or medication respectively. The accumulated risk of operation/MI/death was reduced in groups who had undergone treatment for longer ($p<0.05$ for trend). In addition, the IR program resulted in cost savings of $36000 and $22000 for surgical/inoperable patients respectively, although these costs were based on an American study. This study had a good sample size although sampling was not random and a very long follow-up period. The study design limits the quality of the results (no equivalent control group or blinding). Also it is difficult to isolate the effects of acupressure from co-interventions of acupuncture, self-care program including Chinese health philosophy, stress management and lifestyle adjustments. The sample was not significantly different in baseline variables to Scandinavian heart patients. The researchers described this study as a quality control review, which is subject to selection bias, expectation bias and social bias as patients have chosen and are paying for the treatment. However, evidence is cited which claims that no bias is introduced by patients choice of a particular treatment or paying for treatment[20]. This study was ungraded due to the study focus on cost effectiveness.

Li et al (2007) conducted a controlled trial of acupressure for 30 patients with peripheral arterial occlusive diseases (PAOD). The acupressure group received 3mins pressure on each of Gb34, St36, Sp9, Sp6 until patients felt *de qi.* Compared to the control group (no treatment), acupressure had significant reduction in transcutaneous oximetry ($p>0.05$). This is a poor quality study with an apparent lack of randomisation and non-equivalent control group (6 patients compared to 24 in treatment). Reporting was poor and there is no comparison of groups. Outcomes were objective and the iIntervention was well reported (10 STRICTA items). Graded C.

Chen et al (2003) conducted an RCT using acupressure to improve gastrointestinal (GI) motility in women after trans-abdominal hysterectomy. Fourty-one patients were randomly assigned to intervention (acupressure on Pc6, St36, Sp6) and control (acupressure on sham points) groups. The acupressure group had significantly improved GI motility ($p<0.05$), higher self-awareness of GI motility ($p<0.05$) and satisfaction ($p<0.001$) compared to control. The sample was small and not powered and the study was only single-blind. However, groups were homogenous for a wide range of factors (identified from previous research) (demographics, bowel movements, GI history, surgery history, duration of surgery, blood loss, analgesics, pain, post-surgical activities, leaving the bed and food intake patterns). The reporting of the study was limited with less than a third of CONSORT items. The reliability of the procedure was verified by training, expert verification of point location and GI motility and reported 11 STRICTA items. The RCT was graded as B.

Chen et al (2006) included 64 neurological patients with constipation. The acupressure group experienced easier bowel movement than control group ($p<0.05$). Although randomisation was not described, the groups in this study were also homogenous for a range of variables. The intervention was well reported (13 STRICTA items). This study was poorer quality than the previous study, so graded as C.

Lu et al (2000) investigated the anti-gagging effects of acupressure in 109 dental patients. Patients were randomly assigned to three groups; acupuncture (P6 or sham point), acupressure (P6 or sham) and pharmacological sedation with either acupressure or acupuncture. Acupressure was additionally performed with thumb, device or Sea-band. There was a significant reduction in gagging with acupuncture (team evaluation $p=0.047$, patient $p=0.009$) and with device acupressure (team $p=0.002$,

[20] Morrison D A, Sethi G, Sacks J et al (2002) The VA AWESOME (angina with extremely serious operative mortality evaluation) Multicenter Registry. Percutaneous coronary intervention versus coronary bypass graft surgery for patients with medically refractory myocardial ischemia and risk factors for adverse outcomes with bypass: the VA AWESOME multicenter registry: comparison with the randomised clinical trial. *J Am Coll Cardiol,* 39:266-273

patient p=0.001) at P6 versus sham point, but no other significant differences for acupressure (using thumb or Sea-band). The study was described as double-blind although blinding procedures are not evident. The use of so many comparison groups results in very small group size (between 9 and 18). The outcome measure (subjective rating by the dental team and patient) was not validated and may not be reliable. Groups were not compared for homogeneity in baseline characteristics. 13 STRICTA items were reported. The study was graded as B.

Yuksek et al (2003) randomised 24 patients to receive either acupressure or oxybutinin for nocturnal enuresis. Acupressure was applied to points Gv4, Gv15, Gv20, B23, B28, B32, H7, H9, St36, Sp4, Sp6, Sp12, Ren2, Ren3, Ren6, K3 and K5. There were no significant differences in incidence of bed-wetting between groups after treatment. No bed-wetting was seen in 83.3% of children who received acupressure and 58.3% who received oxybutinin. The main flaw was the very small sample size, with no details of sampling, intervention (only 4 STRICTA points), comparison of groups or randomisation. Additionally selection bias was introduced from moving 3 patients who had previously unsuccessful pharmacological treatment from oxybutinin to acupressure group. Acupressure was not compared to a placebo/sham group. Despite a randomised design, due to these limitations the study was graded as C.

Jin et al (2009) conducted an RCT of acupressure for symptoms of diabetes. 80 patients were recruited but only 64 took part in the trial, only just reaching 80% completion. Acupressure was given on 100 points along the body and then 13 major points, regularly for 3 years. Significant improvements in hyperlipidemia ($p<0.05$), left ventricular hypertrophy ($p<0.05$), kidney function ($p<0.05$) and neuropathy ($p<0.001$). This study had an unusually long follow up period. Sample was a good size and groups allocation was random. Very good description of treatment (14 STRICTA items reported) although discussion was limited. This RCT was graded as A.

Yao et al (2007) conducted a single group study of massage combined with acupressure for 85 patients with chronic fatigue syndrome. Treatment was effective in 91.8% of cases. This study did not use any clear outcome measures, had no control, and only reported 7 STRICTA items. Due to poor reporting it was ungraded.

Ventegodt et al (2006) conducted an uncontrolled pilot study of vaginal acupressure for sexual problems. This was a pilot study of 20 patients and showed significant improvements in symptoms ($p<0.05$), physical health ($p=0.042$), mental health ($p=0.012$), sexual ability ($p=0.003$) and quality of life ($p=0.003$ and 0.007). As a pilot study, this study can only be rated as C, due to small sample, lack of control, no detail on recruitment, unvalidated and subjective outcome measures and poor reporting of acupressure (5 STRICTA items). In addition the intervention does not appear to be based on meridian theory.

Sugiura et al (2007) conducted an uncontrolled study with 22 healthy volunteers of the effects of acupressure on yu-sen, souk-shin and shitsu-min on heart rate and brain activity. Heart rates decreased ($p<0.05$). This was ungraded as it investigated mechanisms rather than effectiveness for a condition. It did however have a high STRICTA score of 12.

6.2.13 Background studies

Studies retrieved and collated as background information on Shiatsu (Appendix 10), identified four single case reports of adverse events occurring following Shiatsu massage (Herskovitz et al 1992; Mumm et al 1993; Tsubo 2001; Wada et al 2005). This is an important area for the profession regarding safety issues and possible causal links between Shiatsu and adverse events. Note, these may not have been the only case reports.

A limited of number studies assessed qualitative aspects of Shiatsu as a therapy (Cheesman et al 2001; Chevalier 2007; Long & Mackay 2003) but the data was either not presented scientifically or was not carried out in controlled circumstances. Other studies mentioned acupuncture massage techniques and it is unclear if this was about acupressure (Furlan et al 2002). There were also general articles mentioning Shiatsu as an intervention (Galantino et al 2003) and some mentioned Shiatsu as part of a service provision (Long et al 2009; Peace & Manasse 2002; Sommers et al 2002; Yates 2005), but these were not RCT designs. A survey was funded by the Research Council for Complementary Medicine (Harris & Pooley 1998) to investigate what conditions practitioners currently treated and to ascertain the direction of future research into the efficacy of Shiatsu. The survey found that the most common conditions presenting for treatment were musculo-skeletal and psychological problems and concluded that future efficacy research should focus on these areas, in particular neck/shoulder, lower back problems, arthritis, depression, stress and anxiety. Three studies referred to Watsu but one was a personal account (Davis 2003) and the others case series (Chon et al 2009; Vogtle et al 1998).

Background information on acupressure mainly included acupressure and its effects on nausea and vomiting and literature reviews, providing further data to support the conclusions on the effectiveness of this treatment (Collins & Thomas 2004; Harris 1997). The articles on nausea and vomiting included some reviews and summaries of reviews (Abraham et al 2008; Aikins 1998; Ezzo et al 2006; Freels and Coggins 2000; Jewell 2003; Klein and Griffiths 2004; Lee et al 2008; Nunley et al 2008; Oates & Whitehead 2003; Oates & Whitehead 2004) but tended to be very broad and included either various types of intervention or were non systematic or related to devices or combinations of interventions (Anderson & Aikins 1998; Johnson 2005). Non-pharmacological management was shown to be effective for post operative and chemotherapy induced nausea and vomiting but Shiatsu was not specifically mentioned (Lee & Done 1999; King 1997; Pan et al 2000). Other background information included acupressure as part of a massage intervention, which found positive results but the effect of acupressure cannot be isolated (Cutshall et al 2010; Bauer et al 2010). Two case reports/series used Collateral Meridian Acupressure Therapy (CMAT) (Lin et al 2009; Yeh et al 2009) which is a new treatment based on patients' responses, Western medical anatomy and pathophysiology and traditional Chinese acupuncture (Lin et al 2009).

A thesis on delivering Shiatsu in general practice (Pirie 2003) looked at the impact of Shiatsu on GP consultations and whether frequency of prescriptions for medications was reduced (Appendix 12). This was a qualitative study and the researcher was also the practitioner. The research concluded that complementary medicine could be effectively delivered in general practice and that further research in clinical and cost effectiveness was warranted. Ma et al (2007) conducted a systematic review of acupressure implications for nursing practice, which found 69 studies of acupressure with positive effects, concluding that acupressure should be taught to nurses. Although the Jadad scale was used to evaluate studies, there was no independent analysis; results are inconclusive and the review was graded C,

Summary

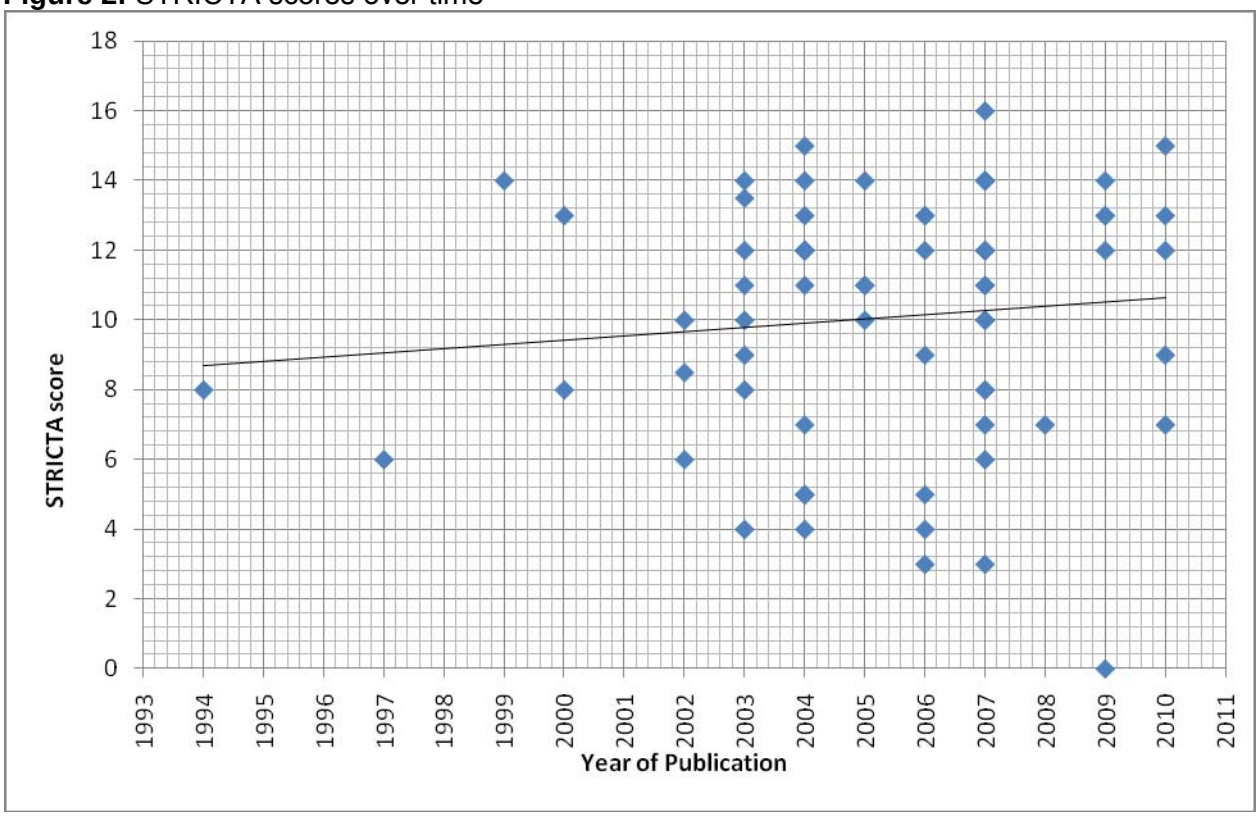
These findings provide an important addition to the existing knowledge base on Shiatsu and acupressure but are very limited.

6.3 Quality analysis

6.3.1 STRICTA

Stricta scores were on average 10.09 and showed a very gradual increase shown by the line of best fit in Figure 2.

Figure 2: STRICTA scores over time



6.3.2 A/B/C grading

The A/B/C quality grading of included articles is given in table 5 and figure 3. Figure 3 indicates a reduction in the percentage of C graded papers over time.

Table 5: Quality grading of all included articles

Grade	Number of studies	Percentage
A	26	29.2%
B	37	41.6%
C	22	24.7%
Ungraded	4	4.5%

Figure 3: Chart of study quality over time

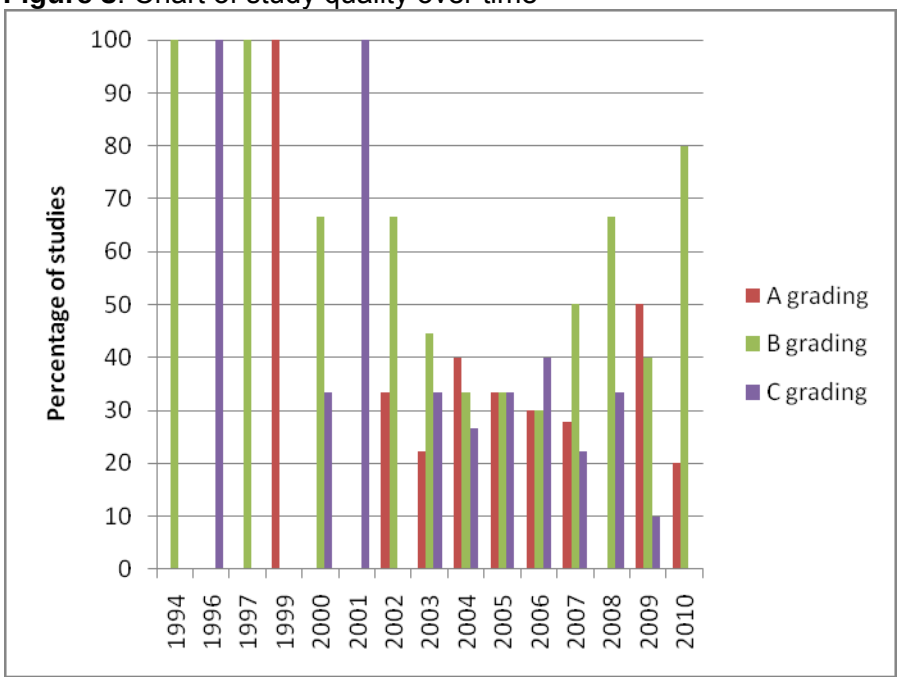
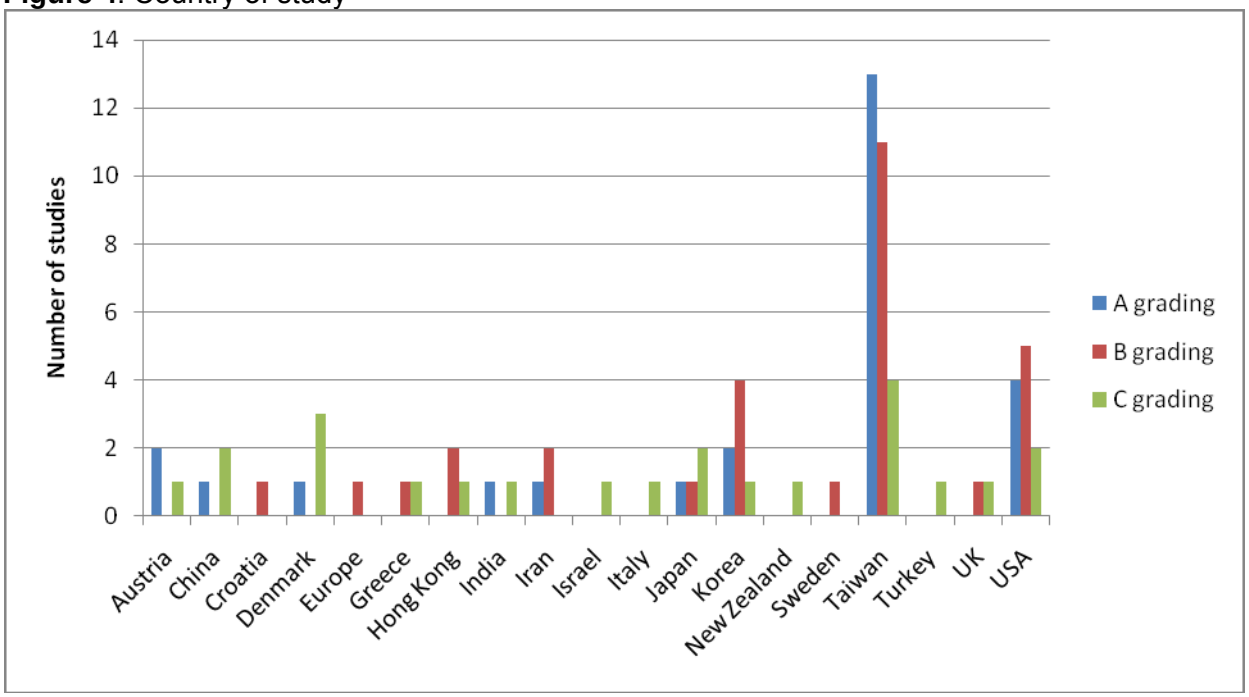


Figure 4 shows the numbers of studies for each A/B/C grading for the different countries. This shows no obvious trend, although countries publishing more studies (Taiwan, USA and Korea) seem to have better quality studies, compared to countries with only one or two publications.

Figure 4: Country of study



6.3.3 Inter-rater quality assessment

When there was any discrepancy in the A/B/C grading between the two raters, a third rater was used to reach consensus. This was necessary for around a quarter of all included studies (see table 6).

Table 6 Inter rater quality assessment (A/B/C grading)	Number of studies	%
Two raters agreed	63	71.3
Two raters disagreed (third rater reached consensus)	20	22.8
Chinese language studies only graded by one rater	5	

7. Discussion

Complementary medicine is under pressure to provide evidence of effectiveness if it is to be accepted and integrated within the prevailing framework of conventional medicine. This section discusses the best way forward for Shiatsu/acupressure research and the implications of the findings for practice.

7.1 Study quality

Twenty-two of the 89 included studies were graded C (the lowest quality grading). All five of the studies in Chinese language were graded C (or ungraded), and most of the Shiatsu studies were graded C. While much of the research carried out with Shiatsu or acupressure as an intervention is of insufficient quality to provide consensus on its use, some high quality (Category 1[21]) clinical research (particularly around pain) does exist. The methodological limitations of the studies reported in this systematic literature review included small sample sizes, non reporting of follow up, insufficient details on sampling, high drop out rates, uncontrolled design and lack of blinding. Many studies were also underpowered i.e. their sample size at the outset was insufficient to detect a significant difference, although many of these were pilot studies.

From the analysis reported in section 6.3, the quality of studies has improved recently, with a decrease in C graded studies. The increase in the quality grading over time is likely due to a greater appreciation of research amongst practitioners and advances in research methods in acupressure/shiatsu and also the recent publication of a number of guidelines on presenting research such as the CONSORT, STRICTA and TREND statements used in this review.

The reporting of studies was also very limited for many papers, with items most commonly missing from the CONSORT checklist including: 1a (identification as RCT in title); 16 (numbers of participants included in each analysis); 6b (changes to trial outcomes); 8,9 and 10 (details of randomisation procedure); 14b (why the trial was ended); and 23 and 24 (registration number and full protocol access). The average of 10.09 (63%) of applicable STRICTA items reported is similar to a previous review (53.4%)[20].The increase in the number of STRICTA items reported over time is likely due to the publication of the STRICTA guidelines in 2001[22]. It is likely to have taken a number of years for these

[21] Generally consistent finding in a range of evidence from well-designed experimental studies – see section 5.3

[22] MacPherson H, White A, Cummings M, Jjobst K, Rose K, Niemtzow R (2001) Standards for reporting interventions in controlled trials of acupuncture: the STRICTA recommendations. *Complement Ther Med* 9: 246-249

guidelines to be widely disseminated, as suggested by Prady et al who found no increase in STRICTA reporting in 2004-2005, which may be too soon to detect a change[23]. In common with this previous review the items most commonly missing were details of practitioner background, setting/context and explanations to patients. In addition few studies reported amount of pressure used (equivalent to depth of insertion of needle), style of acupressure, *de qi* or the extent treatment was varied; these may be less relevant to acupressure than acupuncture. Interestingly, Prady et al[41] found no predictors of STRICTA reporting, including journal type, publication date, or page length, concluding that awareness of STRICTA guidelines is the key factor.

As more journals adopt guidelines such as CONSORT and STRICTA, Shiatsu/acupressure researchers will need to ensure they report all details of their studies to comply with these guidelines.

7.2 Implications for research

Researchers in Taiwan appear to have been most prolific in this area, as well as Korea and the USA. Given the increasing use of CAM in Europe, more research based in European countries may be needed. In particular, Shiatsu is prevalent in the UK (820 registered practitioners/MRSS/teachers/trainee teachers)[24], thus the need for research here is imperative. Shiatsu practitioners should be encouraged to engage in research using well designed and reported studies.

For intervention studies, measures such as randomisation, allocation concealment and comparable treatments are used to reduce the risk of bias. In this review the RCT was the most common study design (48 studies). Other studies used a controlled design but controls were non-randomised (10), crossover (5) or within-subjects (6). The remaining trials were uncontrolled (10), observational (1) or prospective (1). Only six studies used a pragmatic design (individualised treatment or usual practice rather than a protocol) – three for shiatsu (Ballegaard et al 2009; Long 2008; Sundberg et al 2009) and three for acupressure (Ballegaard et al 2004; Hsieh et al 2006; Hsieh et al 2004).

Non-randomised controlled trials can be subject to confounding factors such as time-related or seasonal bias if allocated sequentially, so a randomised design is preferable. A crossover design, as used by five of the studies in this review, is perhaps more ethical as all participants receive treatment. Although the crossover design should address carryover and time-related effects, practice effect may be present, especially for self-administered acupressure. Within-subjects repeated measure designs can also be subject to learning, and are only useful for stable populations such as those with a chronic disease or healthy volunteers. The five studies in this review which used a repeated measure design therefore did so appropriately due to their study populations. One group uncontrolled studies are of limited value as they cannot identify the specific effects of a treatment (although this may be less important with complementary approaches) as they are subject to a range of confounding variables. Longitudinal designs are useful to evaluate effects of a treatment, but again causality cannot be confirmed, and there is increased risk of Hawthorne effect or conditioning.

This review took the standpoint, stated in the NICE guidelines manual, that well-conducted randomised trials are therefore more likely to accurately estimate the effects of interventions than non-randomised studies by addressing internal validity and causality[25]. However, certain study designs are more appropriate for certain interventions and populations[26] and contention is emerging about how

[23] Prady S, Richmond S, Morton V, MacPherson H. (2008) A Systematic Evaluation of the Impact of STRICTA and CONSORT Recommendations on Quality of Reporting for Acupuncture Trials. *PLos ONE* 3(2): e1577

[24] Personal correspondence with Shiatsu Society UK

[25] NICE (2009) The guidelines manual, available at http://www.nice.org.uk/media/5F5/22/The_guidelines_manual_2009_-_Chapter_6_Reviewing_the_evidence.pdf

[26] http://www.york.ac.uk/inst/crd/pdf/Systematic_Reviews.pdf

complementary medicine should be evaluated[27,28,29,30,31,32]. Although the RCT design improves internal validity and is more likely to establish a causal relationship, in complementary therapies there are issues about whether they are appropriate given the individualised nature and non-specific effects of treatment and the inadequacy of sham treatments. The complexity of interventions such as Shiatsu, including their patient-centred nature, practitioner effects, non-specific effects, the influence of patient choice, and potential synergistic effect requires innovative evaluative approaches. Suggested alternative trial designs are described below:

- Studies based in whole systems research which includes qualitative and quantitative methods to include the broader aspects of treatment, not just the intervention[33,34]
- Mixed-methods or qualitative research, as qualitative data can provide information on patients' and/or practitioners' views on the effectiveness of treatment. Many studies are including such qualitative data as part of their design to provide a broader picture of patient outcomes[34].
- Preference trials include patient choice of treatment, which is often important in CAM. They can produce more generalisable results[35], such as the study by Lucini (2009).
- Study designs which take into account, and report details of, practitioner variability in terms of point and meridian selection and use and the use of physical techniques, such as stretches (based on differences in their education and training). Early phase research or pilot studies may be needed to generate hypotheses, identify the most appropriate health conditions, patient groups and treatments to test in full clinical studies[36]. This is especially appropriate given the limited evidence base for Shiatsu.
- A pragmatic design may be appropriate, as used by some studies in this review. Pragmatic trial design overcomes some of the barriers of conducting RCTs in CAM, including patient-centred care, improved recruitment and providing treatment as usual. Examples of pragmatic trials are the cohort multiple randomised controlled trial[37] and health services research[38]. There is promising research using both a pragmatic approach to evaluate Shiatsu as part of an integrated or massage intervention (Ballegaard et al 1996; Sundberg et al 2009)[39]. A flexible protocol approach could be used to improve replicability[40].

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[27] Walji R, Boon H (2006). Redefining the randomised controlled trial in the context of acupuncture research. *Complement Ther Clin Pract.*

[28] Shea J. (2006) Applying evidence-based medicine to Traditional Chinese Medicine: Debate and strategy. *J Altern Complement Med* 12(3): 255-263.

[29] Walker LG, Anderson J. (1999)Testing Complementary and alternative therapies within a research protocol. *European J Cancer* 35(11) 1614-1617

[30] Herman PM, D'Huyvetterk . Mohler MJ ((2006) Are health services research methods a match for CAM. *Altern Ther* 12(3): 78-83.

[31] Broom A. (2005) Using qualitative interviews in CAM research: A guide to study design, data collection and data analysis. *Complement Ther Med* 13: 65-73.

[32] Walach H, Falkenberg T, Fonnebo V, Lewioth G, Jonas WB. (2006) Circular instead of hierarchical: methodological principles for the evaluation of complex interventions. 6: 29. <http://www.biomedcentral.com/1471-2288/6/29. doi 10.1186/1471-2288-6-29>.

[33] Verhoef MJ, Lewith G, Ritenbaugh C, Boon H, Fleishman S & Leis A. (2005) Complementary and alternative medicine whole systems research: Beyond identification of inadequacies of the RCT. *Complement Ther Med* 13(3): 206-212

[34]Giordano J, Garcia MK, Strickland G.(2004) Integrating Chinese Traditional medicine into a US Public Health Paradigm. *J Altern Complement Med* 10(4): 706-710.

[35] Torgerson D and Sibbald B (1998) Understanding controlled trials: What is a patient preference trial? BMJ 316:360

[36] Mikel Aickin. (2007) The Importance of Early Phase Research. The Journal of Alternative and Complementary Medicine, 13(4): 447-450.

[37] Relton C, Torgerson D, O'Cathain A, Nicholl J (2010) Rethinking pragmatic randomised controlled trials: introducing the "cohort multiple randomised controlled trial" design BMJ; 340:c1066

[38] Herman PM, D'Huyvetter K, Mohler MJ (2006) Are health services research methods a match for CAM? Alt Ther 12(3):78-82

[39] Bauer BA, Susanne MC, Laura JW, Deborah E, Penny KM, Christina MW *et al*.: Effect of massage therapy on pain, anxiety, and tension after cardiac surgery: A randomized study. *Complementary Therapies in Clinical Practice* 2010, 70:C75; Cutshall S, Laura JW, Deborah E, Thoralf MS, Ryan FK, Bauer BA: Effect of massage therapy on pain, anxiety,

- One of the main issues in RCTs of complementary approaches is the control treatment and blinding. In the case of acupuncture there has been controversy about the use of sham acupuncture and it is now generally believed that it cannot be used as an inert control though it could be one arm of an RCT[36]. The strength of any conclusions from research will depend on the quality of the evidence included and even with gold standard RCTs there can still be bias[41]. As the included studies have shown, "sham" acupressure including light touch at acupoints does have an effect. This means that "sham" acupressure may not be an appropriate control unless a study is very carefully designed, e.g. three armed trials which use sham treatment and an inert control[36]. Shiatsu (as distinct from acupressure) presents further complexities as treatments are based on Hara diagnosis and rarely if ever "standardised". This needs to be adequately reported in papers, following guidelines such as CONSORT or TREND.
- Another issue in RCTs is criteria for randomisation. A recent paper on acupuncture concluded that RCTs would be more effective if participants were randomised to groups based on traditional Chinese diagnosis, not solely on conventional western criteria[11]. The authors felt that homogeneity of groups based on specific acupuncture diagnostic criteria (which takes into account the different philosophy and Chinese medicine system) could be used as evidence of efficacy of the intervention and satisfy both acupuncture and conventional medicine critics. Details of randomisation would need to be thoroughly reported, in line with CONSORT guidelines. This may be true for other complementary therapies including Shiatsu which uses elements of Traditional Chinese Medicine diagnosis as well as Hara diagnosis.

In terms of topics for research, future studies in this area may need to focus on areas commonly treated with Shiatsu/acupressure which have less evidence, including psychological and musculoskeletal conditions, in particular neck/shoulder, lower back problems, arthritis, depression, stress and anxiety[44], rather than pain and nausea and vomiting. There is a need for studies to improve the generalisability of findings on sleep and renal disease.

7.3 Implications for practice

The research base for Shiatsu is still very much in its infancy and the profession will need to work closely with practitioners and researchers in order to build up a larger body of evidence.

The strongest evidence for acupressure was for pain, post-operative nausea and vomiting, and sleep. These conditions highlight the value of acupressure/Shiatsu as a complementary approach to conventional treatment. This can be either to address the adverse effects of conventional treatment e.g. chemotherapy or anaesthesia, or for conditions conventional medicine struggles to treat, e.g. some types of pain and sleep problems.

Although the quality of the studies and appropriateness of research methods were inadqueate to make a conclusive judgement regarding Shiatsu, studies covered pain, angina, fibromyalgia, labour and mental health. Given that Shiatsu in practice in the UK is most commonly used for musculoskeletal and psychological problems[42], the research base shows a promising beginning, and future research

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and tension in cardiac surgicalEffect of massage therapy on pain, anxiety, and tension in cardiac surgical patients: A pilot study. *Complementary Therapies in Clinical Practice* 2010, 92¿C95.

[40] Schnyer RN, Allen JJ: Bridging the gap in complementary and alternative medicine research: manualization as a means of promoting standardization and flexibility of treatment in clinical trials of acupuncture. *J Altern Complement Med* 2002, 8: 623-634.

[41] Leibovici L. (1999) Alternative (complementary) medicine: a cuckoo in the nest of empiricist warblers. *BMJ (Clinical Research ED.);* 319: 1629 -32.

[42] Harris, P. E. & Pooley, N. (1998), What do shiatsu practitioners treat? A nationwide survey, *Comp Ther in Med*. 6(1): 30-35.

should build on this. More research is needed on the other conditions identified by Long et al as commonly treated including health maintainence, stress and low energy[43].

Most of the studies reviewed used a small number of acupoints for a specific condition or symptom in a protocol approach, rather than individualised treatment. Acupressure is more likely to use such set points, whereas Shiatsu is more likely to be individualised. However, the use of protocol for treatment is particularly useful in trials to facilitate replicability of treatment[44]. The findings relating to protocol-based acupressure may not directly inform the evidence base for Shiatsu/TCM acupressure practice, although the evidence for a specific acupoint for a specific symptom/condition can be integrated into an individualised treatment by combining with points suited for the individual. Appendix 8.3 contains a table which summarises which acupoints have evidence (from the studies reviewed) for which conditions. This may be of use to practitioners working with a points-based method, to identify which specific acupoints can be included in a treatment for patients with specific (Western) diagnoses.

Some studies did support the use of individualised treatment in Shiatsu practice, for example Hsieh et al (2004; 2006; 2010) used a pragmatic trial design which showed that a course of individualised treatment was effective for low back pain and headache. Some studies also support the long-term effects of acupressure/Shiatsu, for example for headache (Hsieh et al 2010), low back pain (Hsieh et al 2004; 2006), and nausea and vomiting (Dibble 2007).

The limitations in applying acupressure findings to Shiatsu practice, especially when self-administered, again highlight the need for Shiatsu research. The relationship between Shiatsu and acupressure may also need clarification for marketing and public awareness.

This review has highlighted the contention around the specific or non-specific effects of CAM treatments. Many studies found that acupressure was only effective compared to control rather than sham or medication, suggesting that effects are non-specific. Examples include labour pain (Chung et al 2003), dysmenorrhoea (Jun et al. 2007), renal symptoms of fatigue, depression and sleep (Tsay, 2004; Tsay & Chen, 2003; Tsay et al 2004), sleep (Hsu et al 2006) and nausea and vomiting (Lee & Done 2004). However, other studies found effects compared to sham treatment, suggesting specific effects. Examples include labour pain (Lee, Chang, & Kang 2004), minor trauma (Kober et al. 2002; Lang, 2007), postoperative nausea and vomiting (Lee & Done 2004), sleep (Chen et al. 1999) and cancer treatment side effects (Chao et al. 2009). Although it is not clear whether the effects of acupressure/Shiatsu identified are specific, one study found that belief in treatment (participants guessing which treatment group they were allocated to) did not affect the results (Harris et al. 2005).

Regarding the implications for conventional medical treatment, the evidence for acupressure for pain, post-operative nausea and vomiting, and sleep suggests that conventional practitioners may consider integrating acupressure for these symptoms. Again, Appendix 8.3 gives details but particular points include: Sp6 for dysmennhorea; P6 for N&V postoperatively, in chemotherapy and pregnancy; combinations of St36, Sp6, Ki1, Ki3, H17, K11 and Gb34 for renal symptoms; a range of points for COPD; Ht7 and other points for sleep in elderly residents; and perhaps Gb20, Du20, He7, Pe6 and Sp6 for agitation in dementia.

[43] Long,A.F. (2008) The effectiveness of shiatsu: findings from a cross-European, prospective observational study [corrected] [published erratum appears in *J Altern Complement Med*. 14:(8): 921-930.

[44] Schnyer, R. N. & Allen, J. J. 2002, "Bridging the gap in complementary and alternative medicine research: manualization as a means of promoting standardization and flexibility of treatment in clinical trials of acupuncture", *J Altern Complement Med*, vol. 8, no. 5, pp. 623-634.

7.4 Safety

This review highlighted that Shiatsu and acupressure appear to be safe and beneficial treatments[45] although four single case reports of adverse events occurring following Shiatsu massage were identified (excluded from this review) (Herskovitz et al 1992; Mumm et al 1993; Tsubo 2001; Wada et al 2005). Safety is best established with prospective studies and the four reports identified in this review highlighted the importance of good evidence on safe practice. However, as this review focussed on efficacy rather than safety, these findings were incidental. Work by Andrew Long has provided a useful typology of adverse effects[46]. These are: Type 1: Responses unconnected to the CAM modality; Type 2: Transitional effect (client-perceived and theory-consistent); Type 3: Transitional effect (theory and experientially consistent); Type 4: Undesired, but not unsafe event or effect; Type 5: Potentially adverse event or effect and possible risk to client safety. This typology should be utilised in future studies. The type and frequency of adverse events, possible causal links between Shiatsu and adverse events and any transient reactions after Shiatsu therapy may need exploration.

The Shiatsu Society may need to consider the development and piloting of an adverse event reporting system for Shiatsu

7.5 Strengths and limitations of the review

Searches for this review were conducted at four separate time points, and a wide range of databases maximised the number of articles captured. This study used recognised quality checklists to evaluate studies and each study was independently assessed by 2 reviewers and with a third reviewer for adjudication.

The checklists used to calculate the quality of the reporting of studies (CONSORT, TREND etc) were useful but do have limitations. In particular with such a broad range of study designs other than RCTs, the appropriateness of checklists for specific study designs is limited. For example the TREND checklist, for nonrandomised study designs, may need additional specific criteria for specific types of nonrandomised designs[47].

As seen in section 6.3.3, inter rater agreement for A/B/C grading was around 71%. Consensus was reached for all papers through discussion with a third rater. The statistical calculation for inter-rater agreement is not a requirement in Systematic Review convention, as this process is generally understood to be collaborative and informal. However, it has been included here for additional information and transparency[48].

Searches were restricted to UK/USA databases; including Asian databases may have improved the findings. Language bias may also be present, although some Chinese language studies were included. There was no attempt to find grey literature except searching for UK postgraduate theses; no contact was made with individual authors.

As this review was not limited by health condition, the breadth of the included studies necessitated limiting inclusion by excluding studies prior to 1990. This may have created bias, although all the

[45] Long, A. F. 2009, "The potential of complementary and alternative medicine in promoting well-being and critical health literacy: a prospective, observational study of shiatsu", *BMC Complementary & Alternative Medicine*, vol. 9, p. 19.
[46] Long AF, Esmonde L, Connolly S, 2009. A typology of negative responses: a case study of shiatsu . Complementary Therapies in Medicine 17, 168—175
[47] Des Jarlais D., Lyles, C., & Crepaz, N. and the TREND group (2004), Improving the reporting quality of nonrandomized evaluations of behavioral and public health interventions: the TREND statement, Am J Public Health, vol. 94(3): 361-366.
[48] NICE guidelines manual (2009) Section 3.5
http://www.nice.org.uk/media/5F2/44/The_guidelines_manual_2009_-_All_chapters.pdf

included studies were published after 1993, suggesting that there may have been little extra data prior to 1990.

As the quality assessment in a systematic review depends on contextual and pragmatic considerations, it was necessary to limit the number of articles reviewed due to time and resource constraints[49]. In particular, purely qualitative studies were excluded, which may have limited results given the now recognised value given to qualitative outcome measures, particularly in complex interventions such as Shiatsu.

8. Conclusions

This review of the best quality evidence to date suggests that, due to the lack of high quality studies specifically relating to Shiatsu, well designed research in any area would be a welcome addition to the current evidence base. For acupressure and pain, the evidence is generally consistent and positive. There is also evidence for acupressure improving sleep in institutionalised elderly. Acupressure studies for nausea and vomiting have been somewhat inconsistent, with strongest evidence for post-operative nausea, and may merit further research. There is limited evidence for chronic respiratory conditions, especially COPD. Similarly the studies on psycho-social aspects of health, anaesthesia and other health conditions are generally weak due to study design. There is a need to consider innovative, high-quality study designs appropriate for evaluating Shiatsu/acupressure. Evidence appears to be improving in quantity, quality and comprehensive reporting, but there is still much room for improvement.

9. Recommendations

- Promote research investigating the effectiveness of Shiatsu as an intervention
- Encourage practitioners to engage in research which is well designed (controlled, randomised, large) and reported (in particular practitioner variability, randomisation procedure and setting)
- Investigate the appropriateness of various research methodologies for Shiatsu research, including pragmatic studies and alternative RCT designs such as preference trials, TCM diagnosis allocation, whole systems research, three armed, and mixed-methods designs.
- Clarify the relationship between Shiatsu and acupressure for marketing and public awareness
- Consider the development and piloting of an adverse event reporting system for Shiatsu
- Explore clinical effectiveness of Shiatsu in an integrated setting
- Identify specific topic areas for initial research investment, potentially psychosocial and musculoskeletal.
- Develop an evaluative framework for integrated Shiatsu practice, perhaps using pragmatic trial designs.
- Improve research resources for the profession

[49] http://www.york.ac.uk/inst/crd/pdf/Systematic_Reviews.pdf

Appendix 1 - Search Terms and definitions

In order to ensure that the correct search term was used, a MeSH search was carried out for the term '**Shiatsu**' with the following result (copied from MeSH) for the option '**Shiatsu [Multi]**' exploded into the MeSH tree:

Acupressure
A type of massage in which finger pressure on specific body sites is used to promote healing, relieve fatigue, etc. Although the anatomical locations are the same as the ACUPUNCTURE POINTS used in ACUPUNCTURE THERAPY (hence acu-), no needle or other acupuncture technique is employed in acupressure. (From Random House Unabridged Dictionary, 2d ed). Shiatsu is a modern outgrowth that focuses more on prevention than healing.

Year introduced: 1996
Entry Terms:
- Shiatsu
- Shiatzu
- Zhi Ya
- Chih Ya

Previous Indexing:
- Acupuncture Points (1990-1995)
- Pressure (1983-1995)

All MeSH Categories
Analytical, Diagnostic and Therapeutic Techniques and Equipment Category
Therapeutics
Complementary Therapies
Acupuncture Therapy
Acupressure

All MeSH Categories
Analytical, Diagnostic and Therapeutic Techniques and Equipment Category
Therapeutics
Complementary Therapies
Musculoskeletal Manipulations
Massage
Acupressure

All MeSH Categories
Analytical, Diagnostic and Therapeutic Techniques and Equipment Category
Therapeutics
Musculoskeletal Manipulations
Massage
Acupressure

All MeSH Categories
Analytical, Diagnostic and Therapeutic Techniques and Equipment Category
Therapeutics
Physical Therapy Modalities
Musculoskeletal Manipulations
Massage
Acupressure

Appendix 2 - Database searches and terms used

Pub/Med search terms

The following search terms were used for MEDLINE searches with no limits set for search criteria:

1. **'Shiatsu AND nursing'** – to update a previous search that the Shiatsu Society UK had undertaken.

2. '**Shiatsu**' – MeSH term to capture any omissions from the first search.

3. **'Shiatsu NOT acupressure'** - to restrict results to Shiatsu.

OVID searches

OVID is an online biomedical data service which comprises of a number of databases. Access can be limited dependant on subscription e.g. EMBASE. This facility allows for a single search to be performed over a number of databases which is then screened for duplicates between databases to produce a final result. Some of these databases include 'popular' health publications such as Here's Health and articles published by organisations for newsletters e.g. the Shiatsu Society News. The following databases were used:

- EBM Reviews - Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews, Cochrane Central Register of Controlled Trials.
- AMED (Allied and Complementary Medicine) <1985 to February 2006> (154)
- British Nursing Index (BNI) <1985 to February 2006> (12)
- CINAHL - Cumulative Index to Nursing & Allied Health Literature.
- EMBASE
- Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations
- Ovid MEDLINE(R) <1966 to present
- PsycINFO
- Journals@Ovid (this includes the former Core Biomedical, Nursing and Mental Health full text collections).

OVID search terms

The majority of OVID databases use a MeSH system for indexing therefore the term **'Shiatsu'** was used for the search (28.02.06). It was only possible to update this search once, 22.03.06. with no new results, as EMBASE was no longer accessible for any further searches therefore the same search could not be repeated.

Other sources

The search terms '**Shiatsu'** and **'acupressure'** were used for searches in journal databases, Index to Theses and ZETOC

Appendix 3 - Inclusion/exclusion criteria

Inclusion criteria

Shiatsu or acupressure administered manually /bodily
Primary research
Secondary research
Systematic review
Review of effectiveness
Literature review with described methodology

Studies in preferred study design hierarchy:
Randomised controlled trial (RCT)
Cohort
Case/Control
Before and after
Cost – comparison / effect / benefit / economics
Audit

Further details of hierarchy of study design and grading of evidence can be found at:
http://www.york.ac.uk/inst/crd/pdf/Systematic_Reviews.pdf

Exclusion criteria

The exclusion criteria were built up in stages as until search results and abstracts were available for initial screening this could not be finalised. For the purpose of this review, qualitative studies, case reports, case series and grey literature were not included for appraisal as these were not considered as scientific evidence of effectiveness.

Stage 1 – initial screening of results
Published prior to February 1990
Duplicated in other searches
Obvious from title that a device has been used
Newspaper articles, book reviews, 'popular' health publications.
General comments, letters

Stage 2 – from abstracts
Foreign language papers
Use of Korean points/meridians
Use of plasters, devices, wristbands
Auricular acupressure
General comments, letters

Stage 3 – from full text articles.
This includes Stage 2 exclusion criteria as it may not have been obvious from the abstracts.

Foreign language papers
Use of Korean points/meridians
Use of plasters, devices, wristbands
Auricular acupressure
Anecdotal evidence
Personal experience

Shiatsu / acupressure are mentioned as therapies in general complementary medicine publications and there is no section which relates specifically to either therapy.
Guidelines for treatment
Reports of possible adverse events
Surveys
Case reports
Case series
Qualitative studies
Conference abstracts / posters

Appendix 4 - Second MEDLINE MeSH tree and subsequent searches

Acupuncture Therapy
Treatment of disease by inserting needles along specific pathways or meridians.
The placement varies with the disease being treated. It is sometimes used in conjunction with heat, moxibustion, acupressure, or electric stimulation.
Year introduced: 1990
Entry Terms:

- Therapy, Acupuncture

Previous Indexing:

- Acupuncture (1966-1989)

See Also:

- Medicine, Chinese Traditional
- Acupuncture

All MeSH Categories
Analytical, Diagnostic and Therapeutic Techniques and Equipment Category
Therapeutics
Complementary Therapies
Acupuncture Therapy
Acupressure
Acupuncture Analgesia
Acupuncture, Ear
Electroacupuncture
Meridians
Acupuncture Points
Moxibustion

The term 'acupuncture therapy' was introduced in 1990 and the MeSH tree terms included 'acupressure' and 'acupuncture points'. 'Acupressure', where 'Shiatsu' is included, was introduced as MeSH term in 1996'. It was not clear from the information in MEDLINE, whether all citations for acupressure had been re-indexed when the term was introduced.
Further searches were therefore carried out on 24th August 2006 to ascertain how many additional publications needed to be reviewed. The search terms used and results were as follows:

Code	Search term	Result	Comment
A	'Shiatsu' – to verify the final 'Shiatsu' search on 1st August	259	18 not in 'acupressure' (259 – 18 = 241 = C
B	'acupressure'	360	119 not in 'Shiatsu' (360 – 119 = 241 = C)
C	'Shiatsu' AND 'acupresssure'	241	
D	'Shiatsu' OR 'acupressure'	378	(= B + 18 Shiatsu from A)
E	'acupoint' AND acupressure'	100	All found in 'acupressure'
F	'acupuncture point' AND 'acupressure'	87	All found in 'acupressure'
G	'acustimulation'	24	10 not found in 'acupressure'

The 10 new results in the 'acustimulation' search did not refer to manually applied acupressure and therefore were not considered for inclusion.

Of the 119 new results in the 'acupressure' search, 15 were duplicated in other searches and 25 were before 1990. Following the exclusion criteria protocol, a further 77 publications were excluded and full text copies were requested for the two remaining publications.

1. Belluomini,J., Litt,R.C., Lee,K.A., and Katz,M. (1994). Acupressure for nausea and vomiting of pregnancy: a randomized, blinded study. *Obstet Gynecol* 84:245-248.
This was added to the evidence tables and appraised.

2. Matsumura,W.M. (1993). Use of acupressure techniques and concepts for nonsurgical management of TMJ disorders. *J Gen Orthod.* 4:5-16.
There was no abstract available for this publication and it was not possible to obtain a full text copy, it was therefore excluded.

Other

As a result of checking the references of the 146 publications that were left for screening, two publications were considered for review.

One was included for review at this final stage:

Ballegaard,S., Johannessen,A., Karpatschof,B., and Nyboe,J. (1999). Addition of acupuncture and self-care education in the treatment of patients with severe angina pectoris may be cost beneficial: an open, prospective study. *J Altern Complement Med* 5:405-413.

This was listed in the references of an included publication by the same first author, but did not appear in any of the MEDLINE searches, as it had been indexed under 'acupuncture therapy':
Ballegaard,S., Borg,E., Karpatschof,B., Nyboe,J., and Johannessen,A. (2004). Long-term effects of integrated rehabilitation in patients with advanced angina pectoris: a nonrandomized comparative study. *J Altern Complement Med* 10:777-783.

One was excluded:
Vickers,A.J. (1996). Can acupuncture have specific effects on health? A systematic review of acupuncture antiemesis trials. *J R Soc Med* 89:303-311.
This was referred to in an excluded letter :
Hoo,J.J. (1997). Acupressure for hyperemesis gravidarum. *Am J Obstet.Gynecol.* 176:1395-1397.
It was found to be indexed under 'acupuncture therapy ' and did not appear in any searches, original or those carried out on 24th August as the key words of the publications included 'acupuncture'. 34 studies were reviewed, seven of which referred to manual acupressure, three were before 1990, three were excluded from this evidence review and one was subsequently included from the MEDLINE 'acupressure' search of 24th August. (Belluomini,J., Litt,R.C., Lee,K.A., and Katz,M. (1994). Acupressure for nausea and vomiting of pregnancy: a randomized, blinded study. *Obstet Gynecol* 84:245-248.)

Appendix 5 - Abstract screening form

Date:
Author:
Publication date:
RefMan database:
ID (from database):

Inclusion criteria	
Primary research	Yes/No
Secondary research	Yes/No
Systematic review	Yes/No
Review of effectiveness	Yes/No
Literature review with described methodology	Yes/No
Shiatsu	Yes/No
Acupressure	Yes/No
Exclusion criteria	
Foreign language papers	Yes/No
Qualitative	Yes/No
Case series	Yes/No
Case reports	Yes/No
Grey literature	Yes/No
Inclusion criteria - preferred study design hierarchy	
Randomised controlled trial (RCT)	Yes/No
Other acceptable designs	
Cohort	Yes/No
Case/Control	Yes/No
Before and after	Yes/No
Cost – comparison / effect / benefit / economics	Yes/No
Audit	Yes/No
Exclusion criteria	
Use of Korean points/meridians	Yes/No
Plasters, devices, wristbands	Yes/No
Auricular acupressure	Yes/No
Comments	
Include study	**Yes/No**

Appendix 6 - Initial search results

269 results after duplicates within databases were removed (via OVID search engine) in search result order

	2006 results	**2010 results**	**Total**
PubMed[1]	231	139	370
Ovid: EBM reviews (incl all Cochrane Library), AMED, BNI, EMBASE, MEDLINE	5221	728 (464 from Dec 2009, 264 from April 2010)	949
AMED – includes Shiatsu Society News	154		
BNI	12		
Ovid: CINAHL	43	232 (198 from Dec 2009, 34 from April 2010)	275
EMBASE	14		
MEDLINE in process & non indexed	2		
OVID MEDLINE	34		
Ovid: PsycINFO (now called PsycARTICLES)	5	4	9
Total	**500**	**1103**	**1603**

1.

Shiatsu AND nursing	**80 (**44 from 2006; 36 from 2010) results, 2 before 1990 leaving **78** for review
Shiatsu	**333** (235 from 2006; 98 from 2010) results, 5 before 1990, 41 included in above, leaving **287** to review
Shiatsu NOT acupressure	**14** (9 from 2006; 5 from 2010) results, 9 included in above or before 1990, leaving **5**to review

Exclusions:

	2006	**2010**	**Total**
Prior to 1990	19	N/A	19
Book reviews, newspaper clips	13	36	49
Shiatsu Society News	110	54	164
Natural Health, Here's Health etc and general CAM	15	51	66
Acupuncture	4	48	52
Total left to compare with 3 Pub/Med searches	108	93	201
Duplicates	36	202	238
Final OVID search results to be reviewed	72	93	165
Total initial exclusions from OVID	**377**	**577**	**954**

Other searches

There were **10** new results from the journal databases searches as detailed below:

Science Direct	17 – **6** of which were new results
Blackwell Synergy	51 (only 4 of these referred to 'Shiatsu' others referred to various complementary therapies) **1** of which was new
Ingenta Select	**2** both new
Wiley Interscience	0
Index to Theses	**1**

A loan copy of two theses was ordered for review and the ZETOC search (see Appendix 15) could not be downloaded for review and included multiple duplicates and conference abstracts.

Follow up searches

A number of additional searches were carried out between March and August 2006 and January and March 2010 to ensure that the most recent publications were captured. Searches included 4 additional MEDLINE 'Shiatsu' searches and a search for 'acupressure' in Science Direct journal database.

After Stage 1 and 2 exclusions had been completed, 146 publications were left for full text screening and appraisal.

Reference Manager	Code	Search results - new only	Stage 1	Stage 2	Full text to screen
Shiatsu and Nursing Medline Feb 06	SNM0206	44	2	30	12
Shiatsu Medline Feb 06	SM10206	235	46	109	80
Shiatsu Medline 21.03.06 new only	SM20306	7		4	3
Shiatsu Medline 26.04.06 new only	SM30406	4		2	2
Shiatsu Medline 21.06.06 new only	SM40606	9		6	3
Shiatsu Medline 01.08.06 new only	SM50806	4		2	2
Shiatsu OVID 28.02.06/22.03.06 new after first exclusions	SO10306	72		57	15
Shiatsu Society News (OVID) as requested by DB	SSN0806	125		122	3
Lee & Done search systematic review 27.04.06	SLD0406	1		0	1
Shiatsu from journal databases 22.03.06 new only	SJD0306	9		4	5
Acupressure Science Direct 04.05.06	SDA0506	88	31	39	18
Acupressure Science Direct 27.06.06/ 02.08.06	SDA0606	4		2	2
TOTAL		**602**	**79**	**377**	**146**

Appendix 7 - Critical Appraisal checklists

Summary review sheet

The following form was used to assess the quality of each study and was compiled from checklists in Greenhalgh T & Donald A, Evidence Based Health Care Workbook, BMJ Books 2000 and Centre for Reviews and Dissemination (http://www.york.ac.uk/inst/crd/report4.htm)

Sample	Sample size - powered? - adequate size? Sampling – random? How were participants recruited? Are results generalisable?
Group assignment	Were participants randomly assigned to groups? Were groups homogenous for baseline variables and in which variables?
Blinding – single/double?	Were the following blinded to which group they were in: - Participants? - Care givers? - Assessors? If not, was double blinding technically not possible? Was a placebo treatment used? Were details given?
Co-interventions	Can the effects of acupressure/Shiatsu be isolated or were co-interventions used?
Outcomes	Were the outcomes appropriate, valid and reliable? clinical are best
Follow up/attrition rate	Were all participants accounted for? Was follow-up over 80%? Was intention to treat analysis used?
Intervention	Intervention described? Valid & reliable?
Results	Are statistics clear and appropriate?
Patients paying for treatment?	May bias results
Finance/ethics	How was study financed? Was ethical approval given?

STRICTA checklist.

This is from MacPherson et al (2010)[50]

(1) Acupuncture rationale	
(1a) Style of acupuncture (eg, Traditional Chinese Medicine, Japanese, Korean,	
Western medical, Five Element, ear acupuncture, etc)	
(1b) Reasoning for treatment provided, based on historical context, literature sources and/or consensus methods, with references where appropriate	
(1c) Extent to which treatment was varied	
(2) Details of needling	
(2a) Number of needle insertions per subject per session (mean and range where relevant)	
(2b) Names (or location if no standard name) of points used (uni-/bilateral)	
(2c) Depth of insertion, based on a specifi ed unit of measurement or on a particular tissue level	
(2d) Responses sought (eg, *de qi* or muscle twitch response)	
(2e) Needle stimulation (eg, manual or electrical)	
(2f) Needle retention time	
(2g) Needle type (diameter, length and manufacturer or material)	
(3) Treatment regimen	
(3a) Number of treatment sessions	
(3b) Frequency and duration of treatment sessions	
(4) Other components of treatment	
(4a) Details of other interventions administered to the acupuncture group (eg, moxibustion, cupping, herbs, exercises, lifestyle advice)	
(4b) Setting and context of treatment, including instructions to practitioners, and information and explanations to patients	
(5) Practitioner background: Description of participating acupuncturists (qualification or professional affiliation, years in acupuncture practice, other relevant experience)	
(6) Control or comparator interventions	
(6a) Rationale for the control or comparator in the context of the research question, with sources that justify the choice(s)	
(6b) Precise description of the control or comparator. If sham acupuncture or any other type of acupuncture-like control is used, provide details as for items 1–3 above	

[50] Macpherson, H., Altman, D. G., Hammerschlag, R., Youping, L., Taixiang, W., White, A., & Moher, D. (2010), Revised STandards for Reporting Interventions in Clinical Trials of Acupuncture (STRICTA): extending the CONSORT statement, PLoS.Med, 7 (6): e1000261.

CONSORT checklist[51]
For randomised controlled trials

Section/Topic	Item No	Checklist item
Title and abstract		
	1a	Identification as a randomised trial in the title
	1b	Structured summary of trial design, methods, results, and conclusions (for specific guidance see CONSORT for abstracts)
Introduction		
Background and objectives	2a	Scientific background and explanation of rationale
	2b	Specific objectives or hypotheses
Methods		
Trial design	3a	Description of trial design (such as parallel, factorial) including allocation ratio
	3b	Important changes to methods after trial commencement (such as eligibility criteria), with reasons
Participants	4a	Eligibility criteria for participants
	4b	Settings and locations where the data were collected
Interventions	5	The interventions for each group with sufficient details to allow replication, including how and when they were actually administered
Outcomes	6a	Completely defined pre-specified primary and secondary outcome measures, including how and when they were assessed
	6b	Any changes to trial outcomes after the trial commenced, with reasons
Sample size	7a	How sample size was determined
	7b	When applicable, explanation of any interim analyses and stopping guidelines
Randomisation:		
Sequence generation	8a	Method used to generate the random allocation sequence
	8b	Type of randomisation; details of any restriction (such as blocking and block size)
Allocation concealment mechanism	9	Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned
Implementation	10	Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions
Blinding	11a	If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how
	11b	If relevant, description of the similarity of interventions
Statistical methods	12a	Statistical methods used to compare groups for primary and secondary outcomes
	12b	Methods for additional analyses, such as subgroup analyses and adjusted analyses
Results		
Participant flow (a diagram is strongly	13a	For each group, the numbers of participants who were randomly assigned, received intended treatment, and were analysed for the primary outcome

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Schulz KF, Altman DG, Moher D, for the CONSORT Group. (2010) CONSORT 2010 Statement: updated guidelines for reporting parallel group randomised trials. BMJ; 340: c332

recommended)	13b	For each group, losses and exclusions after randomisation, together with reasons
Recruitment	14a	Dates defining the periods of recruitment and follow-up
	14b	Why the trial ended or was stopped
Baseline data	15	A table showing baseline demographic and clinical characteristics for each group
Numbers analysed	16	For each group, number of participants (denominator) included in each analysis and whether the analysis was by original assigned groups
Outcomes and estimation	17a	For each primary and secondary outcome, results for each group, and the estimated effect size and its precision (such as 95% confidence interval)
	17b	For binary outcomes, presentation of both absolute and relative effect sizes is recommended
Ancillary analyses	18	Results of any other analyses performed, including subgroup analyses and adjusted analyses, distinguishing pre-specified from exploratory
Harms	19	All important harms or unintended effects in each group (for specific guidance see CONSORT for harms)
Discussion		
Limitations	20	Trial limitations, addressing sources of potential bias, imprecision, and, if relevant, multiplicity of analyses
Generalisability	21	Generalisability (external validity, applicability) of the trial findings
Interpretation	22	Interpretation consistent with results, balancing benefits and harms, and considering other relevant evidence
Other information		
Registration	23	Registration number and name of trial registry
Protocol	24	Where the full trial protocol can be accessed, if available
Funding	25	Sources of funding and other support (such as supply of drugs), role of funders

The TREND checklist[52]
For non-randomised trials

Items		Content
Title and abstract	1	• Information on how units were allocated to interventions
		• Structured abstract recommended
		• Information on target population or study sample
Introduction		• Scientific background and explanation of rationale
Background	2	• Theories used in designing behavioral interventions
Methods		
Participants	3	• Eligibility criteria for participants, including criteria at different levels in recruitment/sampling plan (e.g., cities, clinics, subjects)
		• Method of recruitment (e.g., referral, self-selection), including the sampling method if a systematic sampling plan was implemented
		• Recruitment setting
		• Settings and locations where the data were collected
Interventions	4	• Details of the interventions intended for each study condition and how and when they were actually administered, specifically including: Content: what was given? Delivery method: how was the content given? Unit of delivery: how were subjects grouped during delivery? Deliverer: who delivered the intervention? Setting: where was the intervention delivered? Exposure quantity and duration: how many sessions or episodes or events were intended to be delivered? How long were they intended to last?
		Time span: how long was it intended to take to deliver the intervention to each unit?
		Activities to increase compliance or adherence (e.g., incentives)
Objectives	5	• Specific objectives and hypotheses
Outcomes	6	• Clearly defined primary and secondary outcome measures
		• Methods used to collect data and any methods used to enhance the quality of measurements
		• Information on validated instruments such as psychometric and biometric properties
Sample size	7	• How sample size was determined and, when applicable, explanation of any interim analyses and stopping rules
Assignment method	8	• Unit of assignment (the unit being assigned to study condition, e.g., individual, group, community)
		• Method used to assign units to study conditions, including details of any restriction (e.g., blocking, stratification, minimization)
		• Inclusion of aspects employed to help minimize potential bias induced due to nonrandomization (e.g., matching)
Blinding (masking)	9	• Whether or not participants, those administering the interventions, and those assessing the outcomes were blinded to study condition assignment; if so, statement regarding how the blinding was accomplished and assessed
Unit of analysis	10	• Description of the smallest unit that is being analyzed to assess intervention effects (e.g., individual, group, or community)
		• If the unit of analysis differs from the unit of assignment, the analytical method used to account for this (e.g., adjusting the standard error estimates by the design effect or using multilevel analysis)
Statistical methods	11	• Statistical methods used to compare study groups for primary outcome(s), including complex methods for correlated data

[52] Des Jarlais D., Lyles, C., & Crepaz, N. and the TREND group (2004), Improving the reporting quality of nonrandomized evaluations of behavioral and public health interventions: the TREND statement, Am J Public Health, vol. 94(3): 361-366.

		• Statistical methods used for additional analyses, such as subgroup analyses and adjusted analysis
		• Methods for imputing missing data, if used
		• Statistical software or programs used
Results		
Participant flow	12	• Flow of participants through each stage of the study: enrollment, assignment, allocation and intervention exposure, follow-up, analysis (a diagram is strongly recommended) • Enrollment: the numbers of participants screened for eligibility, found to be eligible or not eligible, declined to be enrolled, and enrolled in the study • Assignment: the numbers of participants assigned to a study condition • Allocation and intervention exposure: the number of participants assigned to each study condition and the number of participants who received each intervention • Follow-up: the number of participants who completed the follow-up or did not complete the follow-up (i.e., lost to follow-up), by study condition • Analysis: the number of participants included in or excluded from the main analysis, by study condition
		• Description of protocol deviations from study as planned, along with reasons
Recruitment	13	• Dates defining the periods of recruitment and follow-up
Baseline data	14	• Baseline demographic and clinical characteristics of participants in each study condition
		• Baseline characteristics for each study condition relevant to specific disease prevention research
		• Baseline comparisons of those lost to follow-up and those retained, overall and by study condition
		• Comparison between study population at baseline and target population of interest
Baseline equivalence	15	• Data on study group equivalence at baseline and statistical methods used to control for baseline differences
Numbers analyzed	16	• Number of participants (denominator) included in each analysis for each study condition, particularly when the denominators change for different outcomes; statement of the results in absolute numbers when feasible
		• Indication of whether the analysis strategy was “intention to treat” or, if not, description of how noncompliers were treated in the analyses
Outcomes and estimation	17	• For each primary and secondary outcome, a summary of results for each study condition, and the estimated effect size and a confidence interval to indicate the precision
		• Inclusion of null and negative findings
		• Inclusion of results from testing prespecified causal pathways through which the intervention was intended to operate, if any
Ancillary analyses	18	• Summary of other analyses performed, including subgroup or restricted analyses, indicating which are prespecified or exploratory
Adverse events	19	• Summary of all important adverse events or unintended effects in each study condition (including summary measures, effect size estimates, and confidence intervals)
Discussion		
Interpretation	20	• Interpretation of the results, taking into account study hypotheses, sources of potential bias, imprecision of measures, multiplicative analyses, and other limitations or weaknesses of the study
		• Discussion of results taking into account the mechanism by which the intervention was intended to work (causal pathways) or alternative mechanisms or explanations
		• Discussion of the success of and barriers to implementing the intervention, fidelity of implementation
		• Discussion of research, programmatic, or policy implications
Generalisability	21	• Generalisability (external validity) of the trial findings, taking into account the study population, the characteristics of the intervention, length of follow-up, incentives, compliance rates, specific sites/settings involved in the study, and other contextual issues
Overall evidence	22	• General interpretation of the results in the context of current evidence and current theory

CASP checklist for cohort studies

A/ Are the results of the study valid?

Screening Questions

1 Did the study address a clearly focused issue? *HINT: A question can be focused in terms of:* *- the population studied* *- the risk factors studied* *- the outcomes considered* *- is it clear whether the study tried to detect a beneficial or harmful effect?*	**Yes Can't tell No** — — —
2 Did the authors use an appropriate method to answer their question? *HINT: Consider* *- Is a cohort study a good way of answering the question under the circumstances?* *-Did it address the study question?*	**Yes Can't tell No** — — —

Is it worth continuing?

Detailed Questions

3 Was the cohort recruited in an acceptable way? *HINT: We are looking for selection bias which might compromise the generalisability of the findings:* *- Was the cohort representative of a defined population?* *- Was there something special about the cohort?* *- Was everybody included who should have been included?*	**Yes Can't tell No** — — —

4. Was the exposure accurately measured to minimize bias? *HINT: We are looking for measurement or classification bias:* *- Did they use subjective or objective measurements?* *- Do the measures truly reflect what you want them to (have they been validated)?* *- Were all the subjects classified into exposure groups using the same procedure?*	**Yes Can't tell No** **_ _ _**
5. Was the outcome accurately measured to minimize bias? *HINT: We are looking for measurement or classification bias:* *- Did they use subjective or objective measurements?* *- Do the measures truly reflect what you want them to (have they been validated)?* *- Has a reliable system been established for detecting all the cases (for measuring disease occurrence)?* *- Were the measurement methods similar in the different groups?* *- Were the subjects and/or the outcome assessor blinded to exposure (does this matter)?*	**Yes Can't tell No** **_ _ _**
6. A. Have the authors identified all important confounding factors? List the ones you think might be important, that the authors missed. **B. Have they taken account of the confounding factors in the design and/or analysis?** *HINT:* *- Look for restriction in design, and techniques eg modelling, stratified-, regression-, or sensitivity analysis to correct, control or adjust for confounding factors*	**Yes Can't tell No** **_ _ _** **Yes Can't tell No _ _ _** **List**

7. A. Was the follow up of subjects complete enough? **B. Was the follow up of subjects long enough?** *HINT:* *- The good or bad effects should have had long enough to reveal themselves* *-The persons that are lost to follow-up may have different outcomes than those available for assessment* *- In an open or dynamic cohort, was there anything special about the outcome of the people leaving, or the exposure of the people entering the cohort?*	**Yes Can't tell No** _ _ _ **Yes Can't tell No** _ _ _

B/ What are the results?

8. What are the results of this study? *HINT:* *- What are the bottom line results?* *- Have they reported the rate or the proportion between the exposed/unexposed, the ratio/the rate difference?* *- How strong is the association between exposure and outcome (RR,)?* *- What is the absolute risk reduction (ARR)?*	**9. How precise are the results?** How precise is the estimate of the risk? ***HINT:*** *- Size of the confidence intervals*
10. Do you believe the results? *HINT:* *- Big effect is hard to ignore!* *- Can it be due to bias, chance or confounding?* *- Are the design and methods of this study sufficiently flawed to make the results unreliable**?*** *- Consider Bradford Hills criteria (eg time sequence,* *dose-response gradient, biological plausibility, consistency).*	**Yes Can't tell No** _ _ _

C/ Will the results help me locally? **11. Can the results be applied to the local population?** *HINT*: *Consider whether* *- The subjects covered in the study*	**Yes Can't tell No** _ _ _

could be sufficiently different *from your population to cause* *concern.* *- Your local setting is likely to differ much from that of the study* *- Can you quantify the local benefits and harms?*	
12. Do the results of this study fit with other available evidence?	**Yes Can't tell No** _ _ _

CASP checklist for systematic reviews[53]

Screening Questions			
1. Did the review ask a clearly-focused question? *Consider if the question is 'focused' in terms of:* *– the population studied* *– the intervention given or exposure* *– the outcomes considered*	Yes	Can't tell	No
2. Did the review include the right type of study? *Consider if the included studies:* *– address the review's question* *– have an appropriate study design*	Yes	Can't tell	No
Is it worth continuing?			
Detailed Questions			
3. Did the reviewers try to identify all relevant studies? *Consider:* *– which bibliographic databases were used* *– if there was follow-up from reference lists* *– if there was personal contact with experts* *– if the reviewers searched for unpublished studies* *– if the reviewers searched for non-English-language studies*	Yes	Can't tell	No
4. Did the reviewers assess the quality of the included studies? *Consider:* *– if a clear, pre-determined strategy was used to determine which studies were included. Look for:* *– a scoring system* *– more than one assessor*	Yes	Can't tell	No
5. If the results of the studies have been combined, was it reasonable to do so? *Consider whether:* *– the results of each study are clearly displayed* *– the results were similar from study to study (look for tests of heterogeneity)* *– the reasons for any variations in results are discussed*	Yes	Can't tell	No
6. How are the results presented and what is the main result? *Consider:* *– how the results are expressed (e.g. odds ratio, relative risk, etc.)*			

[53] Oxman, A. D., Cook, D. J., & Guyatt, G. H. (1994) Users' guides to the medical literature. VI. How to use an overview. Evidence-Based Medicine Working Group, JAMA, 272,(17): 1367-1371.

– how large this size of result is and how meaningful it is *– how you would sum up the bottom-line result of the review in one sentence*			
7. How precise are these results? *Consider:* *– if a confidence interval were reported. Would your decision about whether or not to use this intervention be the same at the upper confidence limit as at the lower confidence limit?* *– if a p-value is reported where confidence intervals are unavailable*			
8. Can the results be applied to the local population? *Consider whether:* *– the population sample covered by the review could be different from your population in ways that would produce different results* *– your local setting differs much from that of the review* *– you can provide the same intervention in your setting*	Yes	Can't tell	No
9. Were all important outcomes considered? *Consider outcomes from the point of view of the:* *– individual* *– policy makers and professionals – family/carers* *– wider community*	Yes	Can't tell	No
10. Should policy or practice change as a result of the evidence contained in this review? *Consider:* *– whether any benefit reported outweighs any harm and/or cost. If this information is not reported can it be filled in from elsewhere?*	Yes	Can't tell	No

Appendix 8 – Included studies

8.1 Summary of studies by health condition, with details of grading

Shiatsu									
Reference	**Design**	**Total sample**	**Intervention**	**Administration**	**Results**	**Reporting**			**Grading**
						Checklist	**score**	**% score***	
Angina									
Ballegaard et al 1996	Controlled trial	69 patients	Integrated treatment with shiatsu on Cv17	Self-administered	Incidence of death/MI reduced to 7% (compared to between 15% and 21%)	TREND	22	41.51	C
Back/neck pain									
Sundberg et al 2009	RCT	80 primary care patients	Integrated care, one of which was shiatsu	Shiatsu practitioner	No significant effects	CONSORT	24	64.86	B
Brady et al 2001	Single group	66 Shiatsu patients	Individualised shiatsu	Shiatsu practitioner	Pain decreased ($p<0.001$), anxiety reduced ($p<0.0001$)	TREND	34	64.15	C
Fibromyalgia									
Faull 2005	Repeated measures	17volunteers	Watsu massage	Watsu practitioner	SF36 improvements for subscales of physical function, bodily pain, vitality and social function ($p=0.01$)	TREND	29	54.72	C
Cancer									
Iida et al 2000	One group	9 cancer patients	Shiatsu massage	n/s	Reduced anxiety for group with strong anxiety ($p=0.09$), increased relaxation for group with weak anxiety ($p=0.01$)	TREND	16	30.19	C
Inducing labour									
Ingram et al 2005	Controlled audit	142 pregnant women	Shiatsu on points GB21, Li4 and Sp6; breathing techniques and exercises	Self administered (taught by midwife)	Labour more likely to be spontaneous ($p=0.038$) and longer ($p=0.03$).	TREND	28	52.83	C
Mental health									
Lichtenberg et al 2009	One group	12 schizophrenic inpatients	Individualised Shiatsu	Shiatsu practitioners	Improved on a range of outcomes p values ranged from 0.0015 to 0.0192	TREND	21	39.62	C

General (range of conditions)									
Long 2008	Uncontrolled	948 Shiatsu patients	Routine practice	Shiatsu practitioner	Symptom scores improved significantly over the 6 months	CASP cohort	7	63.64	ungraded
Chronic stress									
Lucini et al 2009	Controlled nonrandomised	70 patients	Individualised Shiatsu	Shiatsu practitioner	Reduced stress compared to control (p=0.032)	TREND	28	52.83	B
n/s: not specified									

Acupressure

Pain: Category 1

Dysmenorrhoea (7 studies)

Reference	Design	Total sample	Intervention	Administration	Results	Reporting				Grading
						Checklist	score	% score*	Stricta score	
Chen and Chen 2010	RCT	134 students	4 groups. Zusanli; Hegu; Hegu-Sanyinjiao Matched Points; Control	Researcher	Matched points significantly reduced pain (p=0.02), distress (p=0.001) and anxiety (p=0.001) compared to control, after six months. Hegu (p=0.02) reduced pain but not distress and anxiety. Zusanli had no significant effects.	CONSORT	22	56.8	12	A
Cho and Hwang 2009	SR	30 studies	Acupressure	N/A	Acupressure alleviates menstrual pain	CASP	5	48.6	N/A	A
Jun et al 2007	Non randomised controlled trial	61 students	Acupressure on Sp6	Researcher	Dysmenorrhoea decreased p < 0.000 directly after treatment and p =0.032 after 2 hours; temperature p=0.03	TREND	35	59.5	13	A
Wong et al 2010	RCT	40 students	Acupressure on Sp6	Self-administered	Pain reduced (p=0.003; p=0.012; p=0.024)	CONSORT	15	48.6	13	B
Chen and Chen 2004	RCT	69 students	Acupressure at Sp6	Researcher	Reduced pain and anxiety (no p value)	CONSORT	18	51.4	12	A

Jun et al 2006	Controlled non randomised	58 students	Acupressure on Sp6 compared to light touch	Researcher	Dysmenorrhoea severity reduced post-treatment (p=0.000) and for up to 2h (p=0.032)	TREND	37	48.6	12	B
Pouresmail and Ibradimzadeh (2002)	RCT	216 students	Acupressure on Li4, SP15, ST36,Sp6 and LR3 compared to sham and ibuprofen	Self-administered	Pain reduced compared to placebo (p<0.01) but not ibuprofen	CONSORT	5	56.8	6	B
Labour pain (3 studies)										
Reference	**Design**	**Total sample**	**Intervention**	**Administration**	**Results**	**Reporting**				**Grading**
						Checklist	**score**	**% score***	**Stricta score**	
Chung et al 2003	RCT	127 parturient women	Acupressure on Li4 and Bl67 compared to light touch and control	Midwife (trained)	Decreased pain compared to control (p=0.017)	CONSORT	15	40.5	13.5	A
Lee et al 2004	RCT	75 women in labour	Acupressure on Sp6 compared to light touch	Researcher	Pain reduced post treatment (p=0.012), 30mins later (p=0.021) and 60mins later (p=0.012)	CONSORT	13	35.1	14	A
Waters and Raisler 2003	One group	n/s	Ice acupressure on Li4	n/s, probably midwife	Reduced pain	CONSORT	29	78.4	8	B
Back/neck pain (4 studies)										
Reference	**Design**	**Total sample**	**Intervention**	**Administration**	**Results**	**Reporting**				**Grading**
						Checklist	**score**	**% score***	**Stricta score**	
Hsieh et al 2004	RCT	146 chronic low back pain patients	Individualised acupressure compared to physical therapy	Physical therapist trained in acupressure	Pain reduced post-treatment (p = 0.0002) and after 6months (p = 0.0004).	CONSORT	25	67.6	5	B
Hsieh et al 2006	RCT	129 chronic low back pain patients	Individualised acupressure compared to physical therapy	Acupressure therapist	Disability decreased (CI = 5.7 to -1.9). Also reduced pain	CONSORT	26	70.3	4	A
Yip and Tse 2004	RCT	61 adults with sub acute or chronic low back pain	acupressure on Ub22,23,25,40 compared to electrical stimulation and control	Nurse trained in TCM	Reduced pain compared to control (p=0.0001)	CONSORT	21	56.8	13	B

Yip and Tse 2003	RCT	28 adults with neck pain	Acupressure on 20oints compared to control	Nurse trained in TCM	Reduced pain (p=0.02)	CONSORT	19	51.4	13	B
Minor trauma (2 studies)										
Reference	**Design**	**Total sample**	**Intervention**	**Administration**	**Results**	**Reporting**				**Grading**
						Checklist	**score**	**% score***	**Stricta score**	
Lang et al 2007	RCT	32 radial fracture patients	Acupressure on Gv20 and Li4 compared to sham	Paramedic	Lower pain (p=0.001) and anxiety (p=0.022) and heart rate (p<0.05)	CONSORT	22	59.5	N/A	B
Kober at al 2002	RCT	60 minor trauma patients	Acupressure on Di4, Ks9, Ks6, Bl60, Lg20 compared to sham and no treatment.	Paramedic	Less pain, anxiety and heart rate (p<0.01)	CONSORT	18	48.6	8.5	B
Injection (2 studies)										
Reference	**Design**	**Total sample**	**Intervention**	**Administration**	**Results**	**Reporting**				**Grading**
						Checklist	**score**	**% score***	**Stricta score**	
Alavi 2007	Crossover trial	64 injection patients	Acupressure on Ub31 compared to none	Nurse specially trained	Pain reduced (p<0.000)	CONSORT	16	43.2	11	B
Arai 2008	RCT	22 healthy females	Acupressure on Extra1 compared to sham	Not clear (probably researcher)	Pain reduced (p=0.006)	CONSORT	13	35.1	7	B
Headache (1 study)										
Reference	**Design**	**Total sample**	**Intervention**	**Administration**	**Results**	**Reporting**				**Grading**
						Checklist	**score**	**% score***	**Stricta score**	
Hsieh et al 2010	RCT	28 outpatients with chronic headache	Acupressure (points NS)	n/s probably conventional practitioner	Pain decreased compared to medication post treatment and month follow up(p=0.047 and p=0.002)	CONSORT	25	67.6	7	B
Dental (1 study)										
Reference	**Design**	**Total sample**	**Intervention**	**Administration**	**Results**	**Reporting**				**Grading**
						Checklist	**score**	**% score***	**Stricta score**	

Salam 2008	RCT	36 dental patients aged 11 to 16	Self-administered acupressure at Li4 compared to sham or medication control	Self-administered	After first visit, back teeth pain and pain affecting diet were worst in control (p=0.013 and p=0.021)	CONSORT	24	64.9	10	C
Nausea and vomiting: Category 1 and 2										
Post-operative (PONV) **(5 studies) Category 1**										
Reference	**Design**	**Total sample**	**Intervention**	**Administration**	**Results**	**Reporting**				**Grading**
						Checklist	**score**	**% score***	**Stricta score**	
Lee and Fan 2009	SR	40 studies	Acustimulation of P6	N/A	Prevented PONV	CASP	8	80.0	N/A	A
Chen et al 2005	Non randomised controlled trial	104 caesarean section patients	Acupressure on P6 compared to control	researcher	Reduced nausea, vomiting or retching 2 to 4 hours (p = 0.040) and 8 to 10 hours after surgery (p=0.024)	TREND	24	45.3	11	B
Lee and Done 2004	SR	26 studies	Acustimulation of P6	N/A	Reduced risk of nausea but not vomiting	CASP	10	100	N/A	A
Ming et al 2002	RCT	150 functional endoscopic sinus surgery patients	Acupressure on P6 and H7 compared to wrist band and control	n/s	Decreased nausea (p=0.001) and vomiting (p<0.001)	CONSORT	18	48.6	10	A
Shiao and Dune 2006	Meta-analysis	72 studies	Acustimulation	N/A	Acustimulation as effective as medications	CASP	8	80.0	N/A	A
Pregnancy (5 studies) Category 1										
Reference	**Design**	**Total sample**	**Intervention**	**Administration**	**Results**	**Reporting**				**Grading**
						Checklist	**score**	**% score***	**Stricta score**	
Helmreich et al 2006	Meta-analysis	13 studies	Acustimulation	N/A	Acupressure had a greater impact than acupuncture (p<0.001).	CASP	5	50	N/A	B
Shin et al 2007	RCT	66 women	Acupressure on Pc6 compared to placebo and control	Researcher	Nausea and vomiting lower (p<0.05)	CONSORT	18	48.6	11	A
Belluomini et al 1994	RCT	90 pregnant women	Acupressure on Pc6 compared to sham	Self-administered	Nausea improved (p=0.0021)	CONSORT	17	45.9	8	B

		women		ed						
Habek et al 2004	Controlled trial	36 pregnant women	Acupressure on Pc6 compared to placebo and acupuncture	Self-administered	Improved hyperemesis gravidarum (p<0.01)	CONSORT	11	29.7	5	C
Markose et al 2004	One group	35 pregnant women	Acupressure on P6	Self-administered	Reduced nausea (p=0.008), vomiting (p=0.000), retching (p=0.004) and distress (p=0.002),	TREND	15	28.3	4	C
Chemotherapy (4 studies) Category 2										
Reference	**Design**	**Total sample**	**Intervention**	**Administration**	**Results**	**Reporting**				**Grading**
						Checklist	**score**	**% score***	**Stricta score**	
Dibble et al 2007	RCT	160 breast cancer patients	Self administered P6 acupressure compared to sham and control	Self-administered	Significantly reduced delayed nausea and vomiting compared to placebo (p=0.002; p<0.006 respectively) and usual-care groups (p<0.0001; p=0.006)	CONSORT	20	54.1	15	B
Dibble et al 2000	RCT	17 breast cancer patients	Acupressure on P6 and St36	Self-administered	Compared to control reduced nausea experience (p<0.01), nausea intensity (p<0.04)	CONSORT	16	43.2	8	B
Ezzo et al 2006	SR	11 studies	Acustimulation	N/A	Acupressure reduced mean acute nausea severity (SMD = -0.19; 95% confidence interval -0.37 to -0.01; P = 0.04)	CASP	9	90.0	N/A	A
Shin et al 2004	Non equivalent control group	40 gastric cancer patients	Acupressure on P6 compared to medication	Self-administered	Reduced severity of nausea and vomiting, duration of nausea, frequency of vomiting (all p<0.01).	TREND	28	52.8	7	B
Sleep and alertness (6 studies) **Category 1**										
Reference	**Design**	**Total sample**	**Intervention**	**Administration**	**Results**	**Reporting**				**Grading**
						Checklist	**score**	**% score***	**Stricta score**	
Chan et al 2006	Single group	13 elderly residents	Behavioural group intervention including acupressure	TCM practitioner	Sleep improved (p<0.05)	TREND	19	35.8	none	C
Harris et al 2005	Crossover	39 students	Acupressure on Li4, St36, K1, Ub10 compared to relaxation	Self-administred	Greater alertness score (p=0.019).	CONSORT	22	59.5	14	A

Hsu et al 2006	RCT	50	Shenmen acupressure compared to light touch	Nurses trained for project	Improved sleep (p<0.00)	CONSORT	12	32.4	3	C
Reza et al 2010	RCT	77 elderly residents	Acupressure at HT7, K11, SP6 and Anmian	Researcher (trained for study)	Improvement compared to control for subjective sleep quality (p=0.028), sleep latency (p=0.001), sleep duration (p=0.007), habitual sleep efficiency (p=0.028) and sleep disturbance (p=0.013).	CONSORT	18	48.6	8	B
Sun et al 2009	RCT	44 elderly residents	Acupressure on Ht7 compared to light touch	Researchers trained for study	Improved sleep (p<0.05)	CONSORT	30	81.1	12	A
Chen et al 1999	Block experimental	246 elderly residents	Acupressure on Gv20, Gb20, Bl18, Ht7 compared to sham	Researcher (trained in TCM)	Improved sleep (p<0.001)	CONSORT	22	59.5	14	A
Mental health Category 2										
Anxiety/stress (3 studies)										
Reference	**Design**	**Total sample**	**Intervention**	**Administration**	**Results**	**Reporting**				**Grading**
						Checklist	**score**	**% score***	**Stricta score**	
Agarwal et al 2005	RCT	76 surgery patients	Acupressure on extra 1 point compared to control	Researcher	Anxiety reduced (p<0.001), stress reduced (p<0.001)	CONSORT	16	43.2	8	B
Moriarty 2007	single group	25 pregnant women	Acupressure on LI4, GB34, St36, Sp6, Kid3, Li3 and Bl60	Researcher trained in acupressure	Reduced heart rate p= 0.003, anxiety (p=0.0001), tension (p=0.0001) and diastolic blood pressure (p=0.033)	TREND	29	54.7	14	B
Fassoulaki et al 2007	Within - subjects	12 volunteers	Extra 1 acupressure compared to sham and control	n/s probably researcher	Bispectral index and verbal stress decreased (p=0.0001 and p=0.008)	TREND	25	47.2	10	B
Dementia (2 studies)										
Reference	**Design**	**Total sample**	**Intervention**	**Administration**	**Results**	**Reporting**				**Grading**
						Checklist	**score**	**% score***	**Stricta score**	
Lin et al 2009	RCT	133 elderly residents	Acupressure on Gb20, Du20, He7, Pe6, Sp6	Staff with basic TCM training	Reduced agitation (p=0.001), aggression (p=0.001) and physically non aggressive behaviour (p=0.02)	CONSORT	16	43.2	13	B

Yang et al 2007	within subjects	31 elderly residents	Acupressure on Gb20, Du20, He7, Pe6, Sp6	Researcher	Improvement in all outcomes (p<0.001)	TREND	28	52.8	13	C
Renal disease (5 studies) **Category 2**										
Reference	**Design**	**Total sample**	**Intervention**	**Administration**	**Results**	**Reporting**				**Grading**
						Checklist	**score**	**% score***	**Stricta score**	
Cho and Tsay 2004	RCT	62 patients	Acupressure on St36, Sp6, Ki3, Ki1 compared to routine care	n/s	Reduced fatigue (p<0.001) and depression (p=0.03)	CONSORT	14	37.8378	15	B
Tsay and Chen 2003	RCT	98 patients	Acupressure on H17 and Ki1 compared to sham and control	Researcher (trained)	Sleep improved compared to control (p<0.01)	CONSORT	13	35.1351	9	B
Tsay et al 2003	RCT	98 patients	Acupressure on H17 and K11 compared to sham and control	Researcher (trained)	Sleep improved compared to control (p=0.003)	CONSORT	17	45.9459	14	A
Tsay 2004	RCT	106 patients	Acupressure on K1, St36, GB34 and Sp6 compared to sham and control	Researcher (trained)	Fatigue improved (p=0.02) compared to control	CONSORT	16	43.2432	12	A
Tsay et al 2004	RCT	106 patients	Acupressure on K1, St36, GB34 and Sp6 compared to electrical stimulation and control	Researcher (trained)	Fatigue, sleep and depression improved compared to control (p<0.001)	CONSORT	14	37.8378	12	A
Respiratory (COPD, asthma etc) (6 studies)										
Reference	**Design**	**Total sample**	**Intervention**	**Administration**	**Results**	**Reporting**				**Grading**
						Checklist	**score**	**% score***	**Stricta score**	
Maa et al 2007	RCT	35 outpatients	Acupressure on Zhongfu, Chize, Yuji, Fenglong and Zusanli compared to sham and control	Self-administered	Sputum reduced (p=0.03) and respiratory activity improved (p=0.01)	CONSORT	21	56.8	14	B
Wu et al 2007	Randomised, block experimental design	44 COPD patients	Acupressure on GV14, CV22, B13, B23, L10 compared to sham.	Researcher trained for study	Depression, dyspnoea and oxygen saturation improved (p<0.001).	CONSORT	18	48.6	16	A
Maa et al 1997	Crossover	31 patients on pulmonary rehabilitation	Acupressure on Lu1, Lu2, Lu10, Li4,Du14, Pe8, St36 compared to sham	Self-administered	Reduced dyspnoea (p=0.009)	CONSORT	22	59.5	6	B

Maa et al 2003	RCT	41 COPD patients	Acupressure on Lu1, Du14, Extra17, Pe6, St36 compared to standard care	Self-administered	Respiratory score improved (p=0.02)	CONSORT	18	48.6	12	C
Tsay et al 2005	Blocking design trial	52 COPD patients	Acupressure on L14, PC6, HT7 compared to sham	Nurse TCM trained	Improved dyspnoea (P = 0.009), anxiety (P = 0.011) Heart rate (p=0.005) and respiratory rate (P < 0.0001)	CONSORT	19	51.4	11	A
Wu et al 2004	RCT	44 COPD patients	Acupressure on Gv14, Cv22, B13, B23, L10 compared to sham points	Researcher	Improved dyspnoea (p<0.05), fatigue (p<0.01) and activity (p<0.001	CONSORT	18	48.6	12	A

Measures of anaesthesia/consciousness (3 studies): Category 3

Reference	Design	Total sample	Intervention	Administration	Results	Reporting				Grading
						Checklist	score	% score*	Stricta score	
Litscher 2004	RCT	25 healthy volunteers	Acupressure on yintang compared to placebo	TCM practitioner	Bispectral index and spectral edge frequency reduced (p<0.001)	CONSORT	13	35.1	12	C
Fassoulaki et al 2003	Crossover	25 healthy volunteers	Acupressure on Extra 1 point compared to sham point	Nurse	Bispectral index reduced (p<0.001)	TREND	26	49.1	10	C
Dullenkopf et al 2004	Within subjects	15 unsedated volunteers	Acupressure on Extra 1 compared to control point	Researcher	Acupressure influenced autogressive index and reduced stress levels	TREND	21	39.6	5	C

Stroke (3 studies): Category 2

Reference	Design	Total sample	Intervention	Administration	Results	Reporting				Grading
						Checklist	score	% score*	Stricta score	
Kang et al 2009	RCT	56 patients	Meridian acupressure compared to control	researcher	Significant differences in functions of upper extremities (grip p=0.020, pain p=0.017, oedema p=0.005, wrist flexion p = 0.002, wrist extension p < 0.001, elbow flexion p = 0.020, shoulder flexion p < 0.001, shoulder extension p < 0.001), activity of daily living (p<0.001) and depression (p=0.001)	CONSORT	13	35.1	6	B
McFadden and Hernandez 2010	RCT (crossover)	13 volunteers	Individualised acupressure	Acupressure practitione	Reduced heart rate (p=0.043)	CONSORT	22	59.5	13	B

				r						
Shin and Lee 2007	RCT	30 stroke patients with shoulder pain	Acupressure compared to aromatherapy acupressure LI15, SI9, TE14, GB21, SI 11, SI 12	Not clear (probably researcher)	Reduced pain in acupressure group (p=0.001)	CONSORT	20	54.1	11	B
Eyesight (2 studies)										
Reference	**Design**	**Total sample**	**Intervention**	**Administration**	**Results**	**Reporting**				**Grading**
						Checklist	**score**	**% score***	**Stricta score**	
Sun 2006	RCT	40 schoolchildren	Eye exercise including pressure on Yannei, Yanshang, Yanwai Yanxia, Fengchi	Researchers	Eyesight improved P<0.01	CONSORT	9	24.3	9	C
Yeh et al 2007	Controlled nonrandomised trial	70 schoolchildren	Acupressure on Ub2, Ub1, St1 St2, Ex2, Du20, Gb20, Li4	n/s	Improved visual health knowledge, visual acuity, and refractive error	CONSORT	13	35.1	12	B
Cancer side effects (other than N&V) (2 studies)										
Reference	**Design**	**Total sample**	**Intervention**	**Administration**	**Results**	**Reporting**				**Grading**
						Checklist	**score**	**% score***	**Stricta score**	
Chao et al 2009	SR	26 studies	Acupoint stimulation for breast cancer AEs	N/A	Acustimulation is useful for breast cancer N&V	CASP	9	90	N/A	A
Molassiotis et al 2007	RCT	47 patients with cancer and fatigue	Acupressure on LI4, SP6, ST36 compared to sham and to acupuncture,	Self-administered	All improved general fatigue ($p < 0.001$), physical fatigue ($p = 0.016$), activity ($p = 0.004$) and motivation ($p = 0.024$).	CONSORT	27	73.0	15	A
Weight (loss/gain) (2 studies)										
Reference	**Design**	**Total sample**	**Intervention**	**Administration**	**Results**	**Reporting**				**Grading**
						Checklist	**score**	**% score***	**Stricta score**	
Chen et al 2008	RCT	40 premature babies	Acupressure on St36, Rn12, Ki1 and meridian massage of spleen and stomach meridian	Nurse (TCM trained)	Babies gained weight in experimental group (p=0.038)	CONSORT	18	48.6	14	B

Elder et al 2007	RCT	90 overweight community members	Tapas Acupressure Technique (holding a pose which applies pressure to Gb21, Bl1 and yin tang)	Self-administered	Maintained weight loss compared to self directed study (p=0.09) and qi gong (p=0.00)	CONSORT	21	56.8	10	A
Other (Inconclusive)										
Reference	**Design**	**Total sample**	**Intervention**	**Administration**	**Results**	**Reporting**				**Grading**
						Checklist	**score**	**% score***	**Stricta score**	
Cardiovascular (3 studies)										
Ballegaard et al 2004	Nonrandomised	169 patients with angina	Acupressure on Cv17, Ub14 and 15 as part of integrated program	Self-administered	Accumulated risk improved over time (p<0.05)	TREND	35	66.1	N/A	B
Ballegaard et al 1999	Open prospective study	105 patients with angina	Acupressure on Cv17, Ub14, Ub15	Self-administered	Cost saving over 5 years of $32,000 per patients	N/A			11	ungraded
Li et al 2007	Controlled trial	30 patients	Acupressure on Gb34, St36, Sp9, Sp6 compared to control	n/s	Decreased blood flow (p>0.05).	CONSORT	8	21.6	10	C
CFS (1 study)										
Yao et al 2007	One group	85 patients	Acupressure massage	Researcher	Treatment was effective in 91.8% of cases	TREND	15	28.3	7	ungraded
Diabetes (1 study)										
Jin et al 2009	RCT	80 patients	Whole body acupressure	Acupressure practitioners	Hyperlipidemia, hypertrophy and kidney function improved (p<0.05)	CONSORT	19	51.4	14	A
Gagging (1 study)										
Lu et al 2000	RCT	109 dental patients	Acupressure at P6 compared to sham	n/s (probably conventional practitioner)	Reduced gagging (p=0.001)	CONSORT	7	18.9	13	B

Gastrointestinal motility (2 studies)										
Chen et al 2006	RCT	64 neurological patients	Co4, Cv12, St25	n/s	Improved bowel movement ($p<0.05$)	CONSORT	14	37.8	13	C
Chen et al 2003	RCT	41 hysterectomy patients	PC6, St36, Sp6	Nurse (trained in acupressure) & self	Increased GI motility ($p<0.05$)	CONSORT	11	29.7	11	B
General ('nursing practice') (1 study)										
Ma et al 2007	SR	71 studies		N/A	97.2% of articles had positive effects	CASP	1	10	N/A	C
Mechanism (1 study)										
Sugiura et al 2007	Uncontrolled	22 students	Acupressure on yu-sen, souk-shin, shitsu-min	Nurse	Heart rate decreased ($p<0.05$)	N/A			12	ungraded
Nocturnal enuresis (1 study)										
Yuksek et al 2003	RCT	24 patients	Acupressure at Gv4, Gv15, Gv20, B23, B28, B32, H7, H9, St36, Sp4, Sp6, Sp12, Ren2, Ren3, Ren6, K3 and K5.	Parent	No significant differences	CONSORT	8	21.6	4	C
Sexual dysfunction (1 study)										
Ventegodt et al 2006	Uncontrolled	20 patients with sexual problems	Vaginal acupressure (individualised)	Acupressure practitioner	Improvements in symptoms ($p<0.05$), physical health ($p=0.042$), mental health ($p=0.012$), sexual ability ($p=0.003$) and quality of life ($p=0.003$ and 0.007)	TREND	16	30.9	5	C
n/s: not specified										

8.2 Evidence tables of included studies

Shiatsu

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Ballegaard et al 1996 Cost-benefit of combined use of acupuncture, Shiatsu and lifestyle adjustment for treatment of patients with severe angina pectoris.	**Design**: Follow-up controlled trial with non-equivalent control group (see intervention below) **Setting**: Denmark **Sample**: Sixty-nine consecutive patients with severe angina pectoris Forty-nine patients were candidates for coronary-artery bypass grafting (CABG), whereas bypass grafting was rejected in the remaining 20 patients. **Health issue**: Angina pectoris **Intervention**: Patients were treated with acupuncture, Shiatsu and lifestyle adjustments, and were followed for 2 years. Shiatsu was self/spouse administered at point CV17. Endpoint findings (incidence of death +/ myocardial infarction and pain relief) with those of a different study, a large prospective, randomized trial comparing CABG with percutaneous transluminal coronary angioplasty (PTCA).	The incidence of death and myocardial infarction was 21% among the patients undergoing CABG, 15% among the patients undergoing PTCA and 7% among our patients. No significant difference was found concerning pain relief between the three groups. Invasive treatment was postponed in 61% of our patients due to clinical improvement, and the annual number of in-hospital days was reduced by 90%, bringing about an estimated economic saving of 12,000 US $ for each of our patients. Despite the fact that the men in the present study, had significantly less positive expectations towards the outcome of the treatment, when compared to the women, there was no significant difference concerning the effect.	The study suggests that the combined treatment with acupuncture, Shiatsu and lifestyle adjustment may be highly cost effective for patients with advanced angina products and may reduce the risk of dying and/or myocardial infarction more than coronary bypass surgery and PTCA	Convenience sampling, no power calculation No Shiatsu practitioner (self/spouse administered). Main flaw is use of findings from a previous study as a control group, and there is no statistical comparison of differences between the groups. Also, 56% of participants would have been excluded from one of the 'control' groups. Control group study is from the USA. Shiatsu is *additional* intervention, co-interventions of acupuncture and lifestyle adjustment. Good two year follow-up. Focus on cost benefit not efficacy. No blinding. **Grading C** as no blinding, poor control group, no power calculation and shiatsu not isolated.

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Brady et al 2001 The effects of Shiatsu on lower back pain.	**Design**: Quasi-experimental, Pre-test – post test, single group design **Setting**: Shiatsu clinic and school (USA) **Sample**: Convenience sample. 66 individuals/volunteers complaining of lower back pain **Health issue**: Low back pain **Intervention**: Random assignment to Shiatsu massage provided by 2 therapists. Each individual measured on state/trait anxiety and pain level before and after 4 Shiatsu treatments (50-60 min) within an 8 week period. Each subject called 2 days following each treatment and asked to quantify the level of pain.	Pain using the VAS decreased after 4 treatments. P<0.001 Anxiety measured by Trait Anxiety Inventory showed no significant differences. State Anxiety Inventory showed a significant reduction P<.0001. Demographic variables; gender, age, gender of therapist, length of history with lower back pain, and medications taken for lower back pain did not alter the significant results.	Both pain and anxiety decreased significantly over time.	Volunteer patients. Absence of control group. Repeated measures (regression towards the mean) can cause carryover effects. Patients had to pay for treatment which may create bias by limiting access to a higher socio-economic group. 13 patients had previously had Shiatsu before the study (it is unclear whether they were being treated at the time they were recruited). **Grading C** as no control

Author, date and title	**Study methodology, design, setting, sample, condition and intervention**	**Results**	**Study Conclusions**	**Comments on quality**
Faull 2005 A pilot study of the comparative effectiveness of two water-based treatments for fibromyalgia syndrome: Watsu and Aix massage	**Design:** Two-condition, repeated measure with reverse order counterbalancing comparative study. **Setting:** New Zealand **Sample:** Seventeen recruited, thirteen completed study, females diagnosed with FMS **Health issue:** Fibromyalgia syndrome (FMS) **Intervention:** The effectiveness of holistic therapy (Watsu, WATer ShiatSU) was compared to the water-based therapy, Aix massage. Two treatment blocks each of four sessions over two weeks. Participants randomly assigned to receive either Watsu then Aix or vice versa, with a 3 week break between treatment blocks. Short-Form-36 General Health Survey (SF-36) data were collected at the start and completion of treatment. Each SF-36 subscale was tested with a two-way, repeated measure analysis of variance.	Significant change (p=0.01) in treatment and interaction effects were found for Watsu on the SF-36 subscales of physical function, bodily pain, vitality and social function, but not for Aix treatment.	Watsu was supported as an effective holistic intervention compared to Aix massage. A study with a larger sample and a control group is required before it can be inferred that the change is due to this therapy	Pilot study for a larger study of Watsu. Volunteer sampling and very small sample size (n=13). No control, although counterbalanced to reduce carryover effects of using repeated measures design. However, order effects may have occurred due to high dropout rate from Watsu first group (4 out of 8). Variables other than Watsu may have caused the significant result. **Grading C as pilot study with very small sample and no control**

Author, date and title	**Study methodology, design, setting, sample, condition and intervention**	**Results**	**Study Conclusions**	**Comments on quality**
Iida et al 2000 Effects of Shiatsu massage on relief of anxiety and side effect symptoms of patients receiving cancer chemotherapy.	**Design**: One group pre-test post-test quasi-experimental **Setting**: Gunma Hospital, Japan **Sample**: Nine patients scheduled for cancer chemotherapy were grouped into two; the strong anxiety group and the weak anxiety group. **Health issue**: Anxiety and side effect symptoms of cancer chemotherapy. **Intervention:** The relaxation effects of Shiatsu massage for these two groups of patients were compared using state trait anxiety inventory (STAI), physical and psychological relief of side effect symptoms scale, relaxation (RE) scale and skin temperature. Shiatsu given to hands and feet for 30 minutes morning and night for 4 days. Scores compared before and after treatment using t-test.	The strong anxiety group showed significant decline in anxiety score after intervention ($p=0.09$), indicating slight relaxation effects. Both groups had big expectation for psychological relaxation effects of massage. There was a slight relief of physical symptoms in both groups but significance is not stated. In the weak anxiety group, Shiatsu massage significantly increased RE score ($p=0.01$), showing relaxation effects. There was little change in peripheral skin temperature.	Results proved that Shiatsu massage may relieve anxiety. Suggested that Shiatsu massage is used in addition to attentive listening to relieve anxiety in the clinical settings	Very small study (n=9). In addition this was analysed in two groups, giving n=4 and n=5, giving inconclusive evidence. A t-test on a sample this small will only detect differences that are huge and may be the reason why few effects were seen. Sample were 89% male. No control group. Unclear why group was divided into weak and strong anxiety. No sampling process given. **Grading C as no control and very small sample**

Author, date and title	**Study methodology, design, setting, sample, condition and intervention**	**Results**	**Study Conclusions**	**Comments on quality**
Ingram et al 2005. The effects of Shiatsu on post-term pregnancy.	**Design:** A pilot audit with control group **Setting:** St. Michael's Hospital, Bristol **Sample:** 142 women, who attended a consultant clinic hospital appointment at 40 weeks gestation. 66 were in intervention group (when midwife who had learned Shiatsu was on duty) and 77 comparison women were those who attended similar clinics when the midwife was not on duty. **Health issue:** Post-term pregnancy **Intervention.** Women were taught massage by a midwife, who had completed the Shiatsu course. Thumb pressure applied to points GB21, LI4, Sp6. Women used techniques as often as comfortable. Some partners also taught. Breathing techniques and exercises on all fours also taught. Audit extracted outcome information from the hospital database including induction, type of delivery, length of labour and analgesia used and a an audit questionnaire was sent out**.**	Chi squared and t-tests were used. Post-term women who used Shiatsu were significantly more likely to labour spontaneously than those who did not (p=0.038). Of those who had used Shiatsu, 17% more went into spontaneous labour compared to those who were not taught Shiatsu Shiatsu group had a significantly longer labour (p=0.03), although analgesia use was similar. However, if emergency caesarean sections are excluded, spontaneous labour occurs even more in Shiatsu group (22%; p=0.012) and labour length is not significantly different (p=0.19). Maternal age, gestation and baby weight were not statistically significant between groups. 30 (45%) women completed audit questionnaire; 87% of those taught used Shiatsu and 80% found the techniques useful.	Raises the hypothesis that specific Shiatsu techniques on post term women by midwives can decrease the number of labours which need to be induced pharmacologically.	Group assignment not random (depends on which midwife was on duty), although no significant differences between groups in maternal age, parity or delivery details. Relatively small sample size. Self administered Shiatsu (taught by midwife who was taught by study researcher). Also direct effects of Shiatsu unclear as no control over how often/how much pressure was used. Preliminary audit. Co-intervention of breathing techniques and exercises. **Grading C as audit questionnaire and low response rate**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Lichtenberg et al 2009 Shiatsu as an adjuvant therapy for schizophrenia: an open-label pilot study	**Design**: Pilot study, before and after **Setting**: Inpatient psychiatric ward, Israel **Sample:** 12 hospitalised patients with schizophrenia **Health issue**: schizophrenia **Intervention**: Individualised shiatsu was given by shiatsu therapists with at least 2 yrs experience, for 40minute sessions biweekly over 8 weeks. Outcomes were 8 scales relating to illness, psychopathy, anxiety, depression, movement etc.	On all scales subjects showed a statistically and clinically significant improvement by the end of treatment, maintained at 12 week follow up (p values ranged from 0.0015 to 0.0192.	Pilot study suggests that twice weekly shiatsu in addition to standard care produces significant improvement in clinical status.	This is a pilot, uncontrolled, non-randomised, non-blinded study, so is limited quality. Individualised treatment and difficulty blinding would make an RCT difficult. Sample was very small (12) and self-selected. Validity of outcome measures was not stated. Good follow up period and no dropouts. Good details of intervention and setting and fairly good discussion. Rating scales cannot be used with this uncontrolled shiatsu study. **GRADING C as very small pilot study with no blinding or control and a self-selected sample**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Long 2008 The Effectiveness of *Shiatsu*: Findings from a Cross-European, Prospective Observational Study	**Design**: Prospective, observational, uncontrolled, pragmatic, multi-centre study **Setting**: Shiatsu clinics in UK, Spain and Austria **Sample:** 948 patients of shiatsu practitioners **Health issue**: Any **Intervention**: Shiatsu treatment as routine practice. Postal questionnaires collected data on symptom severity (5 point scale) and other questions, at baseline, 4-6 days after treatment, 3 and 6 month follow up	Symptom scores improved significantly over the 6 months (all symptom groups, Austria and the United Kingdom; two symptom groups, Spain), with moderate effect sizes (0.66–0.77) for "tension or stress" and "body structure problems" (Austria, the United Kingdom), and small effect sizes (0.32–0.47) for the other symptom groups (Spain, 0.28–0.43 for four groups). Previous users reported significant symptom improvement from "first ever" to baseline with moderate effect sizes. See tables for more details.	Clients receiving *shiatsu* reported improvements in symptom severity and changes in their health related behaviour that they attributed to their treatment, suggestive of a role for *shiatsu* in maintaining and enhancing health.	Sample was powered and very large. Although sampling was consecutive and performed by the different practitioners (so not standardised), practitioners kept a detailed recruitment log. Data on those who refused is not reported. Good follow up for a longitudinal study (67% (only 49% in Spain)), although the rest were excluded) – this may well create bias as those who find Shiatsu ineffective are less likely to complete. Outcome measures were standardised. Unusual in being longitudinal (6 months follow up) and pragmatic, and including different countries and conditions. **Ungraded due non experimental study design**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Lucini et al 2009 Complementary medicine for the management of chronic stress: superiority of active versus passive techniques	**Design**: Non randomised controlled trial **Setting**: Clinic (not clear which), Milan, Italy **Sample:** 70 patients complaining of stress and unexplained medical symptoms **Health issue**: Chronic stress **Intervention**: 3 groups: Active – relaxation/breathing training; passive – Shiatsu massage biweekly for 1hour, personalised; sham group – structured information on stress management. Outcomes were semi-structured interview, self-rated scales of stress, ECG and respiratory rates.	Both active and passive treatment significantly reduced psychological stress scores (p=0.003; p=0.032) compared to sham, which was ineffective. Active treatment also reduced systolic arterial pressure, autonomic indices and respiratory rate.	This study supports the hypothesis that active relaxation procedures may be more effective in the clinical treatment of stress because, in addition to improving symptoms, they ameliorate autonomic cardiovascular regulation and slightly reduce systolic arterial pressure.	Consecutive, volunteer sample. 3 armed study but preference trial (group allocation not random - patients chose treatment) - biased as more stressed more likely to chose sham. Sample size was small and not powered. Very little info on generalisability or patient group. No blinding (not possible). No info on follow up or dropouts. Shiatsu was 'personalised' so little detail of intervention. Outcome measures were objective and subjective but no details of validation. Study well designed to test mechanisms of stress management. Very good statistical analysis with further multivariate analysis to account for the small changes and potential bias from interaction between stress symptoms and autonomic regulation. Good discussion of mechanism, clinical implications, and results. **Grading B** as non randomised and volunteer sample

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Sundberg et al 2009 Exploring integrative medicine for back and neck pain – a pragmatic randomised clinical pilot trial	**Design**: RCT pilot study **Setting**: Primary care, Stockholm, Sweden **Sample:** Primary care patients with back/neck pain of at least 2 weeks duration. N=80 **Health issue**: Back/neck pain **Intervention**: Integrated model of care with many different components for up to 12 weeks. Multidisciplinary team of CAM therapists (usually two treatments each), one of which was Shiatsu. Control group received conventional standard care only. Outcome measures were SF36 and an integrated medicine measure developed for the study.	Study was underpowered to detect any statistically different effects. 23/44 had shiatsu as part of treatment.	This pilot study provided information to inform a larger trial.	Well reported trial with detail of trial design, randomisation procedure, intention to treat analysis, harms, generalisability and limitations. Flow chart of participants and good follow up of 82%. Good outcome measures. Patients paid for treatment which may create bias especially as the area is described as deprived. However, pragmatic nature of trial limited reporting of treatment procedure. Cannot isolate effect of Shiatsu (Stricta N/A as treatments were individualised and integrated) **Grading B as not powered and pragmatic nature makes it difficult to isolate treatment effects.**

Acupressure

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Alavi 2007 Effectiveness of acupressure to reduce pain in intramuscular injections	**Design**: Single blind, randomised crossover intrasubject trial. **Setting**: Injection therapy clinic, Kashan, Iran **Sample:** All eligible patients – having at least 2 injections of penicillin. N=64 **Health issue**: Pain on injection (intramuscular) **Intervention**: Each subject received an injection with acupressure applied to one buttock and an injection without acupressure to the other buttock or vice versa. The two conditions were randomly allocated. The acupressure point UB 31 was massaged for 1 min. Then the acupressure point was pressed by thumb three times. The injection was carried out after acupressure The perception of pain was measured on a visual analogue scale.	The mean score for perceived pain intensity for the acupressure injection was 3±2 and the mean score for the injection without acupressure was 5±2. The result showed that the perceived pain intensity was at average 2.5 lower in the acupressure group comparing to ordinary injection ($P < 0.000$).	According to findings the acupressure can reduce the pain of intramuscular injection.	No control group. Sample size not powered, although large. May not be sufficiently powered to show gender difference. Unlikely to be generalisable. Good description of intervention. No details of follow up or drop out and no subgroup analysis. Study design is good as the different sites were randomly assigned to treatment/no treatment and it allows for a smaller sample to be used. Only single blinded (assessor). STRICTA: 11/16 (good description of intervention but little background theory). **Grading B** as no control group and insufficiently powered.

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Arai et al 2008 The Effect of Acupressure at the Extra 1 Point on Subjective and Autonomic Responses to Needle Insertion	**Design**: RCT **Setting**: Not clear, Aichi, Japan **Sample:** 22 healthy female volunteers **Health issue**: Pain of needle insertion **Intervention**: Thumb acupressure on point Extra 1 vs acupressure on sham point. One needle inserted, pain rated on verbal rating scale (VRS), acupressure for 3mins at 20-25 cycles/min, then inserted needle in other arm (during acupressure) and rated pain. Also measured HRV and ECG.	Acupressure at the extra 1 point significantly reduced the VRS ($p=0.006$), but acupressure at the sham increased the VRS. Acupressure at the extra 1 significantly reduced the low frequency/high frequency ratio of HRV ($p<0.05$) responding to needle insertion.	Acupressure at the extra 1 point significantly reduced needle insertion pain compared with acupressure at the sham point. Also, acupressure at the extra 1 point significantly reduced the low frequency/high frequency ratio of HRV responding to needle insertion, which implies a reduction in sympathetic nervous system activity.	Small sample but power was calculated. Not clear where patients recruited from and minimal eligibility criteria given. No detail of drop out, presumably 100% No details of how randomisation was done. Good objective and subjective measures. States that it is a blinded trial but doesn't detail how blinding was done. No justification of sham point except that it has been used before. Inserting two needles in one patient may have an effect? STRICTA: 7/16 (No rationale, not clear on pressure used, setting not clear and no details of acupressure t training) **Grading B as small, volunteer sample and not clear if blinded**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Agarwal et al 2005 Acupressure for prevention of pre-operative anxiety: a prospective, randomised, placebo controlled study.	Design: Prospective Randomised Controlled Trial Setting: Hospital, possibly India. Sample: Seventy-six adults, ASA grade I and II, undergoing elective surgery. Group 1 (control) received acupressure at an inappropriate site and group 2 (acupressure) received acupressure at extra 1 point. Health issue: Pre-operative anxiety (characterised by increased analgesic and anaesthetic requirement, postoperative pain and prolonged hospital stay) Intervention: On morning of surgery, following arrival in pre-operative area, patients relaxed for 15 mins then acupressure was applied for 10 min and patients were observed for another 30 min.. The effects of acupressure on pre-operative anxiety and bispectral index (BIS) values (this is a measure of the level of consciousness during anaesthesia) were investigated. Anxiety was recorded on a visual stress scale (VSS) at the start of the study and thereafter at 10 and 40 min. BIS was recorded at 0, 2, 5, 10, 12, 15, 30 and 40 min.	Anxiety (measured by VSS) decreased in both groups following pressure application for 10 min: median VSS (interquartile range) were 5 (1) vs. 8 (1) in the acupressure and 7 (0) vs. 8 (1) in the control groups ($p < 0.001$). However, after 30 mins both groups returned to baseline ($p>0.05$). The decrease in anxiety after 10 mins was greater in the extra 1 point group ($p<0.05$). BIS values were significantly lower during acupressure application than baseline or after release of treatment in both groups ($p<0.05$). During acupressure, BIS values were lower for extra 1 point than control group ($p < 0.05$).	Acupressure is effective in decreasing both pre-operative anxiety and BIS. The effects are not sustained 30 min following release of acupressure. Further studies are needed to elucidate the duration for which acupressure is effective.	Randomised group allocation, although not clear about sampling procedure. Power calculation performed for sample size. Control and intervention groups are homogenous (no significant differences in demographics). Placebo used but details of 'inappropriate site' for sham acupressure not given. May have had effect. Reduction in anxiety and BIS in control group may be due to massage/attention effects, although extra 1 group did show a greater reduction. Single blinded (patient). Used instead of usual care (sedative premedication) not as adjunct. STRICTA 10/16 (little detail of background or practitioner or amount of pressure) Grading B as randomised, powered and controlled and single blinded but poorly reported

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Ballegaard et al 2004 Long-term effects of integrated rehabilitation in patients with advanced angina pectoris: a nonrandomized comparative study.	**Design**: Nonrandomised comparative study. (reported by authors as a quality control review) **Setting**: The treatment was carried out as an ambulatory treatment in a private clinic, Denmark **Sample**: 168 patients with angina pectoris, of whom 103 were candidates for invasive treatment and 65 for whom this had been rejected. Comparison groups: 1) General Danish population matched for age, gender, and observation period, medical and invasive treatments, 2) New York clinical database and 3) American study Schofield et al 1999. **Health issue**: Angina pectoris **Intervention:** 12 sessions over 3-4 weeks of Integrated rehabilitation (IR); acupuncture, a self-care program including acupressure, Chinese health philosophy, stress management techniques, and lifestyle adjustments. Acupressure self/spouse administered at CV17 and UB14 and 15. OUTCOME MEASURES: Follow-up until death or surgery. Data collected from patient database on death rate from any cause, the need for	The 3-year accumulated risk of death was 2.0% (95% confidence limits: 0.0%-4.7%) for the 103 candidates for invasive treatment, 6.4% for the general Danish population, 5.4% (4.7%-6.1%), and 8.4% (7.7%-9.1%) for patients who underwent percutaneous transluminal balloon angioplasty and coronary artery bypass grafting, respectively, in New York. For the 65 inoperable patients the risk of death due to heart disease was 7.7% (3.9%-11.5%), compared to 16% (10%-34%) and 25% (18%-36%) for American patients, who were treated with laser revascularization or medication, respectively. Accumulated risk (of operation, MI, death) improved significantly over time (p for trend <0.05) Of the 103 candidates for invasive treatment, only 19 (18%) still required surgery. Cost savings over 3 years were US $36,000 and US $22,000 for surgical and nonsurgical patients, respectively. These were mainly achieved by the reduction in the use of invasive treatment and a 95%	Integrated rehabilitation was found to be cost effective, and added years to the lives of patients with severe angina pectoris. The results invite further testing in a randomized trial	Good size (168) but consecutive not random sample. Acupressure treatment was not standardised, as part of IR program, for which the 'main philosophy behind the treatment is self-care'. Therefore a pragmatic design. Results cannot be conclusive as compared to non-equivalent groups. Improvement in accumulated risk increased with time since onset of treatment, indicating independent treatment effect. Long follow up period. Costs based on an American study but study performed in Denmark. Patients seem to be paying for treatment, although they give a ref that this does not affect prognosis. Social selection bias not present as sample did not differ from other Scandinavian heart patients. Unclear who financed the study (KID foundation). Treatment not blinded, but they say bias is avoided as

	invasive treatment, and health care expenses.	reduction in in-hospital days.		patients had very little contact with doctor. Did not describe acupressure treatment (see Ballegard et al 1999) **Grading B** – well designed study for the question (not designed as an RCT) with good sample size and follow up but poorly reported

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Ballegaard et al 1999 Addition of acupuncture and self-care education in the treatment of patients with severe angina pectoris may be cost beneficial: an open, prospective study	**Design**: An open prospective study and cost-benefit analysis **Setting**: outpatient basis in a private research clinic, Denmark? **Sample**: 105 patients with angina pectoris, 73 candidates for invasive treatment, and 32 for whom this was rejected. **Health issue**: Angina pectoris **Intervention:** Acupuncture and self-care education including acupressure at CV17, UB14, UB15 was added to the pharmaceutical treatment. OUTCOME MEASURES: Healthcare expenses, a satisfactory medical status defined as New York Heart Association (NYHA) classification 0-I and/or no use of antianginal medication, and risk measured as cardiac death or myocardial infarction.	The estimated cost savings during 5 years were $32,000 (U.S.) per patient, mainly due to a 90% reduction in hospitalization and 70% reduction in needed surgery. Compared to 8% before treatment, 53% of the patients achieved a life without limitations (NYHA 0-I) 1 year after treatment, as did 69% after 5 years. No increased risk for myocardial infarction or cardiac death was observed.	The addition of acupuncture and self-care education was found to be cost beneficial in patients with advanced angina pectoris. The results invite further testing in a randomized controlled trial	Mainly a cost-analysis, study design may have varied if this was primarily an efficacy study. Results cannot be conclusive as compared to non-equivalent groups. Volunteer, consecutive sample. Pragmatic design. Effects of acupressure cannot be isolated from co-interventions of acupuncture and lifestyle modification, all based on a theory of self-care. Long follow up period. STRICTA: 11/16 – no detail of controls or practitioner and self-administrated treatment **Unclassified grading as cost-analysis design**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Belluomini et al 1994 Acupressure for nausea and vomiting of pregnancy: a randomized, blinded study	**Design**: RCT **Setting:** Physician and midwife practices, California? **Sample**: 90 pregnant women with nausea with/without vomiting, gestation of 12 weeks or under **Health issue**: Nausea and vomiting of pregnancy. **Intervention**: women randomized to one of two acupressure groups: treatment group using an acupressure on PC-6 and sham (non acupoint) control group. Subjects were blind to group assignment. For 10 consecutive days, the subjects completed an assessment scale (Rhodes inventory of N&V). Data from the first 3 days were used as pre-treatment scores. Beginning on the morning of the fourth day, each subject used acupressure at her assigned point for 10 minutes four times a day. Data from day 4 were discarded to allow 24 hours for the treatment to take effect. Data from days 5-7 were used to measure treatment effect.	Sixty women completed the study. There were no differences between groups in attrition, parity, foetal number, maternal age, gestational age at entry, or pre-treatment nausea and emesis scores. Analysis of variance indicated that both groups improved significantly over time, but that nausea improved significantly more in the treatment group than in the sham control group ($F_{1,58} = 10.4$, $P = .0021$). There were no differences in the severity or frequency of emesis between the groups. There was a significant positive correlation ($r = 0.261$, $P = .044$) between maternal age and severity of nausea.	Our results indicate that acupressure at the PC-6 anatomical site is effective in reducing symptoms of nausea but not frequency of vomiting in pregnant women	The sample was selected from referred patients, details of this are not clear. Only 60 out of 90 completed the study and intention to treat analysis was not used. Dropout was however similar between study groups. Randomised block design but criteria for blocking not given (could be gestational age?). Groups homogenous for pregnancy characteristics and pre-test scores. Maternal age was associated with N&V score. Controlled for gestational age and placebo effect. Single blind (patient) Self administered acupressure and reliability not checked. Outcome measure is reliable and valid. STRICTA 8/16 – very little detail of acupressure and self-administered **Grading B as poor follow up and self-administered treatment**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Chan et al 2006 The effects of an intervention group with the support of non-pharmacological Chinese medicine on older Chinese adults with insomnia	**Design**: Pilot single-group pretest-postest **Setting**: Neighbourhood elderly centre, Hong Kong **Sample:** 13 elderly residents (65 and over) with insomnia **Health issue**: Insomnia **Intervention**: Behavioural group intervention of six hour long sessions focussing on sleep hygiene; acupressure and Chinese dietetic therapy; positive thinking; relaxation; stimulus control therapy; summary session. Outcomes were the PSQI and qualitative feedback.	PSQI score showed a significant difference ($p<0.05$) between pre and post tests. Qualitative feedback showed acupressure and relaxation were most useful.	Elderly participants with insomnia could benefit from both behavioural and non pharmacological Chinese medicine methods.	Study is of limited quality as it is a pilot, uncontrolled, non-blinded and non-randomised study. Volunteer sample which was very small (13), and follow up only 10, with no details of demographics given (although they were all female) – unlikely to be generalisable. Detailed description of intervention, but intervention is not valid/reliable as designed for this study. Effects of acupressure cannot be isolated. PSQI is valid and appropriate. Data analysis techniques not given, no real hypothesis or actual data is presented, making it very difficult to assess the study. No checklists can be completed for this study. **Grading C – very small (and volunteer) sample, uncontrolled study. Poorly reported.**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Chao et al 2009 The efficacy of acupoint stimulation for the management of therapy-related adverse events in patients with breast cancer: a systematic review	**Design**: Systematic review **Setting**: International **Sample:** Clinical trials of adults with breast cancer using stimulation of acupoints (any modality) for therapy-related AEs; English and Chinese databases **Health issue**: Breast cancer therapy-related AEs. **Intervention**: 2 independent reviewers assessed the quality using a modified Jadad scale. Inter rater test to resolve disparities.	26 studies were identified, 18 RCTs, 8 CCTs. 9 used acupuncture, 6 electroacupuncture, 5 drug injection in acupoints, 3 self-acupressure and 3 devices including wristband and magnet. Most studies (65.4%) scored 2 or less on Jadad scale. AEs studied included N&V, pain, joint symptoms, lymphoedema, leukopenia and AEs. Findings from 3 high quality studies suggest acustimulation is useful in treating N&V.	Acupoint stimulation is useful in treating breast cancer therapy-induced nausea and vomiting. Cost-effectiveness and cost-benefit is worth investigating. For other adverse events the quality of many trials is poor.	Not possible to isolate acupressure as they combined all types of stimulation. Very focussed question which has not been investigated before. Provides a useful summary of all types of AE and acupoint manipulation. Did include the right kind of studies. Good range of databases, symptoms, and used reference lists, as well as English and Chinese language, but may have missed some studies due to not searching for unpublished articles or contacting authors. Included clinical and cost outcomes. Good quality rating with two independent raters and the Jadad scale and QUORUM. Each study is presented in a table but there is little discussion of combining the results (presumably the outcomes were too varied to combine). **Grading A;** a well conducted SR.

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Chen et al 2006 The effectiveness of acupressure at relieving constipation in neurological patients [Chinese].	**Design**: RCT **Setting**: From hospital Taiwan **Sample:** n=64 **Health issue**: constipation **Intervention**: Medicines (softener and laxatives) and acupressure were dispensed to the experimental group, while medicines alone were dispensed to the control group.	It was found that there were no statistically significant differences in age, diagnosis and medicine consumption. Those patients who received acupressure, however, experienced easier bowel movement than the control group ($p < .05$) within six to 12 days.	On the basis of these findings, health providers may choose to use acupressure with medicines to relieve constipation in neurological patients.	It mentioned 'randomization' but had no details about the procedure at all. The basic demographic data is very variable and homogeneous. The statistic analysis has many subgroup comparisons based on the baseline. 15/37 CONSORT items. 13/16 STRICTA **Grading C due to lack of information**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Chen and Chen 2004 Effects of acupressure at the Sanyinjiao point on primary dysmenorrhoea.	**Design**: RCT **Setting**: Medical Technology College, Taiwan **Sample**: 69 female adolescent students (aged 17 – 19). **Health issue**: symptoms of primary dysmenorrhoea among adolescent girls. **Intervention**: Experimental group (n = 35) received acupressure at Sp6 (above the ankle) while the control group (n = 34) rested for 20 min, with no acupressure. Fifty participants (30 experimental, 20 control) completed the 4-6-week follow-up session (self administered acupressure). Five instruments used pretest and post-test at each session: (1) Visual Analogue Scale for pain; (2) the Short-Form McGill Pain Questionnaire; (3) the Menstrual Distress Questionnaire; (4) the Visual Analogue Scale for anxiety; and, for the experimental group only, (5) the Acupressure Self-Assessment Form. Data were analysed using repeated measures two-way ANOVA.	Acupressure at Sanyinjiao during the initial session reduced the pain and anxiety typical of dysmenorrhoea but not distress. No p value. In the self-treatment follow-up session, acupressure at Sanyinjiao significantly reduced menstrual pain. No p value but not anxiety or distress. Thirty-one (87%) of the 35 experimental participants reported that acupressure was more than moderately helpful, and 33 (94%) were satisfied with acupressure in terms of its providing pain relief and psychological support during dysmenorrhoea. Interactions were significant for initial pain ($p=0.04$), initial anxiety ($p<0.001$) and self-treatment follow-u pain ($p=0.003$).	The findings suggest that acupressure at Sanyinjiao can be an effective, cost-free intervention for reducing pain and anxiety during dysmenorrhoea, and we recommend its use for self-care of primary dysmenorrhoea	RCT although not blinded so may create bias. Also no sham treatment so placebo effect may be present. Follow up rate of 72%. Volunteer sample with random group assignment. Sample size calculated using power analysis from pilot study findings. Dysmenorrhoea was self-reported which could be subject to bias, including recall bias, although tools were tested for reliability. The acupressure procedure was validated. Limited generalisability (17-19 year olds) Abstract says chi square and t test were performed but these are not evident in text. STRICTA: 12/16 – very good description of acupressure and validated pressure and point location. Practitioner background is brief and timings not clear. **Grading A –** random and large sample, although not blinded

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Chen et al 2005 Effect of acupressure on nausea, vomiting, anxiety and pain among post-caesarean section women in Taiwan.	**Design**: Quasi experimental **Setting**: Two hospitals in Taiwan **Sample**: convenience sample. 104 eligible females awaiting caesarean section and having had spinal anaesthesia **Health Issue**: Nausea, vomiting, anxiety and pain **Intervention**: Participants assigned to experimental group received acupressure, and those assigned to the control group received only postoperative nursing instruction. The experimental group received three acupressure treatments. Pressure was applied to Neigan (P6) for total of 20mins on each arm. The first treatment was performed the night before CS, the second was performed 2-4 hours after CS, and the third was performed 8-10 hours after CS. Control group received standard nursing post operative instruction. The measures included the Rhodes Index of Nausea and Vomiting, Visual Analog Scale for Anxiety, State-Trait Anxiety Inventory, Visual Analog Scale for Pain, and physiologic indices. Statistical methods included percentages, mean with standard deviation, t test, repeated measure ANOVA.	The use of acupressure reduced the incidence of nausea, vomiting or retching from 69.3% to 53.9%, compared with control group (95% confidence interval = 0.11-1.65; p = 0.040) 2-4 hours after CS (although nausea and vomiting were not independently significant) and from 36.2% to 15.4% compared with control group (95% confidence interval = 0.59-0.02; p = 0.024) 8-10 hours after CS (nausea, vomiting and retching all significant). Experimental group showed an increasing reduction compared with controls in anxiety and pain overall therapeutic times for all outcome measures. State Anxiety Inventory p=0.000. VAS for anxiety (p=0000) VAS for pain (P=0.001) Significant difference between experimental and control group for Respiration p=0.000, Pulse p=0.004, systolic p=0.001, diastolic blood pressure p=0.006 ANOVA showed a correlation between time and intervention effects.	The experimental group had significantly lower anxiety and pain perception of caesarean experiences than the control group. Significant differences were found in all physiologic indices between the two groups. The utilization of acupressure treatment to promote the comfort of women during caesarean delivery was strongly recommended	Surgery duration and type and number of procedures not taken into consideration. Convenience sample. Size ok (n=104). Controlled study but group assignment was not random (first 52 recruited were in control group). However groups were homogeneous (p>0.05). Acupressure procedure tightly controlled to be the same each time. Interaction effects tested for. STRICTA: 11/16 (lacking detail of setting and practitioner but very good details of treatment and validated pressure) **Grading B** as large samople and controlled but not randomised

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Chen et al 2007 Acupressure and meridian massage: combined effects on increasing body weight in premature infants	**Design**: RCT - Double blind clinical trial **Setting**: Medical centre sickness baby room, central Taiwan **Sample**: All eligible patients based on age, weight, meds. N=40 **Health issue**: Premature baby body weight **Intervention**: Based on lit and experts. Nurse trained in Chinese medicine performed 2 minutes each of: kneading on ST36, RN12, KI1 120 circles/min; abdominal rubbing for 60 circles/min; meridian massage of spleen and stomach meridian 30 times per minute; spinal kneading bottom to top 5 cycles for one/minute. 3 times a day for 10 days, one hour before feeding. Compared to routine care. Analysis= t-test and chi squared.	Weight gain significantly higher over whole study in experimental group (32.7g/day compared to 27.3 g/day, p=0.038), but not during first 7 days of study.	Acupressure and meridian massage can affect body weight gain in premature infants. Could be taught to parents or delivered by nurses.	Says double-blinded but no details given and unlikely to be possible due to the intervention. Sample size too small. Does not give details of sample size calculation, random sequence generation, allocation, numbers in each group at each stage, drop outs, intention to treat, making it difficult to assess bias. Little data on harms, ethics, or generalisability. Groups were randomly assigned and matched for weight and gestation age, so were homogenous for baseline clinical variables. Good detail on intervention which seems reliable and valid. STRICTA: 14/16. Excellent reporting of procedure **GRADING B as randomisation missing and insufficiently powered**.

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Chen and Chen 2010 Effects of acupressure on menstrual distress in adolescent girls: a comparison between Hegu-Sanyinjiao matched points and Hegu-Zusanli single point	**Design**: RCT **Setting**: University, Taiwan **Sample:** University students, volunteers. N=134 **Health issue**: Menstrual distress/primary dysmenorrhoea **Intervention**: 4 groups. Zusanli; Hegu; Hegu-Sanyinjiao Matched Points; Control (20 mins rest but no treatment). Each received acupressure for 20 mins, alternating legs, thumb pressure for 6secs, rotating 2/3 times a second, released for 2sec, repeated for 5mins on each point, 4 times. First treatment was during menstrual pain (score higher than 4). For the follow up 6 months girls self-administered acupressure for first 3 menstrual days. Practitioners were trained and pressure was measured. Outcomes were VAS for pain and anxiety, McGill pain Q and menstrual distress Q short form.	Acupressure at matched points significantly reduced pain (p=0.02), distress (p=0.001) and anxiety (p=0.001) compared to control, after six months. Hegu (p=0.02) reduced pain but not distress and anxiety. Zusanli had no significant effects.	This trial provides preliminary evidence that six-month acupressure therapy provides female adolescents with dysmenorrhoea benefit.	Large sample size and power calculation and good flow chart of drop outs. Poor follow up (134/200) and no intention to treat analysis Setting and background well described. Analysis and harms and limitations all discussed. Outcome was valid but could be objectively measured as well. Little data on randomisation process. No sham treatment. Single blinding used. 6 month follow up. STRICTA: 12/16 items reported, including diagrams, background, setting and practitioner background but no sham). **GRADING A as large and powered sample, RCT, with long follow up**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Chen et al 1999 The effectiveness of acupressure in improving the quality of sleep of institutionalized residents	**Design**: A randomized block experimental design **Setting**: Public assistance facility for elderly residents, Taiwan. **Sample**: 246 elderly residents with sleep disturbances as screened for using the Pittsburgh Sleep Quality Index (PSQI) questionnaire. 84 participants eligible to take part. **Health issue**: disturbed sleep in elderly people **Intervention:** By matching the effects of hypertension, hypnosis, naps, and exercise, subjects were randomly assigned to an acupressure group, a sham acupressure group, and a control group (28 subjects each). The same massage routine was used in the acupressure group and the sham acupressure group, whereas only conversation was employed in the control group. Acupressure group had pressure applied at 5 points (points baihui (GV20), fengchi (GB20), anmian (BL18) and shenmen (Ht7) Sham points were 1cm - 3cun from real points. Acupressure performed for 15mins a day, 4hours before bedtime, Monday to Friday for 3 weeks, by the Principal Investigator.	There were significant differences in PSQI subscale scores of the quality, latency, duration, efficiency and global PSQI scores (all $p<0.001$) among subjects in the three groups before and after interventions and the improvements were all significantly greater in acupressure group than other two (Scheffes post hoc comparison). There was also a significant improvement in disturbances of sleep for all groups ($p<0.05$) but this did not differ between groups. Daily sleep status records showed all groups improved in time to fall asleep, hours of bed time and frequency of nocturnal awakening ($p<0.01$). Frequencies of nocturnal awakening and night wakeful time were significantly reduced in the acupressure group compared to the other two groups. ANCOVA showed that a greater frequency of nocturnal awakening gave a greater reduction. Qualitative data showed acupressure group were more likely to experience increased body comfort and self-reported sleep quality than sham group	This study confirmed the effectiveness of acupressure in improving the quality of sleep of elderly people and offered a non-pharmacological therapy method for sleep-disturbed elderly people	Three armed RCT; Control group had conversation to control for placebo effect and sham points enable identification of meridian effects. Sham group showed some improvement which may be due to effects of massage, although acupressure group showed greatest improvements. Sampling was systematic random and order of subjects randomly decided. Groups randomly assigned once matched for various factors (block design). This gives more powerful treatment effects but only if factors are true, i.e. blocks are homogenous. No justification for choice of factors given. Control and intervention groups are homogenous (no significant differences in demographics age, gender, living conditions, drug use, chronic disease, time at facility, naps, exercise, time in bed, milk tea and coffee consumption, smoking, sleep indices). Single-blind. PI administered treatment and collected data which may introduce bias (subjects were reluctant to talk to a stranger), including

	Data collected using PSQI in first (baseline) and fifth week. During intervention information on last nocturnal sleep (LNS) was also collected.	sleep quality than sham group.		to a stranger), including Hawthorne effect and Researcher bias. Only 65.6% follow-up. Internal validity of procedure extensively controlled by inter-rater reliability and expert validation. Limited generalisability as mean age 79 years, and residents had to have low income and have no son. Data subject to recall bias. STRICTA: 14/16 – excellent internal validity checks including measuring pressure and acupoint location. Instructions and rationale for control missing. **Grading A** as randomised and three armed, well reported

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Chen et al 2003 Use of acupressure to improve gastrointestinal motility in women after trans-abdominal hysterectomy.	**Design**: Randomised controlled trial **Setting**: Mid-Taiwan teaching hospital **Sample**: 41 patients undergoing Trans-abdominal hysterectomy (TAH) without neoplasm **Health issue**: Gastrointestinal (GI) motility in women after (TAH). **Intervention**: Patients were randomly assigned into two groups. The experimental group (n=21) received acupressure for 3 minutes at each of three meridian points: Neiguan (PC-6), Zusanli (ST-36) and Sanyinjiao (SP-6). The control group (n=20) received 3 minutes of acupressure on sham points. Acupressure was performed twice a day, for at least three days. A questionnaire was used to determine patients' satisfaction prior to and after afternoon acupressure. GI contractions were measured with a multifunctional stethoscope before and after acupressure.	Acupressure of these three meridian points significantly ($p < 0.05$) increased GI motility in the experimental group, but there was little change in the control group ($p > 0.05$). Experimental group also showed higher self-awareness of GI motility after acupressure than control group ($p<0.05$). Experimental group had higher degree of satisfaction than control ($p<0.001$). Anecdotally, 14 patients from experimental group reported increase in GI motility and passing of gas compared to none in control group.	Our conclusions are that non-invasive acupressure of these meridian points can significantly improve GI motility and can be incorporated into the technical curriculum and clinical education program of nursing schools. Patients and their family members can be taught to continue this procedure at home to enhance GI motility in patients who have undergone TAH	Small sample, but random group assignment. Sampling not given, presumably convenience. RCT design controls for placebo effect, Hawthorne effect selection bias etc. May be subject to researcher bias although measures in place to reduce this risk. Controlled for a large number of extraneous variables, which were identified from previous research. Groups were homogenous in all: demographics, bowel movements, GI history, surgery history, duration of surgery, blood loss, analgesics, pain, post surgical activities, leaving the bed and food intake patterns. Single blind (used sham acupuncture on non meridian points) so can assess meridian effects. 3 measures of reliability for procedure/measurements, including verification from specialists. STRICTA: 11/16 (good description of intervention and background, but lacking info on setting, practitioner and rationale for control) **Grading B** as random and controlled for confounders and reliability of measures and intervention but reporting was limited.

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Cho and Tsay (2004). The effect of acupressure with massage on fatigue and depression in patients with end-stage renal disease.	**Design**: experimental pretest and posttest design **Setting**: two hemodialysis clinics in major hospitals in southern Taiwan. **Sample**: Sixty-two patients with end-stage renal disease (ESRD) receiving hemodialysis treatment. **Health issue**: Fatigue and depressive mood experienced by patients with end-stage renal disease. **Intervention**: Patients in the acupressure group received acupoint massage for 12 minutes per day, three days per week, for four weeks. Subjects in the control group only received routine unit care. The measures included the Revised Piper Fatigue Scale, and Beck ' s Depression Inventory. Descriptive statistics, chi 2 tests, t-test and analyses of covariance were used for data analysis.	The results indicate that subjects experienced a moderate level of fatigue. Nearly 65 % of hemodialysis patients had a depressed mood. T-tests showed a significant reduction in fatigue ($p<0.001$) and depression ($p=0.03$) in experimental group but not in control, confirmed by ANCOVA results indicated that fatigue ($F((1.54)) = 9.05$, $p = .004$) and depression ($F((1.54)) = 4.20$, $p = .045$) among patients in the acupressure group showed significantly greater improvement than patients in the control group.	Acupressure therapy could effectively improve ESRD patients' perceived fatigue and depression, which might provide an interventional model for nurses taking care of ESRD patients	Controlled (compared to routine care) but no sham treatment. Sample size power calculation performed. Convenience sample but random group assignment. Co-intervention of massage, although this was only for 3 out of 15 mins of treatment. Used TCM theory to select points and give reasoning for effectiveness. Treatment clearly defined and reliable Control and intervention groups are almost homogenous (no significant differences in demographics except age). ANCOVA used which controls for differences in pre-test scores and age. Extra attention/interaction with experimental group may have affected mental state (placebo effect not tested for) STRICTA: 15/16 – excellent reporting and pressure validated. Good reasoning for treatment and used *de qi*. Practitioner background missing. **Grading B** as no sham and not blinded

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Cho and Hwang 2009 Acupressure for primary dysmenorrhoea: A systematic review	**Design**: Systematic review **Setting**: - **Sample**: RCTs from electronic databases (English, Korean, Japanese, Chinese). Four RCTs included. **Health issue**: Primary dysmenorrhoea. **Intervention**: Quality of studies assessed using Cochrane Handbook criteria. Studies had to compare acupressure with a control group.	30 studies identified, four included which fitted criteria, two from Iran, one USA, one Taiwan. Two compared to sham treatment and found significant pain reduction. One compared to pharmacologic treatment and found significant reduction in worst pain, symptom intensity and pain medication use. One compared to wait-list and found significant reduction in pain and anxiety.	Data from RCTs suggests that acupressure alleviates menstrual pain, although results are limited by small number of trials.	Excellent quality. Wide range of sources used including different languages/countries, trial databases, reference lists, personal contact with authors and manual search. Flow chart given, based on QUOROM flow chart. Inclusion criteria are very detailed, including type of study, participants, intervention and outcome measures. Any studies unclear re inclusion were independently assessed by two reviewers and discussed. Excluded studies which did not randomise. Methods and results were fairly similar between studies, although did differ on pain, acupoints, types of acupressure and outcomes. It was therefore not possible to do a meta-analysis. **Grading A** as good study selection and assessment, including Cochrane handbook

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Chung et al 2003 Effects of LI4 and BL 67 acupressure on labour pain and uterine contractions in the first stage of labour.	**Design**: Experimental study with a pretest and posttest control group **Setting**: Not clear, may be Taipei National College of Nursing Hospital **Sample**: 127 parturient women were randomly assigned to three groups. **Health issue**: Labour pain and uterine contractions during the first stage of labour. **Intervention**: Each group received only one of the following treatments, LI4 and BL67 acupressure, light skin stroking, or no treatment/conversation only. Data collected from the VAS and external fetal monitoring strips were used for analysis.	Findings indicated that there was a significant difference in decreased labour pain during the active phase of the first stage of labour among the three groups (p=0.041), but not during latent and transitional phases. Wilcoxon showed no significant differences between acupressure and effleurage groups or effleurage and control groups, but did show difference between acupressure and control groups (p=0.017) There was no significant difference in effectiveness of uterine contractions during the first stage of labour among the three groups. Duration of labour was shorter in acupressure group compared to control (p=0.019) but not compared to effleurage group. Qualitative data showed one third of women in acupressure group had positive feeling towards the treatment and felt it had reduced their pain.	Results of the study confirmed the effect of LI4 and BL67 acupressure in lessening labour pain during the active phase of the first stage of labour. There were no verified effects on uterine contractions	Randomised controlled three-armed trial. Sampling and group allocation were both random. Control and intervention groups are homogenous (no significant differences in demographics, obstetrics or attrition). Sample size small for three groups (n=42/43) and v low response at transitional phase (31 out of 127) Placebo effect was tested for by use of 3 groups, to determine if effects of acupressure are from meridian effects or tactile stimulation. Outcome measure (VAS) shown to be valid and reliable. Three comprehensive steps to ensure validity and reliability of acupressure procedure. 23 subjects excluded due to medication/caesarean – reduced generalisbility STRICTA: 13.5/16 (very good acupressure description and pressure, point choice, point location all validated. Practitioner only briefly described) **Grading A** as randomised, controlled, sham and well reported

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Dibble et al 2000 Acupressure for nausea: results of a pilot study.	**Design**: Single-cycle, randomized clinical trial. **Setting**: Outpatient oncology clinic in a major teaching medical center and a private outpatient oncology practice. Western USA **Sample**: Seventeen women participated in the study, receiving CMF or doxorubicin and suffering nausea. **Health issue**: Nausea experience and intensity in women undergoing chemotherapy for breast cancer **Intervention**: Finger acupressure bilaterally at P6 and ST36, acupressure points located on the forearm and by the knee. Baseline and post-study questionnaires plus a daily log of nausea experience measured by the Rhodes inventory of Nausea, Vomiting, and Retching and nausea intensity were used.	Significant differences existed between the two groups in regard to nausea experience ($p < 0.01$) and nausea intensity ($p < 0.04$) during the first 10 days of the chemotherapy cycle, with the acupressure group reporting less intensity and experience of nausea. The CPC (retrospective measure of nausea) reported no differences.	Finger acupressure may decrease nausea among women undergoing chemotherapy for breast cancer	Pilot study (must be replicated prior to advising patients about the efficacy of acupressure for the treatment of nausea) Small sample (n=17) No placebo (discussed as unethical). Hawthorne effect may be present due to extra attention given to acupressure group (for teaching acupressure) Self-administered acupressure Sampling not described Stratified random group assignment (based on setting and treatment regimen). Control and intervention groups are homogenous (no significant differences in demographics, cancer characteristics and treatment). Two of the tools were not validated (two were) Women rarely used ST36 as they reported that it was difficult to access. STRICTA: 6/16 – excellent background but due to self-administration no details on pressure, frequency etc. **Grading B** – small sample and poorly reported

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Dibble et al 2007 Acupressure for Chemotherapy-Induced Nausea and Vomiting: A Randomized Clinical Trial	**Design**: Multicentre RCT **Setting**: 10 community oncology programs, Houston, USA **Sample:** 160 women beginning their second or third cycle of chemotherapy for breast cancer treatment and had moderate nausea intensity scores with their previous cycles **Health issue**: Chemotherapy-induced nausea and vomiting **Intervention**: 3 groups: 1. Acupressure on P6 – self administered, pressed until no longer feel tender (maximum 3 minutes) each morning for 10 days and when needed during the day. 2. Placebo acupressure – same instruction but for SI3 (point on hand). 3. Control – usual care only. Outcomes were daily log of Rhodes Index of Nausea (RIN) and one item from Rhodes Index of Nausea, Vomiting and Retching (NRS) and State Trait Anxiety Inventory.	No significant differences were found in acute nausea or emesis by treatment group. With delayed nausea and vomiting, the acupressure group had a statistically significant reduction in the amount of vomiting and the intensity of nausea over time when compared with the placebo ($p=0.002$; $p<0.006$ respectively) and usual-care groups ($p<0.0001$; $p=0.006$ respectively). No significant differences were found between the placebo and usual-care groups in delayed nausea or vomiting.	Acupressure at the P6 point is a value-added technique in addition to pharmaceutical management for women undergoing treatment for breast cancer to reduce the amount and intensity of delayed CINV.	It was important to measure N&V for 10 days (longer than most) to show the effects. Also found no placebo effect, supported by qualitative comments. Trial design, background, rationale, setting and outcomes were all well described. No sample size calculation. No details of how randomisation was done. Good diagram of recruitment and good follow up rate (92%) and intention-to-treat analysis was used. Study was double blinded but at least 5 patients broke the blind as they wanted to use the active point. Analysis included adjustment for age, anxiety and history of nausea. Treatment is not validated as self administered. Good discussion of limitations. Generalisability difficult to assess as little information on population, although did include 10 different centres.

				STRICTA: 15/16 (excellent reporting of treatment and timing as well as instructions to patients. No practitioner details) **Grading B as lots of confounders, no details of randomisation and no non-treatment control**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Dullenkopf et al 2004 The influence of acupressure on the monitoring of acoustic evoked potentials in unsedated adult volunteers.	**Design**: Within subjects (repeated measures) design with counterbalancing **Setting**: Not given **Sample**: Fifteen unsedated adult volunteers **Health issue**: Stress levels in unsedated volunteers **Intervention** Patients received pressure on Extra 1 point (EP) and on control point for 10 min on different days. A-line Autogressive Index (AAI) recorded 5 min before, during, and after the interventions. Random procedure selected whether participants received EP or control point pressure first. Before and after volunteers quantified stress level by visual analog stress scale. Data compared by Wilcoxon's signed rank test (Bonferroni correction, $P < 0.05$) and simple regression tested for correlation between AAI values within subjects on different days.	Data are median (range). AAI decreased from 73 (40-99) to 53 (33-94) after 10 min of pressure on EP ($P = 0.0044$). Five minutes after release of pressure there was no difference compared with initial values. There was a statistically significant difference between VSS before and after pressure on EP (36 [7-67] to 15 [0-44]; $P = 0.0066$), but not on control point. There was no difference in changes in AAI or VSS between participants who had EP first or control first. There was no correlation between AAI and VSS values before intervention.	1) There was a wide range of AAI values in awake volunteers. 2) AAI was influenced by acupressure performed on the EP in unsedated adult volunteers. This indicates that monitoring of level of consciousness by change in EEG is not solely influenced by anaesthetics. 3) Acupressure on this point significantly reduced stress levels. Acupressure deserves attention for potentially being a non-invasive, easy to apply alternative to reduce stress and anxiety.	Very small sample (15). Sampling procedure not given, don't even know where they came from! No control group, patients acted as their own controls. This can cause 1) Danger of attrition 2) Carryover effects (addressed by counterbalancing of participants having either EP or control first) 3) Practise effect (especially likely in self-report such as VSS) But acting as own controls does control for the heterogeneity in AAI which was observed. AAI measurements were consistent within subjects. Bonferroni correction was used to control for repeated measures, which is good but can cause a loss in precision of findings. STRICTA: 5/16 – very little description of pressure, background or practitioner or control. **Grading C** as no control group and very small sample

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Elder et al 2007 Randomized Trial of Two Mind–Body Interventions for Weight-Loss Maintenance	**Design**: RCT **Setting**: Health maintenance organisation, Portland, USA **Sample:** 90 members of the community/staff members who are overweight **Health issue**: Overweight **Intervention**: All underwent a weight-loss program and were then randomised to one of 3 groups, all 3 interventions standardised to be 10hours of group contact. 1. Qigong 2. Tapas Acupressure Technique which is holding a pose which applies pressure to GB21, BL1 and yin tang while focusing on a number of belief statements. 3. Control – self directed support (SDS) (written materials and user directed support groups). Outcomes were weight as randomisation, 12 and 24 weeks and scales of absorption, expectancy, social support, depression and weight loss history.	At 24 weeks, the TAT group maintained 1.2 kg more weight loss than the SDS group did (p = 0.09), and 2.8 kg more weight loss than the QI group did (p = 0.00), only regaining 0.1 kg. A separation test (0.05 level, 0.95 power) indicated that TAT merits further study. A secondary analysis revealed that participants reporting a previous history of recurrent unsuccessful weight loss were more likely to regain weight if assigned to the SDS arm, but this effect was suppressed in both the QI and TAT groups (p = 0.03). Although QI participants reported important general health benefits, the instruction sequence was too brief, given the complexity of the intervention.	TAT warrants further research for weight-loss maintenance. Any further research on *qigong* should use a modification of our protocol.	The sampling procedure is not well described so hard to determine generalisability. Although a formal power calculation was not done, the size is likely to be adequate. Design-adaptive allocation with balance for demographic/clinical factors is equivalent to randomisation. Participant/care giver blinding was not possible although assessors were blinded. The control group did receive some intervention – no no-treatment control. Outcomes were appropriate but it is not clear if they are validated. Mixed methods were well used. 88% follow up with a good flowchart of participant progression and reasons for dropout. Intention-to-treat analysis not used. Discussion is very limited with no reference to other studies or discussion of generalisability. STRICTA: 10/16 (little information on practitioner, not much rationale for comparators, not clear how

				acupoints were stimulated or how often. **Grading A** as well randomised with large sample

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Ezzo et al 2006 Acupuncture-point stimulation for chemotherapy-induced nausea or vomiting (review).	**Design**: Cochrane Systematic Review **Setting**: - **Sample**: Randomised trials of acupuncture-point stimulation for chemotherapy-induced nausea or vomiting. **Health issue**: Chemotherapy-induced nausea and vomiting in cancer patients **Intervention**: Trials using acupuncture-point stimulation by any method (needles, electrical stimulation, magnets, or acupressure) was used and chemotherapy-induced nausea or vomiting, or both, was assessed. Data provided by investigators of the original trials and pooled using a fixed effect model. Relative risks were calculated on dichotomous data. Standardised mean differences were calculated for nausea severity. Weighted mean differences were calculated for number of emetic episodes.	11 trials (N = 1247) were pooled. Overall, acupuncture-point stimulation of all methods combined reduced the incidence of acute vomiting (RR = 0.82; 95% confidence interval 0.69 to 0.99; P = 0.04), but not acute or delayed nausea severity compared to control. By modality, stimulation with needles reduced proportion of acute vomiting (RR = 0.74; 95% confidence interval 0.58 to 0.94; P = 0.01), but not acute nausea severity. Electroacupuncture reduced the proportion of acute vomiting (RR = 0.76; 95% confidence interval 0.60 to 0.97; P = 0.02), but manual acupuncture did not; delayed symptoms for acupuncture were not reported. Acupressure reduced mean acute nausea severity (SMD = -0.19; 95% confidence interval -0.37 to -0.01; P = 0.04) but not acute vomiting or delayed symptoms.	This review complements data on post-operative nausea and vomiting suggesting a biologic effect of acupuncture-point stimulation. Electroacupuncture has demonstrated benefit for chemotherapy-induced acute vomiting, but studies combining electroacupuncture with state-of-the-art antiemetics and in patients with refractory symptoms are needed to determine clinical relevance. Self-administered acupressure appears to have a protective effect for acute nausea and can readily be taught to patients though studies did not involve placebo control. Noninvasive electrostimulation appears unlikely to have a clinically relevant impact when patients are given state-of-the-art pharmacologic antiemetic therapy	Cochrane review. Only 11 articles included. All methodological details given; selection criteria, etc. Data from studies pooled using Intention to Treat analysis and original data where possible. All acupressure trials together, including those using bands which we would have excluded. Duplicate bias avoided. Language bias avoided. Grey literature not searched. **STRICTA N/A** **Grading A** due to excellent Cochrane methodology

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Fassoulaki et al 2003 Pressure applied on the extra 1 acupuncture point reduces bispectral index (BIS) values and stress in volunteers.	**Design**: Crossover study **Setting**: Not given **Sample**: 25 healthy volunteers **Health issue**: None, healthy volunteers. To reduce preoperative stress. **Intervention** In each volunteer, pressure was applied on the Extra 1 point for 10 min and on a control point for 5 min on different days and in a randomized manner. The BIS value (this is a measure of the level of consciousness during anaesthesia) was recorded before applying pressure on the Extra 1 point (EP), during pressure application every 30 s for 10 min, and after pressure release. Regarding the control point, BIS values were recorded for 5 instead of 10 min during pressure application because acupressure on that point was associated with an unpleasant feeling. Each volunteer was asked to score stress before and after pressure application from 0 to 10. Friedman test used to compare BIS values. Wilcoxon rank to compare BIS values at different times and for EP/control points and VSS before and after. Mann Whitney to compare EP with control.	The BIS values were significantly reduced 2.5, 5, 7.5, and 10 min during pressure application on the extra 1 point (all $P < 0.001$) and returned to the baseline values after pressure release. Pressure application on the control point decreased BIS values ($P < 0.01$ and $P < 0.05$ at 2.5 and 5 min, respectively). However, these values were maintained close to 90% and were significantly higher than those obtained during pressure on the extra 1 point ($P < 0.001$ and $P < 0.001$ for the 2.5- and 5-min comparisons). The verbal sedation score values obtained after pressure application on the extra 1 point were also lower when compared with the values obtained after pressure application on the control point ($P < 0.001$).	Acupressure applied for 10 min on the extra 1 point significantly reduced the BIS values and the verbal stress score when compared with acupressure applied on a control point	Sampling/follow-up/response not given Small sample but apparently powered from a pilot study. Not clear whether participants were blinded. Control point only used for 5 mins (EP for 10) which is a flaw in the study. This was done because discomfort was experienced at control. However, BIS did reduce in EP after 5mins and not in control. Participants excluded if they believed in TCM, could bias sample and reduces generalisable. No control group, patients acted as their own controls. This can cause 1) Danger of attrition (test for impact of sequence effect showed no effect.) 2) Carryover effects (addressed by counterbalancing of participants having either EP or control first) 3) Practise effect (especially likely in self-report such as VSS) But acting as own controls does control for heterogeneity. STRICTA: 10/16 (no detail of pressure, other interventions, practitioner or background) **Grading C** as small sample and no control

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Fassoulaki et al 2007 Acupressure on the Extra 1 Acupoint: The Effect on Bispectral Index, Serum Melatonin, Plasma beta-Endorphin, and Stress	**Design**: Within-subjects controlled pilot study **Setting**: Not clear – hospital? Athens, Greece **Sample:** 12 volunteers (healthy?) **Health issue**: Not clear! Consciousness/anesthesia? And mechanism of acupressure. **Intervention**: Acupressure for 10 mins once only. Patients randomly received, on 3 consecutive days, either acupressure on Extra 1 point, acupressure on a sham point or control, no pressure. Outcomes were bispectral index (BIS), melatonin in blood serum, Beta-endorphin in blood plasma.	The BIS and verbal stress score values were decreased after acupressure on the extra 1 point (P = 0.0001 and P = 0.008, respectively), but melatonin and beta-endorphin did not change.	Acupressure on the extra 1 point has no effect on melatonin and beta-endorphin levels.	Very small sample with no control group, although the within subjects control does provide some comparison and randomisation used to reduce carryover effects. Not clear if patients or care givers were blinded to treatment allocation. Outcomes were good – objective and clinical. Intervention was fairly well described. Acupressure was only given once on each point which may explain lack of effect. STRICTA: 10/16 (No description of setting/context or rationale for comparator) **Grading B as mainly a study of mechanisms and small sample**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Habek et al 2004 Success of acupuncture and acupressure of the Pc 6 acupoint in the treatment of hyperemesis gravidarum.	**Design**: Prospective, placebo-controlled trial **Setting**: Clinical Hospital Osijek, Croatia. **Sample**: 36 pregnant women with HG. **Health issue**: Pregnant women with hyperemesis gravidarum (HG). **Intervention**: Two methods of acupuncture were used: bilateral manual AP of the Pc 6 (Neiguan) acupoint (group 1, n = 10) and bilateral APr of the Pc 6 acupoint (group 2, n = 11); furthermore, superficial intracutaneous placebo AP (group 3, n = 8) and placebo APr (group 4, n = 7) was carried out. APr was self-administered for 30mins whenever they felt nausea. Outcome criteria was disappearance of nausea and vomiting symptoms and no need for medication for HG, assessed by patient report and independent gynaecologist's evaluation.	The efficiency of the HG treatment with AP of the point Pc 6 was 90%, with APr of the Pc 6 63.6%, with placebo AP 12.5%, and with placebo APr 0%. The results showed that AP and Apr can significantly reduce the occurance of HG ($p<0.0001$ and $p<0.01$ respectively)	Acupuncture ($p < 0.0001$) and acupressure ($p < 0.1$) are effective, nonpharmacologic methods for the treatment of HG	Double-blind to reduce bias. Group allocation was random, but the homogeneity of groups was not statistically assessed, even though data was collected and looks similar. Small sample (36) and divided into four groups so power very low in groups. Also sampling process not given, and not stated how women with HG were identified. No control of reliability of acupressure procedure, especially as self-administered there could be variation in procedure. Outcome measures not given. Results just given as % effective, measuring the disappearance of symptoms as subjectively assessed by patient and gynaecologist. Also % should not be used for such small groups. STRICTA: 5/16 – very brief description of treatment and self administered. **Grading C** due to lack of reporting

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Harris et al 2005 Using acupressure to modify alertness in the classroom: a single-blinded, randomized, cross-over trial.	**Design**: a cross-over (two-treatments; three periods), single-blinded, randomized trial. **Setting**: The University of Michigan School of Public Health **Sample**: 39 Students attending a course in clinical research design and statistical analysis at the University of Michigan **Health issue**: alertness in a full-day classroom setting **Intervention**: Blinded subjects were randomized to two acupressure treatment sequences: stimulation-relaxation-relaxation or relaxation-stimulation-stimulation. Acupressure treatments were 15mins, self administered over 3 consecutive days. Pre- and post-treatment alertness scores were assessed each day using the Stanford Sleepiness Scale (SSS). Changes in the SSS score (afternoon-morning) were analyzed using a mixed regression model of fixed and random effects. Important factors that were expected to affect alertness, such as	Baseline characteristics and protocol compliance were similar between the two sequences. Stimulation acupressure treatment yielded a 0.56-point greater difference in score on the SSS, corresponding to less fatigue, compared to the relaxation acupressure treatment ($p = 0.019$). Day of study ($p = 0.004$) and hours of overnight sleep ($p = 0.042$) also significantly affected the change in SSS scores. Incorporating participants' beliefs as to which treatment they received did not significantly alter the observed treatment effect (although it came close, raising p to 0.0484).	Acupressure at stimulation and relaxation points has differential effects on alertness in a classroom setting. Further research is necessary to confirm these findings and to determine whether stimulation and relaxation acupressure are equally effective in influencing alertness	Single-blind (subjects) and all other researchers except those teaching acupressure. Although majority of students could correctly discern the treatment, this did not significantly affect the results. Small sample (39) and low generalisability as all medical students (well educated, scientific researchers who were highly motivated to comply). Sampling not given – may be all eligible students on course. Random group allocation and control and intervention groups are homogenous (no significant differences in demographics). Crossover design should reduce effects of retesting, carryover or time-related. However, is one day enough to allow treatment effects to subside? Also participants acting as own controls can cause practise effect (especially with self-report). Treatment was empirically designed so not clear if acupressure sites chosen were optimal for the intended purpose.

	caffeine and previous night's sleep, were also assessed.			Validity of SSS not given. Missing data provided retrospectively (n=9) may cause recall bias. Very comprehensive statistical analysis accounting for: – Effects of sequence, period, treatment and 'other covariates' – Masking – Co-variates including caffeine, sleep, medication, anxiety and compliance. Results were affected by day of study and hours of sleep which may bias results. Ethical implication of sedating students in class. STRICTA: 13/16 – excellent description of acupressure and control (including rationale). Lacking detail of other interventions, de qi or style. **Grading A** as trial design is very appropriate and well reported

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Helmreich et al 2006 Meta-analysis of acustimulation effects on nausea and vomiting in pregnant women	**Design**: Meta-analysis **Setting**: Houston, USA? Databases = Medline, Cochrane and dissertations **Sample:** RCTs or crossover trials of acustimulation (acupressure, acupuncture and electrical) for N&V in pregnancy. **Health issue**: N&V in pregnancy **Intervention**: Acustimulation vs control. Acupressure was divided into finger pressure and wristband pressure. Used QUORUM guidelines to evaluate quality and calculated RR and 95% CIs	13 trials identified. After the treatment, compared with the controls, AS (all modalities combined) reduced the proportion of nausea (RR =0.47, 95% CI: 0.35-0.62, *P* < .0001) and vomiting (RR = 0.59, 95% CI: 0.51-0.68, *P* < .0001). Acupressure methods applied by finger pressure or wristband reduced NVP (p<0.001). The ETS method was also effective in reducing NVP. However, the acupuncture method did not show effects.	This meta-analysis demonstrates that acupressure and ETS had greater impact than the acupuncture methods in the treatment of NVP. However, the number of acupuncture trials was limited for pregnant women, perhaps because it is impossible to self-administer the acupuncture and thus inconvenient for women experiencing NVP as chronic symptoms	Good focussed question and reviewed only acupoint stimulation, not all non-pharmacological methods. Included the right type of studies but identification of studies was very limited – only 3 databases used, not clear if ref lists were consulted, no personal contact with experts, no attempt to find grey lit and no non-English inclusions. Good quality assessment using tool and 2 reviewers. Good presentation of results and tested for bias. Relative risk presented and effect size for acupressure is good. Hard to generalise as little data given on participants and settings of studies. Only clinical outcomes assessed (despite discussion in Background of impact of N&V on family etc). Despite saying only one trial reported on harms they conclude that AS is safe!! **Grading B** as good search strategy but some studies not included and conclusions re safety may not be justified.

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Hsieh et al 2004 A randomized controlled clinical trial for low back pain treated by acupressure and physical therapy.	**Design**: Randomized controlled clinical trial **Setting**: Orthopedic referral hospital in Taiwan. **Sample**: 146 participants with chronic low back pain were randomly assigned to the acupressure group (69) or the physical therapy group (77), between December 20, 2000, and March 2, 2001 **Health issue**: with low back pain (LBP) **Intervention**: Acupressure from a senior therapist was compared to routine physical therapy. Both were 6 sessions over 4 weeks. Acupressure was for 15mins per session. Physical therapy includes thermotherapy, infrared, electrical stimulation, exercise and traction. Self-appraised pain scores were obtained before treatment as baseline and after treatment as outcomes using the Chinese version of Short-Form Pain Questionnaire (SF-PQ).	There were no significant differences in baseline characteristics among patients randomized into the two groups. The mean of posttreatment pain score after a 4-week treatment (2.28, SD = 2.62) in the acupressure group was significantly lower than that in the physical therapy group (5.05, SD = 5.11) (P = 0.0002). At the 6-month follow-up assessment, the mean of pain score in the acupressure group (1.08, SD = 1.43) was still significantly lower than that in the physical therapy group (3.15, SD = 3.62) (P = 0.0004). The change of score pre to post treatment was also significantly greater in Acupressure (p<0.0001)	Our results suggest that acupressure is another effective alternative medicine in reducing low back pain, although the standard operating procedures involved with acupressure treatment should be carefully assessed in the future	Good sample size, powered using a pilot study. Sample was convenience, over specified time period. Random assignment and control and intervention groups are homogenous (no significant differences in demographics). Validity of SF PQ assessed for the translated version. Although not possible to blind: – Practitioners blind to pre-test scores – Follow up staff blind to treatment – Patients blind to pre-test scores No non-response bias. Intention to treat analysis used, which is debatable but protects against attrition (dropout) bias. Only assessed pain, not functional status etc, which reduces comparability with other studies. Results very highly significant. Generalisability quite good as a wide range of age and types of LBP, and age/gender did not affect results. Acupressure treatment was individualised rather than standardised like other studies. Only one therapist

				was used though, which increases internal validity but decreases external. STRICTA: 5/16 – no description of treatment as individualised. **Grading B –** well designed **but** lack of information on intervention

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Hsieh et al 2006 Treatment of low back pain by acupressure and physical therapy: randomised controlled trial. **Note this is not the same as** Hsieh,L.L., Kuo,C.H., Yen,M.F., and Chen,T.H. (2004). A randomized controlled clinical trial for low back pain treated by acupressure and physical therapy.	**Design**: Randomised controlled trial **Setting**: Orthopaedic outpatient clinic in Kaohsiung, Taiwan. **Sample**: 129 patients with chronic low back pain **Health issue**: low back pain **Intervention**: Acupressure or physical therapy for one month, six sessions. Physical therapy was routine at the clinic and included traction, spinal manipulation, thermotherapy, infrared, electrical stimulation and exercise. Self administered Chinese versions of standard outcome measures for low back pain (primary outcome: Roland and Morris disability questionnaire) at baseline, after treatment, and at six month follow-up. Analysis was t-test, chi-squared, Wilcoxon rank and logistic regression and was Intention to Treat.	The mean total Roland and Morris disability questionnaire score after treatment was significantly lower in the acupressure group than in the physical therapy group regardless of the difference in absolute score (-3.8, 95% confidence interval -5.7 to -1.9) or mean change from the baseline (-4.64, -6.39 to -2.89). Acupressure conferred an 89% (95% confidence interval 61% to 97%) reduction in significant disability compared with physical therapy. The improvement in disability score in the acupressure group compared with the physical group remained at six month follow-up. Statistically significant differences also occurred between the two groups for all six domains of the core outcome, pain visual scale, and modified Oswestry disability questionnaire after treatment and at six month follow-up.	Acupressure was effective in reducing low back pain in terms of disability, pain scores, and functional status. The benefit was sustained for six months	Random group assignment. Sample size powered from pilot study. 15.5% loss to follow up (20 of 129) but intention to treat analysis assumed those lost had no changes from baseline. Control and intervention groups are homogenous (no significant differences in demographics). Outcome measures were not validated for use in Chinese language. Placebo effect not assessed. Blinding not possible but therapists blind to pre-test scores and data collectors blind to treatment as far as possible. Used one therapist rather than a standardised procedure, which increases internal but decreases external validity. STRICTA: 4/16 (no descripton of acupressure – individualised treatment) **Grading A** – intention to treat, randomised and powered

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Hsieh et al 2010 Effect of acupressure and trigger points in treating headache: a randomised controlled trial	**Design**: RCT (compared to medication) **Setting**: Hospital in Taiwan **Sample**: Outpatients with chronic headache. N=28. **Health issue**: Chronic headache **Intervention**: 8 sessions of acupressure over 1 month (points or any other details not specified). Control group received dorsiflex medication. Acupressure group also received 15mg vitamin B complex as a placebo medication. Outcomes were VAS pain and rating of how headache affects QOL, at end of treatment and 6 months later. Analysis intention-to-treat	Mean scores on VAS for pain post treatment and at 6 month follow up were significantly lower for acupressure than medication (p=0.047 and p=0.002). QOL was not significantly different	1 month of acupressure is more effective in reducing chronic headache than 1 month of muscle relaxant treatment and that this effect remains at 6 month follow up.	Small sample but with power calculation and intention to treat analysis, with good detail of follow up/drop outs. Sample was patients who had 'abandoned' Chinese medicine which is curious. No description of acupressure treatment or practitioner giving it. No details about randomisation method or recruitment procedure. No subgroup analysis. Little discussion of study limitations and generalisability. No details of funding or ethics. Assessors blind to pain scores and acupressure group given placebo med (although there is a small chance this could have affected the headache). 6 month follow up. STRICTA 7/16 - very little description of acupressure treatment or practitioners. **Grading B as small sample and limited generalisability**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Hsu et al 2006 Effects of Shemen acupressure on improving the condition of institutional residents with insomnia [Chinese].	**Design**: RCT **Setting**: From long term care centre in Taiwan **Sample:** n=50. **Health issue**: insomnia **Intervention**: the treated group (25subjects) received acupressure on Shenmen acupoint and the control group (25 subjects) received light touch on the same acupoint. Sleep was measured using the Pittsburgh Sleep Quality Index	Sleep status of all participants for 8 weeks were monitored; The experimental group experienced significantly greater improvements in their sleep status than did the control group ($p<0.00$). This was maintained one week after end of acupressure treatment ($p<0.00$).	This study may provide methods of using Shemen acupressure to nurses caring for institutional residents suffering from insomnia.	No details about design procedure especially randomization, which made results not conclusive at all. The p values are not accurately reported and there are no details about the randomization or clear statistical analysis or diagram STRICTA: 3/16 **Grading C due to lack of reporting**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Jin et al 2009 Acupressure therapy inhibits the development of diabetic complications in Chinese patients with type 2 diabetes	**Design**: RCT **Setting**: Dept of osteology, Wenzhou medical college hospital **Sample**: n= 80. All patients from Jan 2002 to May 2008 invited. Diagnosis of diabetes. **Health issue**: Type 2 diabetes – hyperlipidemia, kidney disorder, neuropathy. **Intervention**: All patients received lifestyle/diet advice and medication. Treatment group received whole body acupressure; 90mins/day (1 hour after meal/bath; 30mins before meal), 4-6 times/week for 3 consecutive years (each more than 309 hours each year). Practitioners were trained >1000hours and practice >3 yrs. 100 acupoints along body massaged then 13 major points (see article for names) repeatedly massaged, 3 seconds/time, 10 times, especially for patients with both diabetes and hypertension. Analysis used t test or analysis of variance or Fishers exact test.	16 patients dropped out, leaving 64 total sample. No baseline differences. Hyperlipidemia significantly lower in treatment group ($p<0.05$) after 3 years. Left ventricular hypertrophy significantly lower in treatment group ($p<0.05$). Kidney function better in treatment group ($p<0.05$). Neuropathy severity lower in treatment group ($p<0.001$)	AT appears to be an effective non-pharmacological adjunctive treatment for alleviating the development of diabetes-related complications.	Background is brief. No hypothesis. No sample size calculation and recruitment not clear. Random group assignment and no baseline variation. Stratified after randomisation. Good long period of treatment. Valid and appropriate (clinical) outcomes. No blinding. Dropouts detailed – 80% follow up only just reached - and no intention to treat analysis. 3 year follow up. No subgroup analysis. Little discussion of generalisability or ethics, but does state no competing interests. STRICTA: 14/16 - Very good reporting of treatment except pressure given and rationale for control (standard treatment). **GRADING A as good follow up, sample size and randomisation.**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Jun et al 2006 Effects of acupressure on dysmenorrhoea and skin temperature changes in college students: A non-randomized controlled trial.	**Design**: A non-equivalent control group pre and post-test design **Setting**: Classrooms at two universities in Korea **Sample**: 58 Young (18-28) female nursing students with primary dysmenorrhoea. **Health issue**: Primary dysmenorrhoea **Intervention**: Participants were allotted to either a SP6 acupressure group or placebo group that received light touch on the SP6 acupoint. Group allocation was sequential, so those recruited May-June were in treatment groups and those recruited July-August in placebo group. The experimental group received acupressure treatment within the first 8h of menstruation, and severity of dysmenorrhoea and skin temperature changes in the Zhongwan (CV2) and Qugu (CV12) acupoints were assessed prior to and 30min, 1, 2, and 3h following treatment.	There was a significant difference in severity of dysmenorrhoea between the two groups immediately after ($F=18.50$, $p=0.000$) and for up to 2h ($F=8.04$, $p=0.032$) post treatment. Skin temperature was significantly elevated at 30min after acupressure at the suprapubic CV2 acupoint in the experimental group compared to the control group. Temperature elevation was also noted at the epigastric CV12 acupoint post treatment but group differences were not significant, indicating that SHP6 acupressure relieves dysmenorrhoea primarily by temperature elevation in the CV2 pathway.	Acupressure to the SHP6 meridian can be an effective non-invasive nursing intervention for alleviation of primary dysmenorrhoea, with effects lasting 2h post treatment	Participants may have been students of the researchers which could introduce Hawthorne bias. Sample size powered using pilot study. Groups not randomly assigned (assigned sequentially according to time period), so results may be affected by seasonal effects (which have been suggested as affecting dysmenorrhoea). Groups were however homogenous for demographics and factors affecting dysmenorrhoea Students and data collectors blinded. Placebo controlled. Validity of outcome measure translated not established. No clinical outcomes, only (subjective) VAS. Limited generalisability (young and nursing students) STRICTA: 12/16 (little information on rationale for control) **Grading B** as powered but not random

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Jun et al 2007 Effects of acupressure on dysmenorrhoea and skin temperature changes in college students: A non-randomised controlled trial.	**Design**: Non-equivalent control group pretest-posttest design/non-randomised controlled trial **Setting**: College in Korea **Sample**: Young (18 to 28 yrs) college women with primary dysmenorrhoea from two classrooms. N=61. First two months assigned to one group, second to the other (30 in intervention group, 31 in control). **Health issue**: Primary dysmenorrhoea (moderate or severe pain -score of 4 or more on VAS). **Intervention**: Thumb pressure on SP6 of both legs for 10sec cycles (8s pressure, 2s rest), 120 times for total of 20mins. Control was thumb lightly placed on SP6 for 20mins with no pressure. Dysmenorrhoea rated on a VAS immediately after treatment and 30mins, 1 hr, 2hr, 3hr after. Skin temp measured at CV2 and CV12 acupoints 30mins after. Also measured attitudes towards menstruation and perceived stress with questionnaires. Analysed with chi squared and t test between groups.	Dysmennorhea severity decreased in both groups but significantly more in treatment groups at all time points except 3 hours. Skin temperature increased in both but significantly more in treatment group (indicating increased blood flow to abdomen).	Acupressure at SP6 acupoint may be an effective way to alleviate primary dysmenorrhoea among young college women.	Good reporting of sampling, intervention, group assignment, baseline characteristics (important as nonrandomised). However, no subgroup or intention-to-treat analyses (3 dropped out of control group). No mention of adverse effects. Main limitations are the convenience sample of students and the non random group allocation (although groups were homogenous for baseline variables measured), especially as this was done 'seasonally' which may be a confounding variable for severity of dysmenorrhoea. Sample size was powered. Although measurements were taken for baseline differences analysis did not control for these. May be other potential confounders. Participants and researcher taking the measurements were blinded to allocation. Measuring skin temp is a good additional objective clinical measure. Use of sham treatment means specific effects can be isolated. Outcome measures were mostly validated and appropriate.

				STRICTA: 13/16 Excellent description of points etc and setting. **Grading A as despite lack of randomisation this is well reported and used good outcome measures**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Kang et al 2009 Effects of Meridian acupressure for stroke patients in Korea	**Design**: RCT **Setting**: Hospital, Korea **Sample**: N=56 consecutive stroke patients with hemiplagia **Health issue**: Hemiplagia **Intervention**: 28 in acupressure group, 28 in control group (not specified). Meridian acupressure to 14 points (unspecified) applied after general physical therapy for 10 min per time, every day, over two weeks in the experimental group. Outcomes were 1. Function of upper extremities (grip, pain, oedema, ROM), 2. Activities of daily living, 3. Depression. Analysis with chi squared, ANOVA and t test	There were significant differences in functions of affected upper extremities (grip p=0.020, pain p=0.017, edema p=0.005, wrist flexion p = 0.002, wrist extension p < 0.001, elbow flexion p = 0.020, shoulder flexion p < 0.001, shoulder extension p < 0.001), activity of daily living (p<0.001) and depression (p=0.001) between experimental and control group.	Meridian acupressure was an effective intervention for improving the movement of the affected upper extremities, increasing activity of daily living and decreasing depression of hemiplegia stroke patients.	Sample size not powered and small. No details of follow up/drop out or any subgroup analyses. Intervention not well described e.g. acupoints not specified. Good background. Random assignment to groups. Double blinding (participants and assessors). Discussion of limitations and generalisability (not good) is limited. STRICTA: 6/16 (very little information on treatment timing, pressure etc and no info on practitioner, setting, or control treatment). **Grading B as intervention points not clearly described**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Kober et al 2002 Prehospital analgesia with acupressure in victims of minor trauma: a prospective, randomized, double-blinded trial.	**Design**: Prospective, randomised, double-blinded trial **Setting**: Austria **Sample**: 60 trauma patients. **Health issue**: Untreated pain during the transportation of patients after minor trauma (simple fractures, small wounds, contusions). **Intervention**: Patients were randomly assigned into three groups; "true points," "sham-points," and "no acupressure". All were treated accordingly for 3 minutes. An independent observer, blinded to the treatment assignment, recorded vital variables and visual analog scales (VAS) for pain and anxiety before and after treatment. At the end of transport, we asked for ratings of overall satisfaction. For statistical evaluation, one-way analysis of variance and the Scheffe F test were used. P < 0.05 was considered statistically significant.	Morphometric and demographic data and potential confounding factors such as age, sex, pain, anxiety, blood pressure, and heart rate before treatment did not differ among the groups. At the end of transport we found significantly less pain, anxiety, and heart rate and a greater satisfaction in the "true points" groups (P < 0.01), both sham and no acupressure groups did not change significantly in any variable..	Our results show that acupressure is an effective and simple-to-learn treatment of pain in emergency trauma care and leads to an improvement of the quality of care in emergency transport. We suggest that this technique is easy to learn and risk free and may improve paramedic-based rescue systems.	Double-blind (paramedic A who was treating did not know which point was sham or real). Sampling not given, but acknowledgment section suggests that ambulance staff chose eligible patients to be recruited. Randomised and all groups homogenous. Treatment and data collection by different paramedics, who were not present together. Treatment and data collection were also independently audited. No dropouts. Intention to treat analysis used, which is debatable but protects against attrition (dropout) bias. Reliability of VAS not given. No discussion of limitations. STRICTA: 8.5/16 (little information on pressure, other interventions and only briefly information given to patients) **Grading B** as double blind and randomised but poorly reported.

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Lang et al 2007 Prehospital analgesia with acupressure at the Baihui and Hegu points in patients with radial fractures: a prospective, randomized, double-blind trial	**Design**: RCT **Setting**: Prehospital transport, Vienna **Sample:** 32 patients with isolated fracture of distal radius who were taken in an ambulance (consecutive sample) **Health issue**: Pain and anxiety of fracture of distal radius **Intervention**: Paramedics administered 3 mins of slight circulating, approx 20lb pressure acupressure on either treatment points (GV20 and LI4) or sham points (BL17 and TE14) on non-injured arm. Patients and paramedics were blinded. Outcome measures were hemodynamic parameters incl BP and heart rate, pain and anxiety VAS at site of accident and on arrival at hospital. Analysed using intention-to-treat t tests.	Pretreatment scores for pain and anxiety were similar in the 2 groups. At the hospital, patients in the true-points group had significantly lower pain (P =0.001) and anxiety scores (P = .022) and heart rate (p<0.05) but no difference in blood pressure.	Acupressure in the prehospital setting effectively reduces pain and anxiety in patients with distal radial trauma.	Sample size not powered and fairly small, with quite strict exclusion criteria. Generalisabilty is not discussed but may be limited. Double-blind and randomised. Good description of randomisation process (sealed envelopes). Sham points used although choice of points may have affected results. Intention-to-treat analysis used and only one drop out. Both objective and subjective outcome measures used. STRICTA: 14/16 (good description of pressure and points and timings but less of context and instructions. Practitioner background only briefly described). **Grading B** as double blind but inappropriate sham with no non-treatment control

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Lee et al 2004 Effects of SP6 acupressure on labour pain and length of delivery time in women during labour.	**Design**: Randomized clinical trial. **Setting**: Delivery room in a university hospital, Korea **Sample**: Seventy-five (75) women in labour, **Health issue**: Labour pain **Intervention**: 30-minute acupressure (n=36) or touch (n=39) on SP6 acupoint was performed. Labour pain was measured four times using a structured questionnaire, a subjective labour pain scale (visual-analogue scale [VAS]): before intervention, immediately after the intervention, and 30 and 60 minutes after the intervention. Length of delivery time was calculated in two stages: from 3 cm cervical dilation to full cervical dilatation, and full cervical dilatation to the delivery.	There were significant differences between the groups in subjective labour pain scores at all time points following the intervention: immediately after the intervention ($p = 0.012$); 30 minutes after the intervention ($p = 0.021$); and 60 minutes after the intervention ($p = 0.012$). The total labour time (3 cm dilatation to delivery) was significantly shorter in the SP6 acupressure intervention group than in the control group ($p = 0.006$) although length of second stage did not differ. Anxiety was significantly reduced in acupressure group ($p=0.03$) after intervention compared to control. No significant difference in analgesia use.	These findings showed that SP6 acupressure was effective for decreasing labour pain and shortening the length of delivery time. SP6 acupressure can be an effective nursing management for women in labour	Double-blind randomised trial Participants were blinded and data collectors were blinded (not treatment givers) N=75, quite small and volunteer sample could really bias the results. Groups were randomly assigned and matched (according to parity, cervical dilation, labour stage, rupture of amniotic membrane, and husband's presence during labour.). Control and intervention groups are homogenous (no significant differences in demographics). Use of touch group as control allows testing for meridian effects compared to 'emotional supportive effects'. Confounders controlled for; anxiety and use of analgesics. Anxiety was lower posttest in acupressure group. STRICTA 14/16 - Very detailed control of reliability of procedure. **Grading A** as double blind and randomised, well reported

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Lee and Done 2004 Stimulation of the wrist acupuncture point P6 for preventing postoperative nausea and vomiting .	**Design**: Systematic review **Setting**: N/A **Sample**: RCTs of techniques that stimulate the P6 acupoint compared with either sham treatment, or antiemetic drugs for prevention of PONV. **Health issue**: Postoperative nausea and vomiting (PONV) following surgery and anaesthesia. **Intervention:** We searched CENTRAL (The Cochrane Library, Issue 1, 2003), MEDLINE (January 1966 to January 2003), EMBASE (January 1988 to January 2003) and the National Library of Medicine publication list of acupuncture studies up to and including January 2003. Reference lists of retrieved papers and reviews were consulted for additional references SEARCH STRATEGY: SELECTION CRITERIA: All randomized trials of techniques that stimulated the P6 acupoint compared with: sham treatment or drug therapy for the prevention of PONV. Interventions used in these trials included	Twenty-six trials (n = 3347) were included, none of which reported adequate allocation concealment. There were significant reductions in the risks of nausea (RR 0.72, 95% CI 0.59 to 0.89), vomiting (RR 0.71, 95% CI 0.56 to 0.91) and the need for rescue antiemetics (RR 0.76, 95% CI 0.58 to 1.00) in the P6 acupoint stimulation group compared with the sham treatment, although many of the trials were heterogeneous. There was no evidence of difference in the risk of nausea and vomiting in the P6 acupoint stimulation group versus individual antiemetic groups. However, when different antiemetics were pooled, there was significant reduction in the risk of nausea but not vomiting in the P6 acupoint stimulation group compared with the antiemetic group (RR 0.70, 95% CI 0.50 to 0.98; RR 0.92, 95% CI 0.65 to 1.29 respectively). The side effects associated with P6 acupoint stimulation were minor. There was some evidence of asymmetry of the funnel plot.	This systematic review supports the use of P6 acupoint stimulation in patients without antiemetic prophylaxis. Compared with antiemetic prophylaxis, P6 acupoint stimulation seems to reduce the risk of nausea but not vomiting	Cochrane Review Included children Search terms seem comprehensive although not clear how P6 studies were identified. Combined data using a model for heterogenous studies. **Grading A** as a Cochrane review

	acupuncture, electro-acupuncture, transcutaneous nerve stimulation, laser stimulation, acustimulation device and acupressure. DATA COLLECTION AND ANALYSIS: Two reviewers independently assessed methodological quality and extracted the data. Primary outcomes were incidences of nausea and vomiting. Secondary outcomes were the need for rescue antiemetic therapy and adverse effects. A random effects model was used and relative risk (RR) with associated 95% confidence intervals (95% CI) are reported. Egger's test was used to measure the asymmetry of the funnel plot.			

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Lee and Fan 2009 Stimulation of the wrist acupuncture point P6 for preventing postoperative nausea and vomiting (Review)	**Design**: Systematic (Cochrane) review (update of previous review) **Setting**: - **Sample:** RCTs of acupoint stimulation of P6 compared with sham or drug therapy for postoperative patients. **Health issue**: Postoperative nausea and vomiting **Intervention**: Used a random-effects model and reported RR with 95% CI and I^2 statistic for heterogeneity between studies. Conducted sensitivity analyses and funnel plots and estimated number needed to treat.	40 trials involving 4858 participants. 12 did not report all outcomes. Compared with sham treatment P6 acupoint stimulation significantly reduced: nausea (RR 0.71, 95% CI 0.61 to 0.83); vomiting (RR 0.70, 95% CI 0.59 to 0.83), and the need for rescue antiemetics (RR 0.69, 95% CI 0.57 to 0.83). Heterogeneity among trials was moderate. There was no clear difference in the effectiveness of P6 acupoint stimulation for adults and children; or for invasive and noninvasive acupoint stimulation. No evidence of difference between P6 acupoint stimulation and antiemetic drugs in the risk of nausea (RR 0.82, 95% CI 0.60 to 1.13), vomiting (RR 1.01, 95% CI 0.77 to 1.31), or the need for rescue antiemetics (RR 0.82, 95%CI 0.59 to 1.13). The side effects associated with P6 acupoint stimulation were minor. There was no evidence of publication bias from contour-enhanced funnel plots.	P6 acupoint stimulation prevented PONV. There was no reliable evidence for differences in risks of postoperative nausea or vomiting after P6 acupoint stimulation compared to antiemetic drugs.	As a Cochrane review this is very high quality – 2 reviewers independent assessment and strict appraising process. The question is focussed and only RCTs are included. They did not attempt to find unpublished literature but this is justified (non peer reviewed data is of poor quality). Used a range of meta-analysis techniques to come to conclusions, accompanied by tests for heterogeneity. Implications for practice are given, but policy outcomes are not discussed. **Grading A** as very high quality review with extensive analysis.

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Lin et al 2009 Using acupressure and Montessori-based activities to decrease agitation for residents with dementia: a cross-over trial	**Design**: Crossover RCT **Setting**: Six special care units for long-term care of residents with dementia, Taiwan **Sample:** 133 residents with dementia and agitation **Health issue**: Agitation **Intervention**: 3 interventions administered in 3 difference sequences. Acupressure was on five points GB20, Du20, He7, Pe6, Sp6 for 2 minutes, once a day, 6 days a week for 4 weeks. Finger pressure and acupoint selection were validated. Other groups were Montessori activities and presence of a visitor. Outcomes were: CMAI (Cohen-Mansfield Agitation Inventory), Ease-of-care inventory, Apparent affect rating scale, all validated. Family visits and restraint use were used as controls as they are independently associated with agitation.	Acupressure group had significantly reduced agitated behaviour (p=0.001) aggressive behaviour (p=0.001) and physically non aggressive behaviour (p=0.02) than presence and significantly better ease-of-care rating (p<0.001) than presence. Montessori group was also significantly better than presence in all these variables as well as positive affect.	Blending of traditional Chinese medicine and a Western activities program would be useful in elderly care.	Rather than individual randomisation institutions were randomised to each sequence. Randomisation process not explained. No sample size calculation or explanation of recruitment. No details of dropout although it appears there were none. Good description of outcome measures which were validated. Intervention validated. Control treatment (presence of a visitor) is not justified and may create bias. No blinding – not possible. No no-treatment control. Good description of limitations. Limited generalisability due to the nature of the institutions (e.g. military so mostly male), although did include 6 locations. STRICTA: 13/16 - Fairly good description and validation of intervention, and control, but no data on practitioner) **Grading B** as no power analysis and crossover design, and lack of detail on follow up.

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Litscher,G. (2004). Effects of acupressure, manual acupuncture and Laserneedle acupuncture on EEG bispectral index and spectral edge frequency in healthy volunteers.	**Design**: randomized, controlled and partly blinded cross-over trial **Setting**: Austria **Sample**: Twenty-five healthy volunteers (mean age +/- SD: 25.5 +/- 4.0yr) were investigated during the awake state. **Health issue**: None, investigating effects of EEG **Intervention**: The acupuncture point Yintang and a placebo control point were stimulated for 10mins. Each person received sensory (acupressure and acupuncture) and optical stimulation (Laserneedle acupuncture) or sham acupressure. The sequence was randomly decided for each patient. Outcomes were measured using electroencephalographic bispectral index, spectral edge frequency and a verbal sedation score.	Bispectral index and spectral edge frequency values both decreased significantly ($P < 0.001$) during acupressure on Yintang to values of 62.9 (minimum 35) +/- 13.9 bispectral index and to 13.3 (minimum 2.9) +/- 8.1 Hz (spectral edge frequency right) and 13.8 (minimum 2.7) +/- 7.3 Hz (spectral edge frequency left), respectively. Bispectral index was also significantly ($P < 0.05$) affected by Laserneedle acupuncture and acupressure on the control point but the changes were not clinically relevant, 95.4 +/- 4 and 94.2 +/- 4.8, respectively. All interventions significantly (Yintang: $P < 0.001$; control point: $P < 0.012$) reduced VSS. Heart rate and Blood pressure were reduced after acupressure.	Acupressure at Yintang gave statistically significant and clinically relevant reductions in BIS and EFV. The study highlights the electroencephalographic similarities of acupressure induced sedation and general anaesthesia as assessed by bispectral index and spectral edge frequency	Volunteer sample and quite small (25). They were paid for participation. Subjects and data collectors blinded. Within subject randomisation of order of treatments (crossover design) to reduce carryover effects. However no analysis of these effects. Also only 20mins between treatments which may not be enough time for effect to wear off, and effects not tested beyond 1min after intervention Controlled to reduce placebo effect. STRICTA ;12/16, background very limited but report of intervention very good. **Grading C** as mechanism study rather than effectiveness, small sample and no control group

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Li et al 2007 Effects of acupressure on lower limb blood flow for the treatment of peripheral arterial occlusive diseases (PAOD)	**Design**: Controlled trial – not clear if randomised or not **Setting**: Not clear, Vascular clinic? Tokyo **Sample:** 30 patients with stage II PAOD **Health issue**: Peripheral arterial occlusive diseases (PAOD) **Intervention**: 3mins acupressure on GB34, ST36, SP9, SP6 after patient felt de-qi, on lower limbs which were symptomatic. Control group (6) had no treatment. Outcome was blood flow, measured by transcutaneous oximetry ($TcPO_2$) monitor	Control group had no significant change in blood flow. Acupressure group had significant decrease in $TcPO_2$ ($p>0.05$) for chest wall, bilateral distal crura, dorsum of foot that was stimulated, and increase in $TcPO_2$ of dorsum of feet which had undergone ipsilateral sympathectomy (p<)	Acupressure was found to cause significant increases in the lower limb blood flow of stage II PAOD patients.	The main issue was the apparent lack of randomisation and the control group of n=6 (acupressure group of n=24). Also, there was very little background, no specific hypothesis, no sample size calculation, no details of follow up/dropouts, limited discussion especially regarding limitations and generalisability. There was no demographic data or comparison of treatment and control groups. Outcome was objective. STRICTA: 10/16 (no details of variation, depth of pressure, setting, practitioner or rationale for control) **Grading C** as small study with very little description of intervention, no randomisation and nonequivalent control/treatment group size.

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Lu et al 2000 Acupuncture/acupressure to treat gagging dental patients: a clinical study of anti-gagging effects	**Design**: Double-blind RCT **Setting**: Dental treatment centre, USA **Sample**: 109 dental patients aged 17-76 years. **Health issue**: Severe gagging which prevented dental procedure. **Intervention**: Patients divided into three groups: 1. Acupuncture at P6 or sham point 2. Acupressure at P6 or sham, further divided into three subgroups using thumb, device or sea-band. 3. Conscious (pharmacological) sedation with either acupressure (3 types) or acupuncture. All for 5 mins (for impression taking) or 3 mins (all other procedures. Dental treatment was then given and the outcome evaluated by treatment team and patient on 4 point ranking scale.	There was a significant difference in outcome for acupuncture (team evaluation p=0.047, patient p=0.009) and for device acupressure (team p=0.002, patient p=0.001) at P6 versus sham point. No other significant differences for acupressure. No significant difference using acupressure with conscious sedation. Acupuncture had a better effect than acupressure. For acupressure, device was better than thumb which was better than Seaband.	Stimulation of P6 with acupuncture needle or acupressure device has an anti-gagging effect for dental procedures.	Double blind, although blinding of practitioners not described. Random group allocation. Small groups Outcome measures not clinical or validated. No details of sample, sampling, comparison of groups on baseline factors, response data, No inclusion criteria. STRICTA 13/16 – good description but lacking detail of control and nothing about practitioner. **Grading B** – double blind and random but limited reporting, especially re sample

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Maa et al 1997 Acupressure as an adjunct to a pulmonary rehabilitation program	**Design**: single-blind pretest-posttest, cross-over **Setting**: two private hospitals **Sample**: Thirty-one new patients beginning a 12-week PRP at two private hospitals were randomly assigned to one of two groups. **Health issue**: dyspnoea and other symptoms in patients with chronic obstructive pulmonary disease (COPD). **Intervention**: Patients in group 1 were taught acupressure and practiced it daily at home for 6 weeks, then sham acupressure for the following 6 weeks. In group 2, the order of acupressure and sham acupressure was reversed. During weeks 1, 6, and 12, patient dyspnoea, other symptoms associated with COPD, activity tolerance, lung function, and functional exercise capacity were assessed. Analysis was extension of a paired t test, regression and sensitivity analysis for a small sample to test for outliers.	Real acupressure was more effective than sham acupressure for reducing dyspnoea as measured by a visual analogue scale (P = .009, one-tailed), and was minimally effective for relieving decathexis (P = .044, one-tailed). Other dyspnoea and other measures showed no significant difference. Sham acupressure seemed to be more effective than real acupressure for reducing peripheral sensory symptoms (P = .002, two-tailed), but the presence of these symptoms may also be an indication that the acupressure is affecting the body.	Acupressure seems to be useful to patients with COPD as an adjunct to a PRP in reducing dyspnoea. Some persons who are not initially familiar with traditional Chinese medicine can learn and will accept self-administered acupressure as part of their self-care	Single-blind (and stated that many patients could identify sham vs real) with placebo treatments. Crossover – patients act as own controls. Gives sample details, reasons for dropout etc, but dropout was high (20 of 51), mostly due to medical reasons. Small sample, although sensitivity test did not identify any idiosyncratic individuals. Outcome measures validated for this group and reliability tested. Placebo controlled. Gender was determined to be a covariable (results significantly different for male/female) STRICTA 6/16 as self-administered there is very little detail on intervention. Control points not given. **Grading B** as patients act as own controls and small sample

Author, date and title	**Study methodology, design, setting, sample, condition and intervention**	**Results**	**Study Conclusions**	**Comments on quality**
Maa et al 2003 Effect of acupuncture or acupressure on quality of life of patients with chronic obstructive asthma: a pilot study	**Design:** prospective, randomized study Setting: Outpatients department of Thoracic medicine, Chang Gung Memorial Hospital (Tao-Yuan, Taiwan) between March 1997 and September 1998. **Sample:** Forty-one (n = 41) patients with chronic obstructive asthma **Health issue:** chronic obstructive asthma **Intervention:** Patients randomly assigned to acupuncture + standard care (n = 11), acupressure +standard care (n = 17), or standard care alone (n = 13). Self-administered acupressure performed daily for 8 weeks. Six-minute walking, Dyspnoea Visual Analogue Scale, modified Borg scale, St. George's Respiratory Questionnaire (SGRQ), and Bronchitis Emphysema Symptom Checklist (BESC) used at the beginning and end of the 8 weeks of treatment. Analysis: ANOVA, Kruskal-Wallis, chi-squared, odds ratio, multiple log regression.	The total SGRQ score of acupuncture subjects showed an average 18.5-fold improvement (95% confidence interval [CI] 1.54-211.48, p = 0.02); the improvement for the acupressure subjects was 6.57-fold (95% C.I. 0.98-44.00, p = 0.05). Additionally, for patients who received acupressure, the irritability domain score determined by the BESC exhibited an 11.8-fold improvement (95% C.I. 0.88-158.64, p = 0.06) after adjustment for covariables. The other variables did not differ from those of the controls	Patients with clinically stable, chronic obstructive asthma experienced clinically significant improvements in quality of life when their standard care was supplemented with acupuncture or acupressure	Pilot study. Small sample, although sensitivity test did not identify any idiosyncratic individuals Non-probability, purposive sampling. High attrition rate (29 out of 70), mostly due to non-medical reasons, plus greater from acupuncture group & not intention to treat analysis -> final sample may have had different views/beliefs of treatment. Not blinded as control group received no intervention. Control and intervention groups are homogenous (no significant differences in demographics). Outcome measures were valid. STRICTA 12/16 (Good detail of acupressure and de qi used, but self-administration limits description) **Grading C** as small sample with high attrition rate

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Maa et al 2007 Self-administered acupressure reduces the symptoms that limit daily activities in bronchiectasis patients: pilot study findings	**Design**: Pilot RCT **Setting**: Outpatient department of thoracic medicine, Taiwan **Sample:** 35 outpatients with bronchiectasis **Health issue**: Symptoms of bronchiectasis that limit daily living. **Intervention**: 3 groups: acupressure, sham acupressure and control (standard care). Acupressure was self-administered on Zhongfu, Chize, Yuji, Fenglong and Zusanli – patients taught to press for 30secs to 2mins each,and to apply at their discretion but minimum of once daily. Sham points were non acupoints near the real points. Outcomes were changes in daily sputum amounts, sputum self-assessment, 6min walking distance, breathing difficulty (dyspnoea visual analogue scale) and health-related quality of life (Saint George Respiratory Questionnaire).	The sputum self-assessment score improved over time for the sham acupressure participants (P = 0.03), when compared with the controls. For acupressure participants, the Saint George respiratory questionnaire activity component scores also improved over time, compared with controls (P = 0.01) after adjustment for covariates (treatment, time, age, sex and baseline values). Other variables did not differ between the standard care alone group and the other two groups	Eight weeks of self-administered acupressure could be useful in reducing the effects of bronchiectasis on a patient's daily activities	Small, non-powered sample, although it is a 'pilot' study. Flowchart. 29% dropout, due to 'non-medical' reasons, although dropouts were not statistically different to completers. No details of randomisation except the use of random number tables. Only single-blinded, although self-administered so those administering acupressure were blinded too! Good description of intervention, setting, and statistics. Good analysis, including GEE to adjust for treatment effect, time, age, sex and baseline values. Little discussion of generalisability or harms. STRICTA: 14/16 (all that was missing was frequency of sessions as these were at patient's discretion) **Grading B** as used sham and control treatment and well reported but had high dropout.

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Ma et al 2007 A systematic review of acupressure for the application on nursing practice. [Chinese]	**Design**: Systematic review **Setting**: N/A **Sample:** A total of 71 relevant articles (RCT and CCT) were identified and included but only 34 were finally appraised. Jadad score scale was used. **Health issue**: nursing practice **Intervention**:	Nursing staff conducted the majority of acupressure interventions. Nurses also had the most opportunities to provide acupressure care; 69 articles (97.2%) found acupressure to deliver positive effects; less than half of the articles (34) remained following our elimination of those that presented substandard researching quality unspecific caring scope or a score of only 1 using Jadad Score evaluation; Of these 34, acupressure techniques were most often applied to 8 symptoms/objects; Factors that should be considered in administering acupressure include methods of treatment, application strength, and application period .	Study results should help clinical nursing staff and student nurses learn acupressure and develop acupressure standard operating procedures. Results further provide direction and design guidance for future research.	Acupressure treatment that used clinical control trials (CCT) or randomize control trials (RCT) to review the quality of conducted research quality and the caring effects of acupressure. No independent analysis for these two different studies. A total of 71 relevant articles were identified and included but 34 were finally appraised. Search words did not use shiatsu Jadad score used to evaluate the quality of study but no details reported. In the CASP for systematic review critical appraisal, just one in ten items are conclusive . The results of this SR are not conclusive. **Grading C** due to poor reporting

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Markose et al 2004 Reduction of nausea, vomiting, and dry retches with P6 acupressure during pregnancy	**Design**: Uncontrolled, one group pre post test design. **Setting**: India? **Sample**: 35 women pregnant less than 12 weeks with nausea with/without vomiting **Health issue**: nausea with/without vomiting during early pregnancy **Intervention:** Acupressure on P6 from the 4th day of study, 10 mins on each hand four times a day for four days. Rhodes Inventory of Nausea, Vomiting and Retching used to record symptoms. McNemar non parametric tests to compare scores before and after treatment.	After treatment (day 7) there was a significant reduction from day 3 of frequency of nausea (p=0.008), vomiting (p=0.000), retching (p=0.004 and distress due to nausea (p=0.002), vomiting (p=0.008) and retching (p=0.016). There was no further decrease from day 8 to 10.	This study found P6 acupressure useful for the reduction of nausea, vomiting and retching**.**	Article is a 'brief communication' so comments are limited. Very small sample. Poor response rate of 17 out of 35. Not RCT – not randomised or controlled. Sample was homogenous for baseline symptoms. Sampling not given. STRICTA 4/16 as brief communication so very limited information **Grading C** as small sample and not randomised or controlled

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
McFadden and Hernandez 2010 Cardiovascular benefits of acupressure (Jin Shin) following stroke	**Design**: randomised, placebo-controlled, single-blind crossover design. **Setting**: Clinical Translation Research Centre Uni of Colorado. **Sample**: community sample who had previously had a stroke. Recruited by electronic and media adverts. N=13 **Health issue**: Stroke symptoms of heart rate and blood pressure. **Intervention**: Acupressure practitioner with > 20 yrs experience gave individualised acupressure for 40mins for 8 sessions. Placebo treatment used placebo points (not on point charts) in sequence determined by random number generator. Scripted dialogue. Analysis used t tests.	Only 16 completed study (out of 113 volunteers– most did not fit eligibility criteria). 13 analysed as 2 were determined to be outliers and one refused measurements. Acupressure reduced heart rate (p=0.043). No significant reduction in BP. Also acupressure reduced heart rate faster than placebo during last 4 treatments of 8 treatment series. Treatment effects not accounted for by expectation.	Active acupressure modulates ANS activity; heart rate reduction and relaxation response were enhanced over and above those seen in placebo acupressure.	Well reported paper with good detail on study design, interventions, randomisation, dropout/follow up, and limitations. Community sample but very small sample size, not powered. Placebo treatment used so specific effects can be isolated. Participants and assessors were blinded. Expectancy of outcome was monitored and controlled for – 60% correctly guessed active treatment. Good clinical outcomes. Large effect size. STRICTA: 12/16. Treatment was individualised so no details of acupoints used or reasoning for treatment. But very detailed description of treatment and placebo treatment. Only generalisable to stroke survivors. Confounder may be high proportion (67% on antihypertensives) **Grading B** as not powered and limited generalisability.

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Ming et al 2002 The efficacy of acupressure to prevent nausea and vomiting in post-operative patients	**Design**: Randomized block experimental **Setting**: Medical centre, Taipei **Sample**: 150 subjects scheduled for functional endoscopic sinus surgery (FESS) under general anaesthesia. Each group consisted of 50 subjects. **Health issue**: Post-operative nausea and vomiting **Intervention**: Patients were matched for motion sickness then randomly assigned to a finger-pressing group, a wrist-band group, and a control group. The acupoints (P6 and H7) and treatment times were similar in the finger-pressing group and wrist-band pressing group, whereas only conversation was employed in the control group. Treatment was for 20mins on three occasions; 1 hour before, directly before and 10 hours after operation. The Rhodes Index of Nausea, Vomiting and Retching (INVR) questionnaire was used as a tool to measure incidence and the State Anxiety Inventory was used.. Data was collected the day before and at random points during 24 hours postoperation.	Significant differences in the incidence of the post-operative nausea ($p=0.001$) and vomiting ($p<0.001$)were found between the acupressure, wrist-band, and control groups, with a reduction in the incidence rate of nausea from 73.0% to 43.2% and vomiting incidence rate from 90.5% to 42.9% in the former. Retching did not differ. Nausea and vomiting were significantly different between groups ($p<0.05$). The amount of vomitus and the degree of discomfort were, respectively, less and lower in the former group ($p<0.01$ and $p<0.001$ respectively). Anxiety decreased in the wrist band ($p<0.05$) and control ($p<0.01$) groups but not for acupressure or overall.	In view of the total absence of side-effects in acupressure, its application is worthy of use. This study confirmed the effectiveness of acupressure in preventing post-operative nausea and vomiting	Good sample size (150) and low attrition rate (98.7%). Block design matched for motion sickness – not sure why. Not blinded. Internal validity controlled by inter rater reliability and independent verification of acupressure points. Limited generalisability (only for FESS patients). Control and intervention groups are homogenous (no significant differences in a wide range of variables). STRICTA 10/16 – very little information on setting, practitioner or rationale for control **Grading A** – 3 arm and randomised

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Molassiotis et al 2007 The management of cancer-related fatigue after chemotherapy with acupuncture and acupressure: A randomised controlled trial	**Design**: RCT **Setting**: Cancer clinic, Manchester, UK **Sample:** 47 patients with cancer and moderate to severe fatigue **Health issue**: Fatigue (general/ physical/ activity/motivation/ mental) **Intervention**: three groups: acupuncture, acupressure, sham acupressure. Points: LI4, SP6, ST36, all bilaterally. Acupressure taught to massage points 1 min each daily for 2 weeks. Sham points were LI12, GB33, BL61 (no indication for 'energy'). Multidimensional Fatigue Scale.	Significant improvements were found with regards to General fatigue ($P < 0.001$), Physical fatigue ($P = 0.016$), Activity ($p = 0.004$) and Motivation ($P = 0.024$). At the end of the intervention, there was a 36% improvement in fatigue levels in the acupuncture group, while the acupressure group improved by 19% and the sham acupressure by 0.6%. Improvements were observed even 2 weeks after treatments, although they were lower (22%, 15%, 7%, respectively). Acupuncture was a more effective method than acupressure or sham acupressure.	Acupuncture shows great potential in the management of cancer-related fatigue. Acupressure mean improvement was 19%which is clinically significant and could be a useful alternative treatment.	Good background and description of interventions and randomisation. Outcome measure was validated. Patients were blinded regarding acupressure vs sham. Sample size adequate for 'preliminary' trial although not formally powered. Detailed analysis and good flowchart to show dropout etc – 85% follow up, comparable in all 3 groups. Limitations and harms reported, but little on generalisability (which is likely affected by using newspaper ad to aid recruitment). STRICTA: 15/16 – they state using STRICTA guidelines but this applies more to acupuncture than acupressure. **Grading A** as double blinded and placebo controlled. Well reported, including STRICTA

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Moriarty 2007 Psychophysiologic responses to acupressure used as a pre-birth treatment at full term gestation	**Design**: One group repeated measures **Setting**: Midwifery Department, Illinois, USA **Sample:** 25 in 39th week of pregnancy **Health issue**: To enhance spontaneous labour and reduce need for induction. **Intervention**: 30min, approx 2mins gradual, steady pressure (until de qi) on LI4, GB34, St36, Sp6, Kid3, Li3 and Bl60, bilaterally. Validated by an expert. Outcome measures were vital signs, skin temp, salivary amylase and cortisol, STAI, VAS for anxiety and tension, electronic fetal heart rate and uterine contraction monitoring, maternal perceptions questionnaire, all at 4 time points – 30mins before treatment, immediately before and after and 30mins after.	a) maternal heart rate was significantly decreased from the pre to post-treatment period, p= 0.003 b) maternal anxiety was decreased after this specific one time APR prebirth treatment as measured by the State Trait Anxiety Inventory (STAI) p= 0.002, and visual analogue scale (VAS) p= 0.0001; c) maternal tension was reduced after this specific one time APR pre-birth treatment as measured by the VAS p< 0.0001; d) fetal stress was not invoked and the overall fetal heart rate tracing was stable and reassuring; e) uterine contractions lasting 31-60 seconds and ~ 61 seconds were not quantitatively increased during the 1.5 hour study period. In the current study with this specific APR pre-birth treatment respirations, oral temperature, core to peripheral skin temperature, mean arterial pressure (MAP), and systolic blood pressure were not altered. The diastolic blood pressure significantly decreased from immediately prior to the APR pre-birth treatment (T2) to 30 minutes post APR pre-birth treatment (T4), p= 0.033. Our hypothesis of an APR-elicited	Overall, the effect of the APR pre-birth treatment *did not activate* the maternal or fetal stress response. Maternal heart rate and diastolic blood pressure decreased. It can be reasonably concluded that the APR pre-birth treatment was not associated with *activation* of the stress response. Treatment was not associated with a significant increase in salivary cortisol and was therefore unlikely to be activating the hypothalamic-pituitary adrenal-axis or the stress response. There were no indicators of fetal stress with the APR pre-birth treatment and fetal heart rate was reassuring and stable. While frequency of uterine contractions did not display an APR pre-birth treatment dependent quantitative change a qualitative change was noted by the study subjects. Study participants perceived that treatment decreased anxiety and tension. Impossible to determine that a given outcome was actually caused by the intervention (due to study limitations).	No control group or blinding. Volunteer sample (they volunteered for acupressure) and small (n=25). Very strict criteria including aged 21 to 40, which limits generalisability. Good range of outcome measures, both objective and subjective. Intervention was well described and expert-validated. Good description of setting etc. 100% follow up. Controlled for time of day and a range of other factors affecting cortisol and amylase. Good discussion STRICTA: 14/16 (pressure not defined and variation not clear as de qi was used). **Grading B** as no control or blinding but good measures and control of confounders.

		decrease in maternal stress response was not supported based on measurement of salivary cortisol level and alphaamylase activity.		

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Pouresmail and Ibrahimzadeh 2002 Effects of acupressure and ibuprofen on the severity of primary dysmenorrhoea	**Design**: 3-armed RCT **Setting**: 3 High Schools, Iran. **Sample**: 216 female high school students, aged between 14 to 18 years, were randomly selected and divided into three groups **Health issue**: Primary dysmenorrhoea (PD) **Intervention**: Each group underwent different treatment techniques: acupressure, Ibuprofen and sham acupressure as a placebo. Acupressure was on Li4, SP15, ST36,Sp6 and LR3 for 2mins each, sham was four sham points ,not acupoints, and Ibuprofen was 9 tablets (400ml), all for 3 days starting 24 hours before onset of period. Acupressure and sham also had a relaxation session. 2 checklists were used to assess the severity of dysmenorrhoea before and after treatment.	The results indicated that the three therapeutic techniques were significantly effective in reducing the pain, with a before and after reduction ($p<0.01$) for all three. The score on the dysmenorrhoea scale was 0 for 0% before, increasing to 50% after acupressure, 36% in Ibuprofen and 18% in placebo. However the therapeutic efficacies of acupressure and Ibuprofen were similar with no significant difference, and were significantly better than the placebo.	Acupressure, with no complications, is recommended as an alternative and also a better choice in the decrease of the severity of PD	Random sample. 3 armed RCT Selected from a range of socio-economic backgrounds. Followed up for 3 months prior to study to determine menstruation pattern. Outcome measure not clinical. Low attrition rate. Not clear if provider or patient blinded (in sham vs acupressure). Very strict inclusion criteria may reduce generalisability. STRICTA: 6/16 (very brief description of treatment, and self-administered) **Grading B** as randomised and controlled but poorly reported

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Shiao and Dune 2006 Metaanalyses of acustimulations: effects on nausea and vomiting in postoperative adult patients Thirty-three quality randomized controlled trials (RCT) published over the past three decades were identified by evaluating the quality of randomization and treatment methods, and results were pooled using a fixed effects model.	**Design**:Meta analysis **Setting**: N/A **Sample**: RCTs on any acupoint stimulation for nausea and vomiting symptoms (NVS) in postoperative adult populations. **Health issue**: nausea and vomiting symptoms (NVS) in postoperative adult populations. **Intervention**: Metaanalyses of effects of various acupoints stimulations (AS) (including acupuncture, acupressure, and electrical stimulation) on NVS in postoperative adult populations were performed. Two reviewers independently reviewed and evaluated all relevant information and data was pooled.	24 trials pooled for nausea, 29 for vomiting, and 19 for rescue antiemetics, with AS compared with placebo or controls. 2 additional trials compared AS to medication groups. Compared to controls, AS reduced nausea (relative risk [RR] = 0.60, 95% confidence interval [CI]: 0.54-0.67, P < .0001), vomiting (RR = 0.51, 95% CI: 0.45-0.57, P < .0001), and use of rescue antiemetics (RR = 0.63, 95% CI: 0.54-0.74, P < 0001). All AS modalities were effective in reducing NVS. There were no significant differences on pooled RRs for nausea (five trials) and vomiting (eight trials) between medication and AS groups, but medication groups had increased use of rescue antiemetics (two trials, RR = 2.27, 95% CI: 1.48-3.49, P = .0002). There was a placebo effect when compared with controls in reducing nausea (four trials, RR = 0.67, 95% CI: 0.50-0.90, P = .0069) and vomiting (three trials, RR = 0.39, 95% CI: 0.19-0.80, P = .0106).	This metaanalysis demonstrated that AS is just as effective as medications in reducing NVS and that acupressure is just as effective as acupuncture or electrical stimulation in reducing NVS for postoperative adult populations	Some grey literature included. Only RCTs Good selection process. Studies used had quite similar procedures and outcomes allowing combinability. 18 acupressure trials identified. STRICTA N/A **Grading A** – well conducted and reported

Author, date and title	**Study methodology, design, setting, sample, condition and intervention**	**Results**	**Study Conclusions**	**Comments on quality**
Shin et al 2004 Effect of acupressure on nausea and vomiting during chemotherapy cycle for Korean postoperative stomach cancer patients.	**Design:** Non-equivalent, control group trial**.** **Setting**: Oncology wards at University Medical Centres, South Korea. **Sample:** Forty postoperative gastric cancer patients receiving the first cycle of chemotherapy with cisplatin and 5-Fluorouracil Health issue: Nausea and vomiting associated with cancer chemotherapy Intervention: Both groups received regular antiemesis medication; however, the intervention group (n=20) received acupressure training and was instructed to perform the finger acupressure manoeuvre for 5 minutes on P6 (Nei-Guan) point located at 3-finger widths up from the first palmar crease, between palmaris longus and flexor carpi radialis tendons point, at least 3 times a day before chemotherapy and mealtimes or based on their needs. Both groups received equally frequent nursing visits and consultations. Nausea and vomiting measured by Rhode's Index of Nausea, Vomiting and Retching, side effects assessed by data from medical records. Groups compared for severity, duration and frequency of	Significant differences found between intervention and control groups in the severity of nausea and vomiting, the duration of nausea, and frequency of vomiting (all $p<0.01$). Repeated measures ANOVA showed significant time effects for all three aspects ($p<0.01$) and interaction effect (with time) was significant for duration ($p<0.01$) and frequency ($p<0.05$).	This study suggests that acupressure on P6 point appears to be an effective adjunct manoeuvre in the course of emesis control	Small sample and not randomised (convenience sampling and allocation; first 20 patients in control group, next 20 in intervention group). Although control and intervention groups are homogenous (no significant differences in demographics, disease or treatment variables) Not clear if all patients were from the same hospital. Limited to patients with stomach cancer and on specific drug regimen. Acupressure self/family administered. Tests acupressure as an adjunct to standard care (anti emetic drugs used in both groups). Intervention group had additional attention from research staff. Highly significant results Tested for interaction effects. Self-reported N&V may be subject to recall bias, although measure has high reliability. **Grading B**

	nausea and vomiting using t tests and two way ANOVA			STRICTA: 7/16 (very poor description of acupressure although background and setting are covered)

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Reza et al 2010 The effect of acupressure on quality of sleep in Iranian nursing home residents.	**Design**: RCT **Setting**: Nursing home, Iran **Sample:** 77 (90 included but 13 dropped out) elders 60+ with PSQI score >5. **Health issue**: Sleep disturbance **Intervention**: Acupressure at HT7, K11, SP6 and Anmian. Placebo group received identical massage at points ½ cun from real points and control group routine care only. Outcomes were PSQI and a daily sleep log.	There were significant differences between the acupressure group and the control group in subjective sleep quality (p=0.028), sleep latency (p=0.001), sleep duration (p=0.007), habitual sleep efficiency (p=0.028) and sleep disturbance (p=0.013). But no significant differences were found in sleep indices between the sham acupressure group and the control group. Sleep log data showed a significant decrease in nocturnal awakenings in acupressure group compared to other two groups (p=0.017).	The findings of this study indicated that acupressure has an effect on improvement of sleep quality and endorsed it as a non-pharmacological and complementary therapy for sleep-disturbed elderly people.	Sample was randomly sampled and powered. No data on methods of group randomisation. 85% follow up and reasons for dropout given. Good comparison of baseline characteristics (demographic and clinical). Both placebo and control groups used. Participants, care givers and assessors were blinded to group assignment. Discussion very limited esp re limitations of study and generalisability. STRICTA only 8/16 items reported (no details of timing, number of times pressure applied, number/frequency of treatments or setting and context. Sham briefly described but not justified) **Grading B** as very well designed with large sample and good outcomes but poorly reported

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Salam 2008 An investigation into the effectiveness of acupressure in the control of orthodontic pain	**Design**: RCT **Setting**: Three hospitals in Manchester, UK **Sample:** 36 patients aged 11 to 16 undergoing fixed appliance orthodontic treatment. **Health issue**: Pain of orthodontic treatment **Intervention**: Random allocation to one of three groups: 1) self-administered acupressure at Li4, 2) oral analgesic control, 3) sham acupressure (non acupoint). Pain diaries used with VAS from 4 hours to 7 days after treatment.	After visit 1, group 2 reported the highest incidence of pain related to their back teeth and had their diets most affected by pain, both of which were statistically significant at 4 hours (p=0.013 and p=0.021 respectively) and 24 hours post-treatment (p=0.002 and p=0.011 respectively). After 7 days the overall pain reported was very low but was still felt amongst some subjects from their front and back teeth. After visit 2, there was no statistically significant difference between the groups regarding pain levels at 4 hours, 24 hours and 7 days. Group 2 reported the most pain at 4 and 24 hours post-treatment. After 7 days, group 1 felt the most pain from the front and back teeth and had their diet most affected due to pain.	1) Overall group 2 experienced the most pain between the groups which was statistically significant between the groups for visit one at 4 and 24 hours, reported from their back teeth and their diet being affected by pain. 2) There was no difference in the effectiveness of pain relief after an orthodontic procedure between the definitive acupressure technique and the sham one.	The main flaw with this study is poor recruitment and high dropout. Sample size was calculated as needing to be 156, but only 37 were recruited, and only 23 completed the study. Good details and flowchart of patient flow. Although it was well randomised (very well described randomisation process) and had three arms, it was not blinded. The intervention is well described but only one outcome measure STRICTA: 13/16 (as self administered there is no detail of variation). **Grading C** due to sample size limitations.

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Shin and Lee 2007 Effects of Aromatherapy Acupressure on Hemiplegic Shoulder Pain and Motor Power in Stroke Patients: A Pilot Study	**Design**: RCT **Setting**: Dept of Oriental Rehabilitation Medicine, Iksan, South Korea **Sample:** 30 Stroke patients at clinic with hemiplegic shoulder pain **Health issue**: hemiplegic shoulder pain **Intervention**: Experimental group received 20min sessions twice daily for 2 weeks (28 treatments) of acupressure and aromatherapy (rosemary, lavender, and peppermint in a 2:1:1 ratio diluted to 3% in jojoba oil) at acupuncture points related to shoulder pain LI15, SI9, TE14, GB21, SI 11, SI 12. Acupressure only group received dry acupressure at same points. Outcome measures were verbal pain rating scale and level of motor power test.	The pain scores were markedly reduced in both groups at post-treatment, compared to pretreatment (both aroma acupressure and acupressure group, *p* _ 0.001). A nonparametric statistical analysis revealed that the pain score differed significantly between the 2 groups at post-treatment (*p* _ 0.01). The motor power significantly improved at post-treatment, compared to pretreatment, in both groups (*p* _ 0.005). However, there was no intergroup difference between two groups	These results suggest that aromatherapy acupressure exerts positive effects on hemiplegic shoulder pain, compared to acupressure alone, in stroke patients.	Tested the effects of aromatherapy rather than acupressure. This was a pilot study so had a small sample which was not powered. Groups were randomly assigned and methods of randomisation are detailed (block and random number tables) including who did the randomisation. No non-treatment control so possible placebo effect. No blinding. 100% follow up. Outcomes were validated. Good discussion of limitations etc. Little data on trial design STRICTA: 11/16 (Little data on pressure applied, how long for, how many times each point was pressed. No data on who gave treatment). **Grading B** as small sample, pilot study, and no non-treatment control

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Shin et al 2007 Effect of Nei–Guan point (P6) acupressure on ketonuria levels, nausea and vomiting in women with hyperemesis gravidarum	**Design**: RCT **Setting**: 2 general hospitals, Korea **Sample:** Women with hyperemesis gravidarum. N=66 **Health issue**: Hyperemesis gravidarum **Intervention**: Three groups randomly assigned using coin tossing: a Nei–Guan point acupressure group, a placebo group and a control group which received only conventional intravenous treatment. Acupressure group received 7-second acupressure with 2-second pauses, three times daily before breakfast, lunch and dinner. Each session lasted 10 minutes. Placebo point was bony part around the radial pulse at the wrist. Rhodes et al. (1984) Index of Nausea, Vomiting and Retching (INVR) and midstream urine test for ketonuria were measured.	The degree of nausea and vomiting was statistically significantly lower in the Nei–Guan point acupressure group in comparison with the placebo and control groups. Ketonuria levels were reduced over time and, on days three and four of hospitalization, levels in the treatment group were statistically significantly lower than in the placebo or control groups ($P < 0.05$).	Nei–Guan point acupressure is a useful treatment for relieving symptoms experienced by women with hyperemesis gravidarum	Sample from 2 hospitals and sample size powered. Generalisability not discussed. Good background. Trial was double blind and had three groups to identify specific and non specific effects. Also use of objective and subjective outcome measures is good. Good description of intervention and randomisation method. Little data on follow up or drop outs and no subgroup analyses. STRICTA: 11/16 (good description of intervention and background but not of setting or practitioner experience) **Grading A** as double blind and controlled with powered sample size

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Sugiura et al 2007 Heart rate and electroencephalogram changes caused by finger acupressure on planta pedis	**Design**: Uncontrolled before and after study. **Setting**: University, Hamamatsu, Japan **Sample:** 22 University students **Health issue**: Not clear – heart rate and brain activity **Intervention**: Acupressure on yu-sen (2mins), souk-shin (1min) and shitsu-min (1min) on soles of both feet with 5 mins resting each side. Heart rate and EEG were measured during the whole treatment.	The power of the alpha-1 frequency range increased slightly during acupressure but was not statistically significant, heart rates decreased in all subjects ($p<0.05$).	Acupressure on key points on both soles decreased heart rates in all subjects, while the EEG responses in spectral power varied according to the individual. This preliminary study suggests that a classification of subjects is necessary in understanding brain wave data during acupressure on soles.	Uncontrolled study with a small sample so subject to numerous biases. No details of recruitment or whether participants were healthy. Good clinical measurements and, unusually, measured throughout the treatment. Appropriate statistics (one way ANOVA). STRICTA: 12/16 (although reasoning was brief and no control to be described. Missing details of pressure and practitioner background). **Ungraded as not an effectiveness study (mechanisms)**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Sun 2006 Effect of improving eyesight brain tonic exercise in preventing and curing myopic eye: A multiple-statistical analysis. [Chinese]	**Design**: RCT **Setting**: in 7 middle schools and primary schools in Jiaozuo China. **Sample:** n=40. **Health issue**: myopic eye **Intervention**: training group(n=25) received eye exercises and no treatment control group (n=15) without anything. Eye exercise included: pressing Yannei, Yanshang, Yanwai and Yanxia; scaling orbit alternatively and pressing Fengchi acupoint; turning eyeball to gaze into the distance; closing eyes for relaxing and feeling eyeballs dragged flatly; open eyes to look far away green plant; deep breath. Once a day for 3 months. Before and after analysis with rank sum test.	RESULTS: According to intension, data of 40 students were analyzed with multiple statistical analyses. ①Results of eyesight in training group with rank sum test before and after exercise: Average naked vision was improved 0.08 after 3 -month training, and the increasing rate of eyesight was 32.89%: poor rate of eyesight Was decreased 8.94% after 3 month training ($U=4.7648, P<0.01$). ② Random samples of students in blank control group before and after experiment: Poor rate of eyesight was increased 1.71% after 3- month training, but there was not significant difference from that before experiment($U=0.7577$, $P>0.05$)	Multiple-statistical analysis shows that improving eye-sight brain tonic exercise is an effective method to prevent and cure myopic eye for students by themselves.	Poor study quality; But the condition studied in this article is rare at present; Not a real randomized control study. No clear measurements mentioned. The design has many confounders. STRICTA – 9/16; the intervention procedure is not valid and reliable. **Grading C –** only 3 in 37 items present in the critical appraisal of CONSORT.

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Sun et al 2009 Effectiveness of acupressure for residents of long-term care facilities with insomnia: A randomized controlled trial	**Design**: RCT **Setting**: Long term care facilities, Taiwan **Sample:** n=44 residents with insomnia. **Health issue**: insomnia **Intervention**: 25 participants allocated to the experimental group and 25 participants to the control group. For a 5-week period, the experimental group received standard acupressure on the HT7 points of both wrists (5sec pressure, 1 sec rest for 5 mins), whereas the control group received only light touch on the same places. Insomnia was measured with the Athens Insomnia Scale-Taiwan form (AIS-T). Participants' self-reported scores were done at baseline, during the 5-week period, and after intervention. This study was analyzed on an intention-to treat procedure	The experimental group has significantly better scores on the AIS-T compared to the control group, not only during the intervention period, but also extending after intervention, as shown by generalized estimating equations ($p < 0.05$).	Offering acupressure on a regular basis has the potential to improve insomnia in residents of long-term care facilities. Acupressure on the HT7 point may improve insomnia for up to 2 weeks after the intervention	Sample was powered but may need to be larger to be generalisable. 88% follow up with reasons given and intention to treat analysis used. Intervention was valid except it was administered by 2 different staff due to shift timings. Outcomes translated and back translated for validity. Analysis controlled for time and group, but could have been controlled for other factors too. Very good reporting of background, changes to study, randomisation procedure, analysis and discussion. STRICTA: 12/16 (good description of intervention details but less on setting) **Grading A** as powered, blinded and sham controlled with valid outcomes

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Tsay and Chen 2003 Acupressure and quality of sleep in patients with end-stage renal disease--a randomized controlled trial **Note this is based on the same study as ref 90** (Tsay,S.L., Rong,J.R., and Lin,P.F. (2003). Acupoints massage in improving the quality of sleep and quality of life in patients with end-stage renal disease)	**Design**: randomized controlled trial **Setting**: Dialysis centers of four major hospitals **Sample**: 98 participants were randomly assigned into an acupressure group, a sham acupressure group, and a control group. **Health issue**: sleep quality of end-stage renal disease patients **Intervention**: Patients were randomly assigned into an acupressure group, a sham acupressure group, and a control group. Acupressure and sham acupressure group patients received acupoints (H17 & Ki1) or no acupoints massage (5mins relaxing massage, 9 mins acupoint massage) three times a week during haemodialysis treatment for a total of 4 weeks. Control group received no additional intervention (standard care). The main outcomes measured were the Pittsburgh sleep quality index (PSQI) and the daily sleep log. Data were collected at pre-treatment (before randomisation) and following treatment. Primary statistical analysis was by means of Analysis of Covariance, the Kruskal-Wallis Test and repeated measure ANOVA.	The results indicated that PSQI scores of the acupressure group have a significantly greater improvement ($p < 0.01$) than the control group. However, there were no differences between the acupressure group and the sham group or the sham group and the control group ($p > 0.05$). Subscales of PSQI were further analyzed. Results demonstrated significant differences between the acupressure group and the control group in subjective sleep quality ($p = 0.009$), sleep duration ($p = 0.004$), habitual sleep efficiency ($p = 0.001$), and sleep sufficiency ($p = 0.004$). Significant differences in the subscale of subjective sleep quality ($p = 0.003$) between the sham acupressure group and the control group were also observed. Sleep log data showed that the acupressure group significantly decreased awake time and improved quality of sleep over time more than the control group ($p < 0.01$). The improvement could be seen as soon as the acupoints massage was implemented, and it was maintained through the post intervention	This study supports the effectiveness of acupoints massage in improving the quality of sleep and life quality of end-stage renal disease patients, and offers a noninvasive therapy for sleep-disturbed patients	Blinded (interviewer/data collector, usual care provider, participant) but not researcher or acupressure nurse. Three armed. Outcome measures are reliable. Attrition was low (98 from 105) Reliability and validity of acupressure procedure established. Groups homogenous for demographics, sleep affecting behaviour and ESRD related factors. Bonferroni correction used to control for type 1 error. Limited generalisability (renal end stage and northern Taiwan) STRICTA: 9/16 – good description of treatment but little information on background, setting, practitioner **Grading B** as three armed and blinded but poorly reported

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Tsay et al 2003 Acupoints massage in improving the quality of sleep and quality of life in patients with end-stage renal disease **Note this is based on the same study as ref 93 (**Tsay,S.L. and Chen,M.L. (2003).Acupressure and quality of sleep in patients with end-stage renal disease--a randomized controlled trial)	**Design**: Randomized control trial **Setting**: Four outpatient dialysis centres in hospitals in Taipei. **Sample**: 98 end-stage renal disease patients with sleep disturbances **Health issue**: Sleep disturbance and diminished quality of life in patients with end-stage renal disease **Intervention**: Patients were randomly assigned into an acupressure group, a sham acupressure group, and a control group. Acupressure and sham acupressure group patients received acupoints or no acupoints massage (5mins relaxing massage, 9 mins acupoint massage) three times a week during haemodialysis treatment for a total of 4 weeks. Control group received no additional intervention (standard care). Data collected at baseline and one week after course, using Pittsburgh Sleep Quality Index, and the Medical Outcome Study - Short Form 36. Plus daily Sleep Log.	Significant differences between the acupressure group and the control group in Pittsburgh Sleep Quality Index subscale scores of subjective sleep quality (p=0.009), sleep duration (p=0.004), habitual sleep efficiency (p=0.001), sleep sufficiency (p=0.004), and global Pittsburgh Sleep Quality Index scores (p=0.003). No significant difference between acupressure and sham. Sleep log data revealed that the acupressure group significantly decreased wake time and experienced an improved quality of sleep at night over the control group. Medical Outcome Study - Short Form 36 data also documented that acupressure group patients experienced significantly improved quality of life on a number of subscales: physical role (p=0.01), body pain (p=0.001), vitality (p=0.001), social function (p=0.05), total physical (p=0.05) and total mental (p=0.05). These were greater for acupressure group.	This study supports the effectiveness of acupoints massage in improving the quality of sleep and life quality of end-stage renal disease patients, and offers a noninvasive therapy for sleep-disturbed patients	Blinded (interviewer, usual care provider, participant) but not researcher or acupressure nurse. Three armed. Outcome measures are reliable. Attrition was low (98 from 105) Reliability and validity of acupressure procedure established. Groups homogenous for demographics, sleep affecting behaviour and ESRD related factors. Limited generalisability (renal end stage) STRICTA: 14/16 – very good reporting of details of acupressure and background. Setting and rationale for control are missing. **Grading A** due to three armed and blinded design with low attrition and good reporting.

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Tsay 2004 Acupressure and fatigue in patients with end-stage renal disease-a randomized controlled trial ***Note this is very similar to 90 and 93 (**Tsay,S.L., Rong,J.R., and Lin,P.F. (2003) and Tsay,S.L. and Chen,M.L. (2003)), **but the sample size is different (same as** Tsay,S.L., Cho,Y.C., and Chen,M.L. (2004).) **so not sure if this is an original study.**	**Design**: a randomized control trial **Setting**: not clear **Sample**: 106 participants **Health issue**: fatigue in patients with end-stage renal-disease (ESRD). **Intervention** Random assignment to acupressure, sham or control group. Acupressure 3mins of relaxing massage then 3mins per acupoint on K1, St36, GB34 and Sp6. Sham was sham points. Acupressure three times a week for 4 weeks Control group only received routine unit care. All instructed not to massage any acupoints. Measures: revised Piper Fatigue Scale (PFS), VAS of Fatigue, the Pittsburgh Sleep Quality Index and the Beck Depression Inventory. Data of collected pretreatment and a week following treatment. Sleep quality and depression were collected during post-test only. The statistical methods included the descriptive statistics, one-way ANOVA, ANCOVA, and repeated-measures ANOVA.:	ANCOVA that adjusted for differences in baseline fatigue scores (PFS), post-test of depression and sleep quality, result was significant, $F(2,100)=3.99$, $p=0.02$. Post-hoc tests revealed that patients in the acupressure group were significantly having lower scores of fatigue than patients in the control group. ANCOVA results also significant for VAS of Fatigue among groups, $F(2,100)=5.63$, $p=0.003$. Comparisons indicated that there were significant differences between the acupressure group and the control group ($p=0.01$) and between the sham group and control group ($p=0.003$). Predialysis fatigue was assessed routinely by using a rating of 0-10. Repeated-measures ANOVA results demonstrate the group main effect was significant in the perceived fatigue ($p<0.001$). Follow-up significant differences between acupressure and control groups ($p<0.001$) and sham and control ($p<0.001$).	The study provided an alternative method for health care providers to managing ESRD patients with fatigue	Random group assignment. Three armed (treatment, placebo and control) BUT NOT blinded (in conclusion – "*obviously patients are aware that they are receiving acupoints or nonacupoints treatments*") Control and intervention groups are homogenous (no significant differences in demographic and clinical factors) and baseline factors were controlled for. Reliability and validity of procedure evaluated (expert validation). Internal consistency of outcome measures good. STRICTA: 12/16 – good description of acupressure including timings and pressure, as well as practitioner. Little info on control treatment. **Grading A due to random three armed design and good reporting**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Tsay et al 2004 Acupressure and Transcutaneous Electrical Acupoint Stimulation in improving fatigue, sleep quality and depression in hemodialysis patients	**Design**: Prospective, randomized controlled trial **Setting**: 4 dialysis centres in major hospitals in Northern Taiwan. **Sample**: 106 patients randomly assigned to acupressure, Transcutaneous Electrical Acupoint Stimulation (TEAS) or control groups. **Health issue**: Fatigue, sleep quality and depression in patients who were receiving routine hemodialysis treatment **Intervention**: Acupressure and TEAS groups had 15 mins 3 times a week for 1 month, instructed not to massage acupoints. Acupressure was 3mins of relaxing massage then 3mins on K1, St36, GB34 and Sp6. Three times a week for 4 weeks Patients in the control group only received routine unit care. Measurement included the revised Piper Fatigue Scale (PFS), the Pittsburgh Sleep Quality Index and the Beck Depression Inventory. Data collected at baseline, during intervention and post-treatment.	The results indicated that patients in the acupressure ($p=0.006$) and TEAS groups ($p=0.02$) had significantly lower levels of fatigue, a better sleep quality ($p=0.05$ and $p=0.016$ respectively) and less depressed moods ($p=0.009$ and $p=0.008$ respectively) compared with patients in the control group based upon the adjusted baseline differences (group main effect was significant $p<0.001$). However, there were no differences between acupressure and TEAS groups in outcome measures ($p>0.05$).	This study provides an alternative method for health care providers in managing dialysis patients with symptoms of fatigue, poor sleep or depression	Random group assignment. Three armed. Sample size was powered. Reliability and validity of procedure evaluated (expert validation). Internal consistency of outcome measures good. Very low attrition rate (2 out of 108). Groups homogenous. ANCOVA to test for baseline differences to establish group effect as main effect. No details of blinding. Low generalisability (haemodialysis patients in northern Taiwan). STRICTA: 12/16 (very good description of acupressure including pressure, *de qi* and timing, but not control) **Grading A due to RCT design and three armed**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Tsay et al 2005 Effects of acupressure therapy for patients having prolonged mechanical ventilation support	**Design**: Two group experimental blocking design. **Setting**: Two intermediate respiratory intensive care units. The study was carried out in 2003. **Sample**: 52 patients with chronic obstructive pulmonary disease in northern Taiwan. **Health issue**: dyspnoea, anxiety and physiological indicators of heart rate and respiratory rate in patients with chronic obstructive pulmonary disease having mechanical ventilation support. **Intervention**: After matching for sex, age and length of ventilation use, patients were randomly assigned to an acupressure group and a comparison group. In the experimental group received daily acupressure therapy and massage treatment for 10 days, on L14, PC6, HT7 for 4mins each and 3mins relaxing massage. Patients in the comparison group received massage treatment and handholding. The primary outcome measures were the visual analogue scales for dyspnoea and anxiety, and physiological indicators of heart rate and respiratory rate. Data were collected every day from baseline (day 1), during the treatment (days 2-10) and follow-up (days 11-17). Data were analysed using generalized estimation equations.	Patients with chronic obstructive pulmonary disease who were using prolonged mechanical ventilatory support experienced high levels of dyspnoea and anxiety. Dyspnoea ($P = 0.009$), anxiety ($P = 0.011$) Heart rate ($p=0.005$) and respiratory rate ($P < 0.0001$) in the acupressure group improved statistically significantly over time when compared with those of the comparison group.	This results support the suggestion that acupressure therapy could decrease sympathetic stimulation and improve perceived symptoms of dyspnoea and anxiety in patients with chronic obstructive pulmonary disease who are using prolonged mechanical ventilation	Sample size powered. Procedure reliable and valid (expert validation). Clinical outcome measures (HR and RR) as well as self-reported (VAS) Single blinded (patients, data collectors and caregivers) but not researchers, nurses giving acupressure. Groups homogenous for baseline demographics and clinical factors. Used GEE to control for confounding variables. No information on dropout/compliance rates. STRICTA: 11/16 (validated and reliability tested treatment, good explanation of TCM theory, but little detail of setting or control) **Grading A** as controlled for confounders and powered sample size

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Waters and Raisler 2003 Ice massage for the reduction of labour pain	**Design:** A one-group, pretest, posttest design **Setting:** Hospital in New Mexico **Sample:** Hispanic and white Medicaid recipients who received prenatal care at a women's clinic staffed by certified nurse-midwives and obstetricians **Health issue:** labour pain during contractions **Intervention:** Ice bag was applied to Li4 during contractions for 20mins each hand. A family member was then taught the procedure so could continue. The study used 100-mm Visual Analog Scales (VAS) and the McGill Pain Questionnaire (MPQ) ranked numerically and verbally to measure pain levels; the pretest served as the control. Analysis was standard analysis of variance.	Participants noted a pain reduction mean on the VAS of 28.22 mm on the left hand and 11.93 mm on the right hand. The postdelivery ranked MPQ dropped from number 3 (distressing) to number 2 (discomforting).	The study results suggest that ice massage is a safe, noninvasive, nonpharmacological method of reducing labour pain	No control or randomisation or blinding. Convenience sample, no sample size calculated. Low dropout rate (4 from 53). Only early labour stages investigated due to difficulties completing VAS later on. Limited generalisability. No monitoring of extra use of ice (by family member) which was an option. Statistical analysis was limited. STRICTA: 8/16 (poor description of acupressure although good background) **Grading B** as not controlled and convenience sampling

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Wong et al 2010 Effects of SP6 acupressure on pain and menstrual distress in young women with dysmenorrhoea	**Design**: RCT **Setting**: Nursing school, Chinese University of Hong Kong, Hong Kong **Sample:** University students from 2 classes in the nursing school with dysmenorrhoea. N=40 **Health issue**: dysmenorrhoea **Intervention**: Acupressure on SP6 during first 24h of menstrual cycle. 20mins of acupressure from researcher alternating between legs. 15s pressure, 15s rest 10 times (5mins), repeated twice on both legs (20mins), at 3kg pressure. Then given booklet and taught to do it at home, did it on waking and bedtime for first 3 days of next three menstrual cycles. Pain VAS, McGill pain Q and menstrual distress scales used. Control group rested for 20mins and asked to rest for 20mins same timings as acupressure group	There was a statistically significant decrease in pain score for PVAS (p = 0.003) and SF-MPQ (p = 0.02) immediately after the 20 min of SP6 acupressure. In the self-care periods, significant reduction of PVAS (p = 0.008), SF-MPQ (p = 0.012), and SF-MDQ (p = 0.024) scores was noted in the third month of post-intervention	SP6 acupressure has an immediate pain-relieving effect for dysmenorrhoea. Moreover, acupressure applied to the SP6 acupoint for 3 consecutive months was effective in relieving both the pain and menstrual distress level resulting from dysmenorrhoea	Sample size not powered and limited as University students of certain age. Classes are randomised instead of individuals No blinding or sham control. Follow up 40/46. No data on subgroup analysis or drop outs. No details of randomisation procedure. Outcome measures all valid. Good description of intervention. STRICTA: 13/16 (very good description of pressure, points, setting, background. No details of practitioner) **Grading B** as no sham control and individuals not randomised

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Wu et al 2004 Effectiveness of acupressure in improving dyspnoea in chronic obstructive pulmonary disease.	**Design**: A randomized block experimental design. **Setting**: Outpatients department at a medical centre and three regional hospitals in Taipei. **Sample**: 44 patients diagnosed with COPD and living at home. **Health issue**: Dyspnoea in patients with chronic obstructive pulmonary disease (COPD) **Intervention**: Using age, sex, pulmonary function, smoking, and steroid use as matching factors, were randomly assigned either to a true acupoint acupressure or a sham group. The true acupoint acupressure group received a programme to decrease dyspnoea. Those in the sham group received acupressure using sham pressure points. Both acupressure programmes consisted of five sessions per week lasting 16 minutes per session, extending over 4 weeks for a total of 20 sessions. Before and after outcome measures: Pulmonary Status and Dyspnoea Questionnaire-modified scale (PFSDQ-M); Spielberger State Anxiety scale; 6-minute walking distance test. Physiological indicators of oxygen saturation	Scores from the PFSDQ-M improved significantly more in true acupoint group than sham group for all three subscales; dyspnoea ($p<0.05$), fatigue ($p<0.01$) and activity ($p<0.001$). Tolerance for activity (walking distance measurement) was improved significantly in true acupoint group ($p<0.001$). Pulmonary function (respiratory rate and oxygen saturation) and state anxiety scores also improved significantly more in true acupoint group than sham group (both $p<0.001$)	The findings suggest that acupressure can be used as a nursing intervention to improve dyspnoea in patients with COPD	Small sample (n=44) Sampling method not given in detail. Randomised block design, this will give more powerful treatment effects, but only if the blocks are more homogenous than the whole sample, and no discussion of how block factors were decided/justified is given here. Controlled design with sham treatment should isolate meridian effects. Sham points especially good as on different meridians and ganglionic sections. However effects may be due to location of points (on the back) promoting relaxation. Acupressure protocol highly reliable and valid as subject to many tests: - independently rated for validity and amended to give 100% score - accuracy of points observed by TCM practitioner - True and sham treatments compared on video for homogeneity in timing

	and respiratory rate were measured before and after every session. Results analysed using descriptive statistics, chi-squared and Mann-Whitney U tests.			Outcome measures are reliable and valid. Results highly significant (most p<0.001) for *all* variables. Generalisability limited as majority of sample male and average age = 73 STRICTA: 12/16 (location and pressure were validated and well described. Setting and practitioner details missing) **Grading A** as well designed and controlled with good reporting

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Ventegodt et al 2006 Clinical Holistic Medicine: Pilot Study on the Effect of Vaginal Acupressure (Hippocratic Pelvic Massage)	**Design**: Uncontrolled before and after pilot study **Setting**: Research clinic for holistic medicine, Copenhagen, Denmark **Sample:** 20 patients with a long history of sexual problems **Health issue**: Sexual problems **Intervention**: Vaginal acupressure – slow pelvic examination with a therapeutic element. Outcomes were quality of life scales and semi-structured questions.	VA was found statistically and clinically significant ($p < 0.05$, improvement more than 0.5 step on a 5-point Likert scale) to help patients with chronic genital pains, pain or discomfort during sexual intercourse, lack of desire or orgasm, and subjective sexual insufficiency. Self-evaluated physical (p=0.042) and mental (p=0.012) health was significantly improved for the total group; the relationship with partner, the subjective sexual ability (p=0.003), and the quality of life that were measured with QOL1 (p=0.003) and QOL5 (p=0.007) questionnaires were all significantly improved.	Acupressure through the vagina can help many women with chronic genital pains, coital discomfort, problems with sexual desire and orgasmic malfunctioning, and other problems of female sexuality. Acupressure through the vagina thus seems to be a safe and efficient procedure, and important tool in the holistic medical toolbox	The acupressure intervention does not appear to be based on Chinese theory or based on meridian acupoints. The actual acupressure component is not well described. This was a pilot, uncontrolled study with a small sample (18 completed treatment, 90%) so is of limited value. Recruitment is not explained and eligibility criteria are minimal, so generalisability cannot be evaluated. Outcome measures do not appear to be validated and are all subjective, although quantitative and qualitative are combined. Adverse effects are reported and ethical considerations well described. STRICTA: 5/16 (no description of the actual acupressure) **Grading C** as very poorly reported, small sample and not controlled, blinded or randomised.

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Wu et al 2007 The Psychologic Consequences of Chronic Dyspnoea in Chronic Pulmonary Obstruction Disease: The Effects of Acupressure on Depression	**Design**: Randomised, block experimental design **Setting**: Thoracic clinics at one medical centre and 3 hospitals in Taipei **Sample:** 44 patients with COPD who could be matched on prognostic factors **Health issue**: Depressive symptoms in breathless patients with COPD **Intervention**: An acupressure protocol using points GV14, CV22, B13 (bilateral), B23 (bilateral) and L10 (unilateral), lasting 16mins was given 5 times/week for 4 weeks by a trained acupuncturist. Sham treatment was Sp5, Sp3 and Liv1 for 16mins etc. Outcomes were Geriatric depression scale, Dyspnoea VAS, oxygen saturation, BP, respiratory rate and heart rate. Analysis was t test and linear regression.	The results of this study showed that the GDS scores($P<0.001$), DVAS scores ($P<0.001$), oxygen saturation($P<0.001$), and SBP, RR and HR ($P<0.001$)of the true acupressure group were significantly improved, compared to those of the sham acupressure group. DBP was not significant. Also change in dyspnoea was a significant predictor of change in depression ($p=0.00$) and the acupressure treatment indicator and baseline dyspnoea were statistically significant predictors of changes in dyspnoea ($p<0.00$; , $p= 0.001$), revealing that depression could be influenced by true acupressure through changes in dyspnoea.	These findings provide health professionals with an evidence-based intervention to use with persons with COPD. Applying this acupressure program in clinical practice, communities, and long-term care units may lessen chronic dyspnoea and depression in persons with COPD.	Excellent quality regarding the acupressure given, poorer regarding randomisation and group comparison. Sample size was powered but needed to be 23 in each group and study only had 22. Groups were not compared for baseline characteristics but they were matched. Flow chart of participants and only 19.4% drop out. Lots of detail on acupressure protocols, which were thoroughly tested for reliability and validity. Sham protocol only used 3 points compared to 3 in true acupressure. Outcomes are objective and subjective and analysis is appropriate, including linear regression to further verify links between dyspnoea and depression. Discussion is very short. Reports all STRICA items, very good description of points, pressure, reasons for point choice, timing and practitioner training) **Grading A** as well designed and reported, although small sample, limited follow up.

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Yang et al 2007 The efficacy of acupressure for decreasing agitated behaviour in dementia: a pilot study	**Design**: Pilot study with participants as own controls **Setting**: Specialist dementia nursing home, Taiwan. **Sample**: N=31. Older people with dementia and agitation. **Health issue**: Agitated behaviour in dementia. **Intervention**: Fengchi (GB.20), Baihui (Du.20), Shenmen (He.7), Niguan (Pe.6) and Sanyinjiao (Sp.6). For each treatment, pressure was applied to each acupoint for 2 mins, after 5 mins of warm- up activity (holding, rubbing and pressing the palms and finger joints on both hands). Twice daily. It took 15 minutes to apply pressure to the residents. After five days of treatment, the residents had a two-day break. This weekly cycle was repeated for four weeks. Validity and reliability of pressure, timing and direction of acupressure was assessed. Outcomes were a validated agitation scale (CMAI) and daily records of agitated behaviour, as ease of care inventory.	Significant differences between the control phase and treatment phase on all outcome measures ($p<0.001$).	Acupressure is recommended as an efficacious and non-intrusive method for decreasing the agitation behaviours in patients with dementia	TREND checklist: Good information on setting, sample, intervention (see stricta below), validated outcome measures. However, no adjustment for confounders, no measures for nonrandomisation, no underlying theory, little data on follow up, mechanisms or external validity. No flowchart or details of dropouts. Only 20 of 31 completed the study (65%). STRICTA: 12/16 excellent description of treatment and pressure etc but no control. **Grading C** as small sample, pilot study, no control group or non-treatment control.

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Yao et al 2007 Observation on therapeutic effect of point pressure combined with massage on chronic fatigue syndrome. [Chinese].	**Design**: one single group **Setting**: from hospital in China **Sample: n=85** **Health issue**: chronic fatigue syndrome **Intervention**: massage combined with acupressure	After treatment of 3 courses, 26 cases were markedly effective , 52 cases were effective, and 7 cases were ineffective, with a total effective rate of 91.8% and a markedly effective rate of 30.6%	Pressing acupoints and massage can effectively improve clinical symptoms of the patients with chronic fatigue syndrome.	STRICTA: 7/17.. According to the TREND Checklist, 9 in 47 items are present. There are no clear outcome measures and effects evaluation used in this study, which is the key problem resulting in a poor quality and inconclusive results. **Unclassified due to lack of information**

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Yeh et al 2007 An Intervention of Acupressure and Interactive Multimedia to Improve Visual Health Among Taiwanese Schoolchildren	**Design**: Controlled but nonrandomised pre-posttest experimental research design. **Setting**: Elementary school, Taipai, Taiwan **Sample**: 70 schoolchildren with visual impairment **Health issue**: Visual impairment **Intervention**: seed patches on six common auricular points for improving visual health: eye, liver, shenmen, kidney, eye disorder1, and eye disorder2, renewed weekly by researcher. Also eight common meridian points associated with eye function, including zanzhu (UB.2), jingming (UB.1), chengqi (St.1), sibai (St.2), taiyang (Ex.2), baihui (Du.20), fengchi (GB.20), and hegu (LI.4). Also interactive multimedia files of instructions and eye structure and function, which told children to press each point (auricular and meridian) for at least 1 min, 3 times a day for 15 weeks. Control was no treatment. Outcomes: visual health knowledge questionnaire (reliable) and Snellen chart.	Experimental group demonstrated significant improvements in visual health knowledge, visual acuity, and refractive error.	The outcomes of using the intervention seemed to be promising, but broader studies exploring its effects on children in different school years as well as its longitudinal effects are required.	No data on random allocation methods. No data on follow up, drop out, intention to treat. No subgroup analyses although groups were similar for demographic and condition-specific variables at baseline. Sample size was calculated and intervention and outcome measures were reliable. Same 3 researchers trained children and collected data. Poor description of intervention as self-administered and not clear how they monitored what children actually did. This severely limits conclusions about the specific effects of acupressure. Volunteer sample in one school means low generalisability. Cannot isolate effects of acupressure due to use of multimedia intervention as well. Roughly half of STRICTA items reported. **Grading B** as not blinded and limited description, especially randomisation and follow up

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Yip and Tse 2004 The effectiveness of relaxation acupoint stimulation and acupressure with aromatic lavender essential oil for non-specific low back pain in Hong Kong: a randomised controlled trial	**Design**: Randomised controlled trial **Setting**: The community centre, Old-Aged Home and Women Workers Association, Hong Kong. **Sample**: adults with sub-acute or chronic non-specific low back pain. **Health issue**: sub-acute or chronic non-specific low back pain. **Intervention**: 8-session (35-40mins each relaxation acupoint stimulation followed by acupressure with lavender oil over a 3-week period. Acupoint stimulation was with digital Electronic Muscle Simulator on Li10, Li11, Si10, TW15 and BL10, acupressure on UB22,23,25,40. The control group received usual care only. Changes from baseline to the end of treatment were assessed in pain intensity (by Visual Analogue Scale) and duration; lateral fingertip-to-ground distance in centimetres; walking time and interference on daily activities.	The baseline VAS scores for the intervention and control groups were 6.38 (S.E.M. = 0.22) and 5.70 (S.E.M. = 0.37) out of 10, respectively (P=0.24). One week after the end of treatment, the intervention group had 39% greater reduction in VAS pain intensity than the control group (P=0.0001), improved walking time (P=0.05) and greater lateral spine flexion range (P=0.01). Groups were similar for pain duration (p=0.08). Interference in daily activities was unaffected. 78% were satisfied and 15% strongly satisfied with treatment.	Our results show that 8-sessions of acupoint stimulation followed by acupressure with aromatic lavender oil were an effective method for short-term LBP relief. No adverse effects were reported. To complement mainstream medical treatment for sub-acute LBP, the combined therapy of acupoint stimulation followed by acupressure with aromatic lavender oil may be one of the choices as an add-on therapy for short-term reduction of LBP	Co-interventions of electrodes and lavender oil, also performed on different acupoints to acupressure. Hard to isolate the acupressure effect. Random group assignment. Acupoints validated by expert. Sample size powered although volunteer sample, may introduce bias. 84% follow up and dropout not for medical reasons. However, dropout group were older and had greater interference on daily activities which may cause bias. Outcome measures content validated Groups homogenous for socio-demographic and clinical variables Not blinded and no placebo – placebo effect may be present Intervention group had much more frequent measurements – may cause bias. STRICTA: 13/16 (good background and treatment description but lacking setting and control rationale) **Grading B** as random but hard to isolate acupressure effect

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Yip and Tse 2006 An experimental study on the effectiveness of acupressure with aromatic lavender essential oil for sub-acute, non-specific neck pain in Hong Kong	**Design**: Experimental study design **Setting**: The Telehealth clinic and the community centre, Hong Kong. **Sample**: adults with sub-acute non-specific neck pain. **Health issue**: sub-acute non-specific neck pain **Intervention**: A course of 8-session manual acupressure with lavender oil over a 3 week period. 30min neck pain acupuncture massage on 20 points for 2 mins each. Changes from baseline to the end of treatment were assessed on neck pain intensity [by Visual Analogue Scale (VAS)]; stiffness level; stress level; neck lateral flexion, forward flexion and extension in cm, and interference with daily activities.	The baseline VAS score for the intervention and control groups were 5.12 and 4.91 out of 10, respectively (P = 0.72). One month after the end of treatment, compared to the control group, the manual acupressure group had 23% reduced pain intensity (P = 0.02), 23% reduced neck stiffness (P = 0.001), 39% reduced stress level (P = 0.0001), improved neck flexion (P = 0.02), neck lateral flexion (P = 0.02), and neck extension (P = 0.01). However, improvements in functional disability level were found in both the manual acupressure group (P = 0.001) and control group (P = 0.02). Interference with daily life improved in both groups at 1 month follow up (p=0.001 treatment and p=0.02 control). 76% were satisfied and 16% strongly satisfied with treatment.	Our results show that eight sessions of acupressure with aromatic lavender oil were an effective method for short-term neck pain relief	Small sample (28 completed) Follow-up good 88% Co-intervention of lavender oil, Hard to isolate the acupressure effect. Random group assignment. Points validated by expert. Outcome measures content validated Groups homogenous for socio-demographic and clinical variables Not blinded and no placebo – placebo effect may be present Improvement in both groups at 1month indicates maybe need to test for time effect Intervention group had much more frequent measurements – may cause bias. STRICTA: 13/16 (lacking details of pressure, setting and control rationale). **Grading B** as not blinded or placebo controlled but randomised

Author, date and title	Study methodology, design, setting, sample, condition and intervention	Results	Study Conclusions	Comments on quality
Yuksek et al 2003 Acupressure versus oxybutinin in the treatment of enuresis	**Design**: RCT **Setting**: Unclear, may be Turkey **Sample**: 24 patients **Health issue**: nocturnal enuresis **Intervention** Acupressure was administered to 12 patients by their parents, who had been taught the technique. Pressure was applied by the parent for 5sec per point per day at acupuncture points Gv4, Gv15, Gv20, B23, B28, B32, H7, H9, St36, Sp4, Sp6, Sp12, Ren2, Ren3, Ren6, K3 and K5. Twelve control patients received 0.4 mg/kg oxybutinin. Parents were asked to record incidences of bed-wetting and patients and/or parents completed a questionnaire 15 days and 1, 3 and 6 months after the start of treatment. Analysis was independent samples t test, chi-squared/Fishers exact test.	NO significant difference between groups. Complete (no bed-wetting) and partial responses (reduction in bed-wetting) after 6 months of treatment were seen in 83.3% and 16.7%, respectively, of patients treated with acupressure, and in 58.3% and 33.3%, respectively, of children who received oxybutinin	In conclusion, nocturnal enuresis can be partially treated by oxybutinin but acupressure could be an alternative non-drug therapy. Acupressure has the advantages of being non-invasive, painless and cost-effective	Very small sample (12 in each group). 3 patients who had previously unsuccessful pharmacological treatment moved to group A (acupressure) -> selection bias. Significance values not given. 6 month follow up period Ethical approval was NOT sought. Very brief report, no details of sampling, randomisation, comparison of groups at baseline… Intro states study investigated acupressure "*especially for those not wanting drug or acupuncture*"… Acupressure compared to drug not placebo/sham. STRICTA: 4/16 – very limited reporting of acupressure. **Grading C** due to poor reporting

8.3: Table of acupoints

This table shows which conditions and acupoints have strong evidence, with reference to the studies.

Acupoints	Labour pain	Dysmenorrheoa pain	Post operative N&V	N&V in Pregnancy	Nausea in Chemotherapy	Sleep (elderly)	Anxiety	Symptoms of renal disease	COPD	Cancer side effects	Weight gain
Cv22									O		
Extra1							L				T
Gb20						H					
Gb21											T
Gb34								M			
Gv14									O		
Gv20						H					
Hegu		C									
Ht17						I		N			
Ht7									P		
K1						J		M			
K11								N			
Li14										S	
Li4						K			P		
Lu10									Q		
P6			E	F	G				P		
Sanyinjiao		C									
Sp6	A	D						M		S	
St36						K		M		S	
Ub1											T
Ub10						K					
Ub13									O		
Ub18						H					
Ub23									O		
Ub67	B										

A Lee et al 2004

B Chung et al 2003

C Chen and Chen 2010

D Cho & Hwang 2006; Jun et al 2006/2007; Wong et al 2010; Chen & Chen 2004

E Lee & Fan 2009; Chen et al 2005; Lee & Done 2004; Ming et al 2002; Shiao & Dune 2006

F Helmreich et al 2006; Shin et al 2007; Belluomini et al 1994; Habek et al 2004; Markose et al 2004

G Ezzo et al 2006; Dibble et al 2007; Dibble et al 2000; Shin et al 2004

H Chen et al 1999

I Sun et al 2009; Chen et al 1999

J Harris et al 2005; Sun et al 2009

K Harris et al 2005

L Agarwal et al 2005; Fassoulaki et al 2007

M Tsay 2004, Tsay et al 2004

N Tsay and Chen 2003; Tsay et al 2003

O Wu et al 2007; Wu et al 2004

P Tsay et al 2005

Q Wu et al 2004

S Molassiotis et al 2007

T Elder et al 2007

Appendix 9 - Excluded from review

Full text publications excluded at Stage 3 screening

Exclusion criteria:
Foreign language papers
Use of Korean points/meridians
Use of plasters, devices, wristbands
Auricular acupressure
Anecdotal evidence
Personal experience
Shiatsu / acupressure are mentioned as treatments in general complementary medicine publications but are not the main subject area of the publication.
Guidelines for treatment
Reports of possible adverse events
Surveys
Conference abstracts / posters

Of the 300 (146 from 2006; 154 from 2010) publications that remained for screening and review, 102 (44 from 2006; 58 from 2010) were reviewed as evidence and assessed for quality. 56 (41 from 2006; 15 from 2010) publications were considered useful as background information but not evidence on Shiatsu / acupressure. The remaining 205 (61 from 2006; 144 from 2010) publications were excluded at this stage, 15 Shiatsu and 190 acupressure.

Excluded publications and reasons for exclusion

9.1 Shiatsu

1.Atchison,J.W., Taub,N.S., Cotter,A.C., and Tellis,A. (1999). Complementary and alternative medicine treatments for low back pain. *Physical Medicine and Rehabilitation: State of the Art Reviews* 13:561-586.
This is a review of information and efficacy of treatments for low back pain which include manipulation, massage therapy, mind-body therapy and acupuncture
Reason for exclusion: Shiatsu and acupressure are described as therapies in the 'Massage' section and briefly mentioned in a paragraph discussing efficacy studies

2. Booth,B. (1993). Shiatsu. *Nurs Times* 89:38-40.
This is a part of a series on complementary medicine
Reason for exclusion: This is a very general article is not a study and does not add to the knowledge base for Shiatsu.

3. Centre for Reviews and Dissemination (2006). Is massage useful in the management of diabetes: a systematic review (Structured abstract). *Database of Abstracts of Reviews of Effectiveness*.
This is a summary of a systematic review.
Reason for exclusion: Shiatsu and acupressure were included in the search terms but not in any of the studies reviewed.

4 .Cohen,R. (2009) Management of work stress in health care providers at the haematology division using Shiatsu (alternative treatment approach): N1087.[Abstract]. Bone Marrow Transplantation.Sup 1): S324.
Reason for exclusion: abstract only, no full text available

5.Daniels,J.M., Ishmael,T., and Wesley,R.M. (2003). Managing Myofascial Pain Syndrome: sorting through the diagnosis and honing treatment *Physician and Sports Medicine* 31:39-45.
This paper discusses treatment options and guidelines
Reason for exclusion: There is one paragraph describing Shiatsu as a technique with one reference dating back to 1975

6. Elliott,M.A. and Taylor,L.P. (2002). "Shiatsu sympathectomy": ICA dissection associated with a Shiatsu massager. *Neurology* 58:1302-1304.
These are two case reports of internal carotid artery (ICA) dissection that occurred after use of a 'Shiatsu' massage machine.
Reason for exclusion: This is not related to the practice of Shiatsu.

7. Fields,N. (1995). Teaching the gentle way to labour... midwifery, yoga, Shiatsu. *Nursing Times* 1995 Feb 8-14; 91:44-45.
This short article explains the benefits of practising yoga and Shiatsu during pregnancy.
Reason for exclusion: This is a personal viewpoint and discusses courses available at a centre where the author teaches yoga.

8. Inagaki,J., Yoneda,J., Ito,M., and Nogaki,H. (2002). Psychophysiological effect of massage and Shiatsu while in the prone position with face down. *Nurs Health Sci* 4:A5-A6.
This study examined the effect of Shiatsu and massage on 24 healthy women.
Reason for exclusion: This is an abstract for a symposium on healthy care for the elderly. There are no references and the study has not been published.

9. Lichtenberg,P. (2008) Shiatsu adjuvant therapy and placebo for schizophrenia. *http://wwwclinicaltrialsgov*.
Reason for exclusion: This is an ongoing study, not yet published

10. Omura,Y. and Beckman,S.L. (1995). Application of intensified (+) Qi Gong energy, (-) electrical field, (S) magnetic field, electrical pulses (1-2 pulses/sec), strong Shiatsu massage or acupuncture on the accurate organ representation areas of the hands to improve circulation and enhance drug uptake in pathological organs: clinical applications with special emphasis on the "Chlamydia-(Lyme)-uric acid syndrome" and "Chlamydia-(cytomegalovirus)-uric acid syndrome". *Acupunct.Electrother.Res* 20:21-72.
This study included 15 patients presenting with a variety of symptoms. It investigated a number of interventions used to improve circulation by stimulation of organ points on the hands.
Reason for exclusion: Korean points were used and deep massage and / or Shiatsu was applied for 'about a minute on organ representation areas'.

11. Omura,Y., Shimotsura,Y., Ooki,M., and Noguchi,T. (1998). Estimation of the amount of telomere molecules in different human age groups and the telomere increasing effect of acupuncture and Shiatsu on St.36, using synthesized basic units of the human telomere molecules as reference control substances for the bi-digital O-ring test resonance phenomenon. *Acupunct.Electrother.Res* 23:185-206.
This study included approximately 30 subjects with ages ranging from infancy to 76 years of age. There was no indication on how these subjects were grouped to receive the interventions.
Reason for exclusion: This was a preliminary report to assess the effect of acupuncture and / or Shiatsu on telomere levels. There were some results reported for those who had received acupuncture but none given for Shiatsu, other than a comment that Shiatsu had less of an effect than acupuncture. It was unclear if subjects had received both acupuncture and Shiatsu.

12. Saito,H. (2000). Preventing and resolving post-laparotomy intestinal obstruction: an effective Shiatsu method. *Am J Chin Med* 28:141-145.
This describes the effect of Shiatsu from personal experience and from one case report.

Reason for exclusion: This is a personal viewpoint with references to the author's publications following his experience with cancer.

13. Toth,M., Kahn,J., Walton,T., Hrbek,A., Eisenberg,D.M., and Phillips,R.S. (2003). Therapeutic Massage Intervention for Hospitalized Patients with Cancer: A Pilot Study. *Alternative & Complementary Therapies* 9:117-124.
This pilot study investigated the effect of permitted massage techniques on seven consenting patients, four of whom died during hospitalisation
Reason for exclusion: Shiatsu and acupressure were both mentioned as permitted techniques, but there is no indication that either was used.

14. Viggo Hansen,N., Jorgensen,T., and rtenblad,L. (2004). Massage and Touch for dementia [Protocol]. *Cochrane Database of Systematic Reviews*.
Comment: This is the protocol for the systematic review which was subsequently published on 18th October 2006:
Viggo Hansen N, Jørgensen T, Ørtenblad L. Massage and touch for dementia. *Cochrane Database of Systematic Reviews* 2006, Issue 4. Art. No.: CD004989. DOI: 10.1002/14651858.CD004989.pub2.
Reason for exclusion: Shiatsu was included in the search term for trials. However, no Shiatsu trials were included and only two trials were found to meet the 'minimal methodological criteria'.

15. Zullino,D.F., Krenz,S., Fresard,E., Cancela,E., and Khazaal,Y. (2005). Local back massage with an automated massage chair: general muscle and psychophysiologic relaxing properties. *J Altern Complement Med* 11:1103-1106.
This studies the effect of three different Shiatsu massage programmes on ten healthy volunteers.
Reason for exclusion: Use of a massage chair.

9.2 Acupressure

1. Devices used

In the 14 studies listed in this section, acupressure was not applied manually but by using devices such as wristbands, particularly in studies investigating the effects of acupressure on nausea and vomiting. Those most commonly used were Sea-Band® which resemble sweat bands which have a plastic button attached. These bands were initially produced to relieve travel sickness but their use has been extended to include treatment of nausea and vomiting associated with pregnancy, chemotherapy and post operative effects of anaesthesia. (Bayreuther, Pickering, Lewith,1994)

1. **Alkaissi,A., Stalnert,M., and Kalman,S. (1999). Effect and placebo effect of acupressure (P6) on nausea and vomiting after outpatient gynaecological surgery. *Acta Anaesthesiol.Scand.* 43:270-274.**
   Reason for exclusion: Wristbands (Sea-Band®) used

2. **Alkaissi,A., Ledin,T., Odkvist,L.M., and Kalman,S. (2005). P6 acupressure increases tolerance to nauseogenic motion stimulation in women at high risk for PONV. *Can.J Anaesth.* 52:703-709.**
   Reason for exclusion: Wristbands (Sea-Band®) used

3. **Allen TK, Habib AS (2008) P6 stimulation for the prevention of nausea and vomiting associated with cesarean delivery under neuraxial anesthesia: a systematic review of randomized controlled trials. *Anesth Analg.*107:1308-12.**
   Reason for exclusion: All studies included in the review were of wristbands (Seabands®)

4. **Bayreuther,J., Pickering,R., and Lewith,G.T. (1994). A double-blind cross-over study to evaluate the effectiveness of acupressure at pericardium 6 (P6) in the treatment of early morning sickness (EMS). *Complementary Therapies in Medicine* 2:70-76.**
   Reason for exclusion: Wristbands (Sea-Band®) used

5. **Cerrone,R., L.Giani, B.Galbiati, G.Messina, M.Casiraghi, E.Proserpio, M.Meregalli, P.Trabattoni, P.Lissoni, and G.Gardani. Efficacy of HT 7 point acupressure stimulation in the treatment of insomnia in cancer patients and in patients suffering from disorders other than cancer. *Minerva Med* 99[6], 535-537. 2008.**
   Reason for exclusion: Used a medical device (H7 Insomnia Control.)

6. **Chan DK,J.M.S.K. (2009) Electrical Acustimulation of the Wrist for Chronic Neck Pain: A Randomized, Sham-controlled Trial Using a Wrist-Ankle Acustimulation Device. Clinical Journal of Pain. 25:(4): 320-326.**
   Reason for exclusion: Electrical stimulation used.

7. **Estrada III,A.L. (2007) Airsickness prevention in helicopter passengers. Aviation Space and Environmental Medicine. 78:(4)**
   Reason for exclusion: Wristband (ReliefBand®) used

8. **Felhendler, D. and Lisander,B (1996) Pressure on acupoints decreases postoperative pain. *Clin J Pain* 12:326-329**
   Reason for exclusion: Dentist's tool used

9. **Felhendler,D. and Lisander,B. (1999). Effects of non-invasive stimulation of acupoints on the cardiovascular system. *Complement Ther Med* 7:231-234**
   Reason for exclusion: Dentist's tool used

10. **Gardani,G., R.Cerrone, C.Biella, G.Galbiati, E.Proserpio, M.Casiraghi, J.Arnoffi, M.Meregalli, P.Trabattoni, E.Dapretto, L.Giani, G.Messina, and P.Lissoni. (2007) A progress study of 100 cancer patients treated by acupressure for chemotherapy-induced vomiting after failure with the pharmacological approach. Minerva Medica. 98:(6): 665-668.**
    Reason for exclusion: Wristbands (Sea-Band®) used

11. **Gardani,G., R.Cerrone, C.Biella, L.Mancini, E.Proserpio, M.Casiraghi, O.Travisi, M.Meregalli, P.Trabattoni, L.Colombo, L.Giani, M.Vaghi, and P.Lissoni. (2006) Effect of acupressure on nausea and vomiting induced by chemotherapy in cancer patients. Minerva Medica. 97:(5): 391-394.**
    Reason for exclusion: Wristbands (Sea-Band®) used

12. **Gurkan O and Arslan H (2008) Effect of acupressure on nausea and vomiting during pregnancy. *Complementary therapies in clinical practice*. 14:46-52.**
    Reason for exclusion: Wristband used.

13. **Harmon_,D., Gardiner,J., Harrison,R., and Kelly,A. (1999). Acupressure and the prevention of nausea and vomiting after laparoscopy. *Br J Anaesth.* 82:387-390**
    Reason for exclusion: Wristbands (Sea-Band®) used

14. **Harmon,D., Ryan,M., Kelly,A., and Bowen,M. (2000). Acupressure and prevention of nausea and vomiting during and after spinal anaesthesia for caesarean section. *Br J Anaesth.* 84:463-467**
    Reason for exclusion: Wristbands (Sea-Band®) used

15. **Heazell,A., Thorneycroft,J., Walton,V., and Etherington,I. (2006). Acupressure for the in-patient treatment of nausea and vomiting in early pregnancy: a randomized control trial *Am J Obstet.Gynecol.* 194:815-820**
Reason for exclusion: Wristbands (Sea-Band®) used

16. **Ho,C.M., H.J.Tsai, K.H.Chan, and S.K.Tsai. (2006) P6 acupressure does not prevent emesis during spinal anesthesia for cesarean delivery. Anesthesia & Analgesia. 102:(3): 900-903.**
Reason for exclusion: Wristbands (Sea-Band®) used

17. **Jamigorn,M. (2007) Acupressure and vitamin B6 to relieve nausea and vomiting in pregnancy: a randomized study. Archives of gynecology and obstetrics. 276:(3): 245-249.**
Reason for exclusion: Wristbands (Sea-Band®) used

18. **Jones,E., S.Isom, K.J.Kemper, T.W.McLean, E.Jones, S.Isom, K.J.Kemper, and T.W.McLean. (2008) Acupressure for chemotherapy-associated nausea and vomiting in children. Journal Of The Society For Integrative Oncology. 6:(4): 141-145.**
Reason for exclusion: Wristbands (Sea-Band®) used

19. **Klaiman,P., M.Sternfeld, Z.Deeb, Y.Roth, A.Golan, T.Ezri, L.Azamfirei, P.Klaiman, M.Sternfeld, Z.Deeb, Y.Roth, A.Golan, T.Ezri, and L.Azamfirei. (2008) Magnetic acupressure for management of postoperative nausea and vomiting: a preliminary study. Minerva Anestesiologica. 74:(11): 635-642.**
Reason for exclusion: Magnetic patch used

20. **Melchart,D., Ihbe-Heffinger,A., Leps,B., von,S.C., and Linde,K. (2006). Acupuncture and acupressure for the prevention of chemotherapy-induced nausea-a randomised cross-over pilot study. *Support.Care Cancer* 14(8):878- 882.**
Reason for exclusion: Acupressure wrist bands used, brand not specified.

21. **Molassiotis,A., A.M.Helin, R.Dabbour, and S.Hummerston. (2007) The effects of P6 acupressure in the prophylaxis of chemotherapy-related nausea and vomiting in breast cancer patients. Complementary Therapies in Medicine. 15:(1): 3-12.**
Reason for exclusion: Wristbands (Sea-Band®) used

22. **Neri,I., Allais,G., Schiapparelli,P., Blasi,I., Benedetto,C., and Facchinetti,F. (2005). Acupuncture versus pharmacological approach to reduce Hyperemesis gravidarum discomfort. *Minerva Ginecol.* 57:471-475**
Reason for exclusion: Wristbands (Sea-Band®) used.

23. **Norheim AJ, Liodden I, Howley M (2010) Implementation of acupuncture and acupressure under surgical procedures in children: a pilot study. *Acupunct Med* 28:71-3.**
Reason for exclusion: Wristband used.

24. **Nordio,M., F.Romanelli, M.Nordio, and F.Romanelli. (2008) Efficacy of wrists overnight compression (HT 7 point) on insomniacs: possible role of melatonin? Minerva Medica. 99:(6): 539-547.**
Reason for exclusion: Used a medical device (H7 Insomnia Control.)

25. **Proctor, M, Farquhar,C, Stones,W (2009) Transcutaneous electrical nerve stimulation for primary dysmenorrhoea. Cochrane Database of Systematic Reviews.Issue 1**
Reason for exclusion: TENS machine used

26. **Roscoe,J.A., P.Jean-Pierre, G.R.Morrow, J.T.Hickok, B.Issell, J.L.Wade, and D.K.King. (2006) Exploratory analysis of the usefulness of acupressure bands when severe chemotherapy-related nausea is expected. J.Soc.Integr.Oncol. 4:(1): 16-20.**

Reason for exclusion: Wristbands (Sea-Band®) used

27. **Sadighha,A., N.Nurai, A.Sadighha, and N.Nurai. (2008) Acupressure wristbands versus metoclopramide for the prevention of postoperative nausea and vomiting. Annals of Saudi Medicine. 28:(4): 287-291.**
    Reason for exclusion: Wristbands used.

28. **Scarborough,D., K.M.Bailey-Van, and M.Hughes. (2008) Altering the gag reflex via a palm pressure point. Journal of the American Dental Association. 139:(10): 1365-1372.**
    Reason for exclusion: Device (designed for the study) used.

29. **Taspinar,A. and A.Sirin. (2010) Effect of acupressure on chemotherapy-induced nausea and vomiting in gynecologic cancer patients in Turkey. European Journal of Oncology Nursing. 14:(1): 49-54.**
    Reason for exclusion: Wristband (Sea-Band®) used.

30. **Tokumaru,O. and Chen,J.D. (2005). Effects of acupressure on gastric myoelectrical activity in healthy humans. *Scand.J Gastroenterol* 40:319-325**
    Reason for exclusion: Pressure applied using a 3 pound dumb-bell.

31. **Turgut,S.O. (2007) Acupressure for postoperative nausea and vomiting in gynaecological patients receiving patient-controlled analgesia. European Journal of Anaesthesiology. 24:(1): Jan.**
    Reason for exclusion: Wristbands (Sea-Band®) used

32. **Wang,S.M., Gaal,D., Maranets,I., Caldwell-Andrews,A., and Kain,Z.N. (2005). Acupressure and preoperative parental anxiety: a pilot study. *Anesth.Analg.* 101:666-9**
    Reason for exclusion: Acupressure bead “manufactured with an occlusive tape covering”.

33. **Wang,S.M.M. (2008) Extra-1 Acupressure for Children Undergoing Anesthesia.[Miscellaneous Article]. Anesthesia & Analgesia. 107:(3): 811-816.**
    Reason for exclusion: Acupressure bead (Acu-pellet®) taped on point

34. **Wang,X.Q., J.L.Yu, Z.Y.Du, R.Xu, C.C.Jiang, and X.Gao. (2010) Electroacupoint Stimulation for Postoperative Nausea and Vomiting in Patients Undergoing Supratentorial Craniotomy. Journal of Neurosurgical Anesthesiology. 22:(2): 128-131.**
    Reason for exclusion: Electrostimulation used.

35. **Werntoft,E. and Dykes,A.K. (2001). Effect of acupressure on nausea and vomiting during pregnancy. A randomized, placebo-controlled, pilot study. *J Reprod.Med* 46:835-839**
    Reason for exclusion: Acupressure wrist bands used, brand not specified.

36. **Wollaston,D.E., Xu,X., Tokumaru,O., Chen,J.D., and McNearney,T.A. (2005). Patients with systemic sclerosis have unique and persistent alterations in gastric myoelectrical activity with acupressure to Neiguan point PC6. *J Rheumatol.* 32:494-501**
    Reason for exclusion: Pressure applied using a 3 pound dumb-bell.

2. Application to other points and / or treatment guidelines

Acupressure was included in the MeSH terms of the MEDLINE citations of the following papers, but this was not the main therapeutic intervention or subject area in the majority of them. It should also be noted that the references in papers from the Journal of Traditional Chinese Medicine are in Chinese and therefore cannot be checked or verified.

1. Bei,Y., Fang,X., and Yao,Z. (2004). Sixty-two cases of simple obesity treated by acupuncture combined with massage. *J Tradit.Chin Med* 24:36-39.

This study compared 32 cases treated with auricular seed embedding and massage with 30 cases treated with auricular seed embedding and acupuncture
Reason for exclusion: Treatment did not include acupressure or acupoints. Massage included spinal pinching and manipulation.

2. Chen,R. (1997). Treatment of apoplectic hemiplegia by digital acupoint pressure--a report of 42 cases. *J Tradit.Chin Med* 17:198-202.
This paper describes 3 methods of digital acupoint pressure (DAP) – one, three and five digits – which the author has used to treat 42 cases with differing diagnoses.
Reason for exclusion: This paper focuses on how to apply a therapeutic procedure and briefly summarises the author's analysis of the therapeutic effect on 42 unrelated cases.

3. Cui,M. (1996). Advanced in studies on acupuncture abstinence. *J Tradit.Chin Med* 16:65-69.
This paper reviews methods for treating addiction (smoking and alcohol). These include auricular acupuncture, electro acupuncture, auricular plasters with seeds embedded and laser radiation.
Reason for exclusion: Acupressure was not a considered method

4. Cummings,M. (2001). Hand acupressure reduces postoperative vomiting after strabismus surgery (n=50). *Acupunct.Med* 19:53-54.
This is a review of a study which is included in a section of research reviews. The study investigated the effects of placing an acupressure device (small disc) on a Korean hand acupuncture point.
Reason for exclusion: A Korean point and a device were used.

5. Dai,G. (1997). Advances in the acupuncture treatment of acne. *J Tradit.Chin Med* 17:65-72.
This paper reviews 38 studies on the treatment of acne. The interventions include body acupuncture in combination with either moxibustion, electric stimulation, herbs, cupping, pricking or drawing blood and auricular acupuncture. There is one study which refers to "digital facial acupoint pressure".
Reason for exclusion: Acupressure is only mentioned briefly and the reference to the study is in Chinese.

6. Hammes,M. (2009) Acupuncture and auricular acupressure in relieving menopausal hot flashes of bilaterally ovariectomized Chinese women: A randomized controlled trial. *Deutsche Zeitschrift fur Akupunktur*. 52:(4).
Reason for exclusion: Auricular acupressure

7. Li,Y. and Peng,C. (2000). Treatment of 86 cases of facial spasm by acupuncture and pressure on otopoints. *J Tradit.Chin Med* 20:33-35.
This study compared 86 cases treated with a combination of acupuncture on facial acupoints and pressure with *Vaccaria segetalis* seeds on selected otopoints with 38 cases treated with facial acupuncture only and 40 cases treated with pressure on otopoints only.
Reason for exclusion: Treatment did not include acupressure on acupoints.

8. Ma,J. (1995). Periomarthritis treated with pain point pressure in combination with local exercises. *J Tradit.Chin Med* 15:289.
This paper describes the application of pressure to pain points and quotes one case study.
Reason for exclusion: Treatment did not involve acupoints

9. Shen,P. (2004). Two hundred cases of insomnia treated by otopoint pressure plus acupuncture. *J Tradit.Chin Med* 24:168-169.
This paper describes a treatment protocol using self applied pressure with *Vaccaria segetalis* seeds on selected otopoints combined with acupuncture at selected points for different levels and types of insomnia.
Reason for exclusion: Treatment did not include acupressure on acupoints.

10. Shin,H.S. (2010) Effects of Koryo Hand Therapy on Serum Hormones and Menopausal Symptoms in Korean Women. *Journal of Transcultural Nursing*. 22:(2): 134-142.
Reason for exclusion: Koryo hand acupressure

11. **Vachiramon,A. and Wang,W.C. (2002). Acupressure technique to control gag reflex during maxillary impression procedures. *J Prosthet.Dent.* 88:236.**

This is a letter which describes the authors' use of acupressure to manage the gag reflex. The authors refer to a study that has been included for review :
Lu,D.P., Lu,G.P., and Reed,J.F., III (2000). Acupuncture/acupressure to treat gagging dental patients: a clinical study of anti-gagging effects. *Gen Dent.* 48:446-452.
Reason for exclusion: This is based on the authors' personal experience.

12. **Vachiramon,A. and Wang,W.C. (2005). Acupuncture and acupressure techniques for reducing orthodontic post-adjustment pain. *J Contemp.Dent.Pract* 6:163-167.**

This paper introduces techniques that the may reduce dental pain. As in **9** above, the authors refer to a study that has been included for review:
Lu,D.P., Lu,G.P., and Reed,J.F., III (2000). Acupuncture/acupressure to treat gagging dental patients: a clinical study of anti-gagging effects. *Gen Dent.* 48:446-452.
Reason for exclusion: This introduced a technique to fellow dentists and their patients. It cannot be considered as evidence.

Comments , news and letters

1. **Apfel,C. and S.Kinjo. (2009) Acustimulation of P6: an antiemetic alternative with no risk of drug-induced side-effects. British Journal of Anaesthesia. 102:(5): 102**

2. **Bledsoe,B.E. and Myers,J. (2003). Future trends in prehospital pain management. *JEMS.* 28:68-71.**

This focuses on various drug options and briefly mentions one study that is included in the evidence review: Kober,A., Scheck,T., Greher,M., Lieba,F., Fleischhackl,R., Fleischhackl,S., Randunsky,F., and Hoerauf,K. (2002). Prehospital analgesia with acupressure in victims of minor trauma: a prospective, randomized, double-blinded trial. *Anesth.Analg.* 95:723

3. **Bond,S. (2009) Acupressure Relieves Symptoms of Nausea and Vomiting of Pregnancy for some, But not all, Women. Journal of Midwifery and Women's Health. 54:(6).**

Reason for exclusion: This is a commentary on a study which has been excluded (Gurkan and Arsian 2008)

4. **Fonnebo V, CAM-Cancer Consortium. Acupuncture and acupressure in the treatment of chemtherapy-associated nausea and vomiting. www cam-cancer org 2009**

Reason for exclusion: This is an expert knowledge summary

5. **Golembiewski,J.A. and O'Brien,D. (2002). A systematic approach to the management of postoperative nausea and vomiting. *Journal of PeriAnesthesia Nursing* 17:364-376.**

Although this is an extensive review, only three out of 59 references refer to acupoint stimulation and only one of these is included in this evidence review: Ming,J.L., Kuo,B.I., Lin,J.G., and Lin,L.C. (2002). The efficacy of acupressure to prevent nausea and vomiting in post-operative patients. *J Adv Nurs* 39:343-351

6. **Heazell A, Thorneycroft J, Walton V, et al. (2006) Acupressure for the in-patient treatment of nausea and vomiting in early pregnancy: a randomized control trial. *American Journal of Obstetrics & Gynecology* 194:815-20.**

This is an abstract and commentary on a study which was previously excluded (Meclhart et al 2006)
Reason for exclusion: Abstract and commentary only

7. **King,T.L. and P.A.Murphy. (2009) Evidence-Based Approaches to Managing Nausea and Vomiting in Early Pregnancy. Journal of Midwifery and Women's Health. 54:(6).**

8. **Lee,M.S. (2009) Is acupressure effective for stroke rehabilitation? Focus on Alternative and Complementary Therapies. 14:(4).**

9. **Perkins,P., S.L.Vowler, P.Perkins, and S.L.Vowler. (2008) Does acupressure help reduce nausea and vomiting in palliative care patients? Pilot study. Palliative Medicine. 22:(2): 193-194.**

This is a letter so is not included.

10. **Pinkowish,M.D. (2009) Acupressure and acupuncture for side effects of radiotherapy. CA Cancer Journal for Clinicians. 59:(5): 277-280.**

Reason for exclusion: News item

11. **Robertshawe,P. (2008) Cancer-related fatigue managed with acupuncture and acupressure. Australian Traditional-Medicine Society. 14:(4): 229-230.**

This is a comment on the study by Molassiotis et al (2007) which is included in the review.

12. **Robertshawe P. (2008) Effect of acupressure on nausea and vomiting during pregnancy. *Journal - Australian Traditional-Medicine Society.* 14(2):85-6.**

Reason for exclusion: This is a commentary on a study which has been excluded (Gurkan and Arsian 2008)

13. **Streng,A. and A.Heazell. (2006) Limited value of acupressure as add-on therapy for inpatient treatment of severe nausea and vomiting associated with pregnancy. Focus on Alternative and Complementary Therapies. 11:(3): 209-211.**

14. **Sok S, (2009) Is acupressure effective for stroke rehabilitation? FACT. 14(4): 312-313**

This is a comment on Kang et al (2009)

15. **(No author) SU JOK therapy or Acupressure(2009) National Journal of Homoeopathy. 11:(9): 20.**

Reason for exclusion: This is a commentary rather than a real study.

D. Systematic and other reviews where 'acupressure' is included in the MeSH terms of MEDLINE citations

1. **Adams, J, Lui, C.W., Sibbritt,D, Broom A, Wardle, J, Homer,C and Beck,S.(2009) Women's Use of Complementary and Alternative Medicine During Pregnancy: A Critical Review of the Literature.[Article]. *Birth*. 36:(3): 237-245.**
   This reviewed the use of CAM during pregnancy. 24 papers were reviewed, with four themes extracted.
   Reason for exclusion: acupressure data cannot be extracted, and the paper is not a systematic review.

2. **Allaire,A.D. (2001). Complementary and alternative medicine in the labour and delivery suite. *Clin Obstet.Gynecol.* 44:681-691.**

This is a literature review with a limited methodology. Acupressure is included with acupuncture and related modalities.
Reason for exclusion: Acupressure is described as a form of acupuncture, there are no references to any acupressure studies.

3. **Ben-Aharaon I, Gafter-Gvili A, Paul M, Leibovici L, Stemmer S M (2008) Interventions for alleviating cancer-related dyspnoea: a systematic review**

This review includes one study which used acupuncture and acupressure but results show it was ineffective.
Reason for exclusion: Only mentions acupressure

4. **Bausewein,C., S.Booth, M.Gysels, and I.Higginson. (2008) Non-pharmacological interventions for breathlessness in advanced stages of malignant and non-malignant diseases. *Cochrane Database of Systematic Reviews*.2): CD005623.**

This Cochrane review found 'low strength' evidence for acupuncture and acupressure in breathlessness.
Reason for exclusion: Only mentions acupressure

5. **Chou,R. (2009) Nonsurgical Interventional Therapies for Low Back Pain: A Review of the Evidence for an American Pain Society Clinical Practice Guideline.[Review]. *Spine*. 34:(10): 1078-1093.**

This review for a clinical guideline concludes that few non surgical options are effective for low back pain.
Reason for exclusion: Non systematic review

6. **Dune,L. (2006) Integrating tuina acupressure and traditional Chinese medicine concepts into a holistic nursing practice. [Review]. *Explore: The Journal of Science & Healing*. 2:(6): 543-546.**

This commentary provides suggestions on how tuina acupressure can be integrated into nursing.
Reason for exclusion: Commentary

7. **Dune,L.S. and Shiao,S.Y. (2006). Metaanalysis of acustimulation effects on postoperative nausea and vomiting in children *Explore (NY)* 2:314-320.**

This metaanlysis investigated the effects of a number of acupuncture and acupressure techniques. These included the use of electrodes, lasers, bands and plasters. 12 RCTs were reviewed, five of these referred to acupressure or acupressure in conjunction with acupuncture.
Reason for exclusion: None of the five studies used manual acupressure. The interventions were acuplasters, bands, pressure on Korean points, electrode acupressure.

8. **Ernst,E. (1997). Acupuncture/acupressure for weight reduction? A systematic review. *Wien.Klin.Wochenschr.* 109:60-62.**

Four clinical trials fulfilled the inclusion criteria for this review. One of these studies used acupressure as the intervention.
Reason for exclusion: Acupressure devices, one in the ear and one on the wrist, were used

9. **Evans,S., J.C.I.Tsao, and L.K.Zeltzer. (2008) Complementary and alternative medicine for acute procedural pain in children. *Alternative Therapies in Health & Medicine*. 14:(5): 52-56.**

This is a review article which concludes that music therapy, hypnosis, acupuncture, laughter terapy and massage may be useful, but not acupressure.

10. **Festin,M. (2007) Nausea and vomiting in early pregnancy. *Clinical Evidence*. 2007.**

This is only available to BMJ subscribers.
Reason for exclusion: Clinical guidelines

11. **Fugh-Berman,A., Kronenberg,F. (2003). Complementary and alternative medicine (CAM) in reproductive-age women: a review of randomized controlled trials. *Reproductive Toxicology* 17:137-152.**

This systematic review investigated complementary and alternative medicine trials relevant to obstetrics and gynaecology. Ten trials where acupressure was used for nausea and vomiting associated with pregnancy were included.
Reason for exclusion: Nine of these trials used acupressure wrist bands. One trial where acupressure was self applied, dated from 1988 and therefore not considered for inclusion.

12. Fujii,Y. (2009) Current management of vomiting after tonsillectomy in children. [Review] [106 refs]. *Current Drug Safety*. 4:(1): 62-73.

This paper comments on the various treatment options. It mentions acupressure but does not recommend it.

Reason for exclusion: Commentary

13. Gooneratne,N.S. (2008) Complementary and alternative medicine for sleep disturbances in older adults. [Review] [125 refs]. *Clinics in Geriatric Medicine*. 24:(1): 121-138.

This paper reports on various CAM used for sleep disturbance in older adults. It states that evidence for acupressure is 'intriguing' and needs replication in more diverse cohorts.

Reason for exclusion: Commentary

14. Griffiths,J.D., G.M.L.Gyte, S.Paranjothy, H.C.Brown, H.K.Broughton, and J.Thomas. (2009a) Interventions for reducing nausea and vomiting at caesarean section. *Cochrane Database of Systematic Reviews*.1).

This is a protocol for a Cochrane review of interventions for reducting nausea and vomiting at caesarean section.

Reason for exclusion: Protocol

15. Keller,V.E. (1995). Management of nausea and vomiting in children. *Journal of Pediatric Nursing* 10:280-286.

This reviewed available pharmacological and nonpharmacological interventions including acupuncture and acupressure.

Reason for exclusion: The use of acupressure bands was mentioned as a possible intervention.

16. King,T.L. and P.A.Murphy. (2009) Evidence-Based Approaches to Managing Nausea and Vomiting in Early Pregnancy. *Journal of Midwifery and Women's Health*. 54:(6).

This is a 'feature' which reviews the evidence base for nausea and vomiting in early preganacy.

17. Koog,Y.H., S.S.Jin, K.Yoon, and B.I.Min. (2010) Interventions for hemiplegic shoulder pain: systematic review of randomised controlled trials. *Disability & Rehabilitation*. 32:(4): 282-291.

Reason for exclusion: Mentions acupressure

18. Lotfi-Jam,K., M.Carey, M.Jefford, P.Schofield, C.Charleson, and A.S. (2008) Nonpharmacologic strategies for managing common chemotherapy adverse effects: a systematic review (Structured abstract). *Journal of Clinical Oncology*. 26:(34): 5618-5629.

This is an abstract of a systematic review of nonpharmacologic methods for managing chemotherapy adverse effects.It concludes that evidence for acupressure (from 5 trials) is inconclusive.

Reason for exclusion: DARE abstract of another study which would not be included.

19. Meeks,T.W., J.L.Wetherell, M.R.Irwin, L.S.Redwine, and D.V.Jeste. (2007) Complementary and alternative treatments for late-life depression, anxiety, and sleep disturbance: a review of randomized controlled trials. [Review] [73 refs]. *Journal of Clinical Psychiatry*. 68:(10): 1461-1471.

This review concludes that there may be potential for acupressure in reducing anxiety and promoting sleep.

Reason for exclusion: Non systematic review

20. Nedrow,A. (2006) Complementary and alternative therapies for the management of menopause-related symptoms: a systematic evidence review (Structured abstract). *Archives of Internal Medicine*. 166:(14): 1453-1465.

This is a systematic review of CAM for menopause-related symptoms. It concludes that data is insuffient to support the use of any therapies.

Reason for exclusion: does not present findings for acupressure alone

21. **Silva,D.R.F., P.E.D.Reis, I.P.Gomes, S.S.Funghetto, and C.G.R.de Leon. (2009) Non pharmacological interventions for chemotherapy induced nauseas and vomits: integrative review. *Online Brazilian Journal of Nursing*. 8:(1):1**

This narrative review included acupressure and concluded that interventions should be recommended
Reason for exclusion: non systematic review

22. Smith, CA, Collins CT, Cyna AM, Crowther CA (2009) Complementary and alternative therapies for pain management in labour. *Cochrane Database of Systematic Reviews*. 3, 2009

This review covered more than just acupressure, and found insufficient evidence for acupressure
Reason for exclusion: Not only acupressure

23. Sun,Y. (2008) Acupuncture and related techniques for postoperative pain: a systematic review of randomized controlled trials (Structured abstract). *British Journal of Anaesthesia Database of Abstracts of Reviews of Effects*. 101:(2): 151-160.

This is a DARE abstract of a review of many therapies. Data on acupressure is not separated.
Reason for exclusion: does not present findings for acupressure alone

24. Thompson,H.J. (1999). The management of post-operative nausea and vomiting. *J Adv Nurs* 29:1130-1136.

This reviewed pharmacological, dietary and behavioural interventions. Acupressure was considered as a behavioural intervention.
Reason for exclusion: The use of acupressure bands was mentioned as a possible intervention.

25. Tournaire,M. and A.Theau-Yonneau. (2007) Complementary and alternative approaches to pain relief during labour. *Evidence-Based Complementary & Alternative Medicine: eCAM*. 4:(4): 409-417.

This study included a range of CAM but did find efficacy for acupressure in pain relief during labour
Reason for exclusion: non systematic review

26. Turk,M.W., K.Yang, M.Hravnak, S.M.Sereika, L.J.Ewing, and L.E.Burke. (2009) Randomized clinical trials of weight loss maintenance: a review. [Review] [120 refs]. *Journal of Cardiovascular Nursing*. 24:(1): 58-80.

This is a non systematic review of RCTs of weight-loss maintainence approaches. It concluded that acupressure was effective.
Reason for exclusion: non systematic review

27. White,A., Rampes,H., and Campbell,J. (2006). Acupuncture and related interventions for smoking cessation. *Cochrane Database Syst Rev* (1): CD000009.

Acupressure was considered as a related intervention and investigated for its effectiveness for smoking cessation. 24 studies were included in the review, three of these referred to the use of acupressure either alone or in conjunction with acupuncture or electro acupuncture.
Reason for exclusion: Auricular acupressure with seeds was the intervention used in all three studies.

28. Zhou,D., Y.Y.Liu, G.L.Li, and Y.Guo. (2008) Summarization and analysis on acupuncture-related articles embodied in Medline data-base in 2006. *Zhongguo Zhenjiu*. 28:(2): 151-155.

Although 'acupressure' was included in their search terms, this review does not draw any conclusions relating to acupressure
Reason for exclusion: Does not provide acupressure-specific information

E. Application of substances to acupressure points

All four papers discuss the possible therapeutic effects of applying flower essences and essential oils to acupressure points. These papers may be of general interest but they do not add to the evidence base.

1. Balinski,A.A. (1998). Use of Western Australian flower essences in the management of pain and stress in the hospital setting. *Complementary Therapies in Nursing and Midwifery* 4:111-117.
Abstract: This article explores the use of the unique flora from Western Australia. These wildflower essences are collected from across the state and are made into flower essences. These essences are made in a form similar to homoeopathy. The essences can be given internally, or applied to the external body and acupressure points. Angela and Craig Balinski have used the Western Australian flower essences in their complementary therapy practice where patients are treated for stress and pain management. This programme is currently being utilized at nine of Perth's hospitals. The Western Australian flower essences and their specific application techniques are compatible within the hospital environment because they are safe, produce consistent results, and take little time to apply to the patient. One of the other outstanding features of these essences is that they can be used without any interference to medical procedures. The Western Australian flower essences and the techniques for their use are unique and have, over the last two years, been presented at all of the major nursing conferences in Australia. At present, across Australia there are over 16 hospitals which are currently offering these treatments to their patients

2. Mojay,G. (1998). Aromatic acupressure: The therapeutic application of specific essential oils for the organ meridians and acupressure points of oriental medicine. *International Journal of Aromatherapy* 9:105-114.
No abstract available

3. Mojay,G. (2002). Healing the jade pool--the phyto-aromatic and acupressure treatment of dysmenorrhoea and menopausal syndrome: an East-West approach. *International Journal of Aromatherapy* 12:131-141.
Abstract: Contrary to orthodox scientific medicine, gynaecological therapeutics in traditional Chinese medicine (TCM) is inseparable from the treatment of the woman as a whole—primarily because, from the perspective of TCM, the precise nature of her symptomatology, carefully analyzed and assessed, implicates imbalances that have their root in her energetic-constitutional physiology. Thus, in the language of TCM, it is only by addressing the problem in the 'root' *(Ben)* that one is able to begin healing the manifestation or 'branch' *(Biao).*
While pharmacological drugs, through their refined or synthesized single compound structure, are necessarily designed to address only the branch of a disease, essential oils have a dynamic, complex structure and thus a synergistic activity which is fundamentally in keeping with the body's own functional–biochemical homeostatic intricacy. However, the full potential of the whole-system properties of essential oils can only be achieved through a therapeutic system that can describe and match these, through thorough diagnosis and accurate application, to the true clinical needs of the client-patient.
Through affording such a system, Oriental medicine allows the clinical aromatherapist to approach the treatment of common gynaecological conditions such as dysmenorrhoea and menopausal syndrome with the diagnostic differentiation that a truly individualized natural therapy demands. In such a context, the practitioner's scientific, evidence-based knowledge of essential oil therapeutics need not be disregarded—and indeed is often provided with a broadened significance and a more precise application.
In this paper, Gabriel Mojay draws from his 15 years' experience of treating dysmenorrhoea and menopausal syndrome with the aid of essential oils and aromatic acupressure according to the diagnostic wisdom of Oriental medicine.

4. Mojay,G. (2004). The aromatic and acupressure treatment of common musculoskeletal disorders: an Oriental medicine approach *International Journal of Aromatherapy* 14:81-88.
Abstract: Although research evidence does exist for many of the most common essential oils used in the relief of joint pain, stiffness and inflammation, the purpose of this paper is to outline a terrain-based approach to the aromatic treatment of rheumatic conditions - an approach that is defined by the principles of Oriental medicine. The purpose behind this is not to offer an alternative therapeutic methodology, but one that is complementary to that of science

F. Abstracts only, conference abstracts and posters

These publications have been excluded as they are very brief reports of studies, there are no references and no subsequent publications have been found.

1. **Beate Wulff,C.S.N.L. (2008) A randomised placebo-controlled pilot study of pericardium 6 acupressure and acupuncture as additive antiemetic therapy during chemotherapy in children and adolescents. Pediatr Blood Cancer. 50:(5(supplement): 171.**

2. **Ben-Aharon,I. (2008) Interventions for alleviating cancer-related dyspnoea: a systematic review (Structured abstract). *Journal of Clinical Oncology*. 26:(14): 2396-2404.**
   This is a DARE structured abstract of another study which was excluded (Ben-Aharon et al 2008)

3. **Fung,K.H.K., E.S.B.Mok, and T.K.S.Wong. (2007) Effectiveness of self-care strategies program and acupressure on nausea, vomiting and quality of life in cancer chemotherapy. Asian Journal of Nursing. 10:(1): 73.**
   Reason for exclusion: Abstract not even available

4. **Hjelmstedt,A., S.Shenoy, E.Stener-Victorin, M.Lekander, M.Bhat, K.K.Leena, and U.Waldenstrom. (2009) Acupressure to reduce labour pain - a randomized controlled trial. International Journal of Gynecology & Obstetrics. 107:(Suppl 2): S201.**
   This is a conference abstract of an RCT of acupressure on Sp6 compared to light touch for labour pain in India. It found a reduction in pain but statistical significance is not reported.

   a. **Hoffman,T.S., Hu,S., Stritzel,R., and Chandler,A. (1995). P6 acupressure reduces nausea and gastric tachyarrhythmia provoked by optokinetic rotation. *Gastroenterology* 108:A615.**

   This study, with 64 subjects, investigated the effectiveness of P6 acupressure on reducing nausea induced by viewing an "optokinetic rotating drum". The abstract did not state how acupressure was applied, but as the subjects sat in the drum, it is probable that wristbands were used. From the results, it was concluded that P6 acupressure reduced nausea

5. **Klaiman and colleagues. (2010) Research: Klaiman and colleagues. Positive Health. 167:(1).**
   This is an abstract of a full paper, which has been included elsewhere (Klaiman et al 2008)

6. **Lu,B., Ren,S., Hu,X., and Lichstein,E. (2000). A randomized controlled trial of acupuncture and acupressure treatment for essential hypertension**
   ***American Journal of Hypertension* 13:S185.**
   This study, with 12 patients, investigated the effect of acupuncture and self-administered acupressure on high blood pressure. Although not clearly stated, it would appear that auricular acupressure was self administered. The results suggested that the interventions "may be efficacious in decreasing arterial BP in hypertensive patients".

7. **Park,Y., Cho,J., Kwon,J., Ahn,E., Lim,J., and Chang,S. (2003). The effect of San-Yin-Jiao (SP-6) acupressure on labour progression. *American Journal of Obstetrics and Gynecology* 189:S209.**
   This study, with 62 pregnant women, evaluated the effect of acupressure on pain relief, labour time and frequency and intensity of uterine contractions. It was not stated how the acupressure was applied. From the results it was concluded that pain was reduced and "effective and adequate" uterine contractions induced in the group receiving acupressure.

8. **Schoell,G. (2006) The effects of acupressure on the bispectral index and entropy parameters in mentally disabled volunteers: A-137.[Miscellaneous]. European Journal of Anaesthesiology. 23:(Supplement 37): 35-36.**
   This is a conference abstract. It reportes a study of acupressure on Yintang in healthy volunteers. BIS was significantly reduced ($p<0.001$).

9. **Tse,M. (2008) The use of acupressure for older persons with chronic knee pain: A randomize control trial.[Abstract]. Australasian Journal on Ageing. 27:(Supplement 1): A59.**
   This is a conference abstract of a study of 58 elderly people with knee pain. It was a randomised conrolled study but was still underway, so results are not available.

10. **Wang,C. (2006) Acupressure - effects on weaning indices in coma patients with ventilation support. European Respiratory Journal. 28:(Suppl 50): 133s.**
    Abstract not available

G. Miscellaneous

1. Dusek, J. A. P., Finch, M. P., Plotnikoff, G. M. M. F., & Knutson, L. R. B. H.-B. (2010) The Impact of Integrative Medicine on Pain Management in a Tertiary Care Hospital, *Journal of Patient Safety*, 6(1): 48-51.
Reason for exclusion: Audit study rather than effectiveness

2. Bellorini,J. (2009) Acupressure for motion sickness. *Cochrane Database of Systematic Reviews*. 3, 2009.
This is a protocol so does not provide any data.
Reason for exclusion: this is a protocol rather than reporting a study

3. Hoo,J.J. (1997). Acupressure for hyperemesis gravidarum. *Am J Obstet.Gynecol.* 176:1395-1397.
Reason for exclusion: This letter discusses the location of the correct acupoint and refers to a review of 33 controlled trials – Vickers A.J (1996) Can acupuncture have specific effects on health? A systematic review of acupuncture antiemesis trials. J R Soc Med 89:303-311. This review was not included in the results of any of the Shiatsu searches.

4. Simkin,P. and Bolding,A. (2004). Update on nonpharmacologic approaches to relieve labour pain and prevent suffering *Journal of Midwifery & Women's Health* 49:489-504.
Reason for exclusion: This is an update to previous reviews which found no acupressure trials for labour pain and therefore has no relevance to this review.

5. Youngs,P.J. (2000). Acupressure and prevention of nausea and vomiting. *Br J Anaesth.* 85:807-808.
Reason for exclusion: This is a comment on the drugs used in a study that investigated the use of wristbands.

H. Duplicate publications

1. **Hammes,M. (2009) Acupuncture and auricular acupressure in relieving menopausal hot flashes of bilaterally ovariectomized Chinese women: A randomized controlled trial. *Deutsche Zeitschrift fur Akupunktur*. 52:(4).**
   Reason for exclusion: duplicate with previous search

2. **Markose,M.T., Ramanathan,K., and Vijayakumar,J. (2004). Reduction of nausea, vomiting, and dry retches with P6 acupressure during pregnancy *International Journal of Gynecology & Obstetrics* 85:168-169.**
   Reason for exclusion: This is a duplicate reference from a Science Direct search. The result from the MEDLINE search has been included for review.

3. **McDougall G J,J. (2005). Research review: The effect of acupressure with massage on fatigue and depression in patients with end-stage renal disease *Geriatric Nursing* 26:164-165.**

Reason for exclusion: This is a duplicate reference from a Science Direct search. The result from the MEDLINE search has been included in the background information section..

4. **Murphy,P.A. (1998). Alternative therapies for nausea and vomiting of pregnancy *Obstetrics & Gynecology* 91:149-155.**
   Reason for exclusion: This is a duplicate reference from a Science Direct search. The result from the MEDLINE search, where the author details appreared as Aikins M.P has been included in the background information section.

5. **Proctor,M., C.Farquhar, and W.Stones. (2009) Transcutaneous electrical nerve stimulation for primary dysmenorrhoea. *Cochrane Database of Systematic Reviews*.Issue 1**
   Reason for exclusion: duplicate with previous search

6. **Roscoe,J.A., P.Bushunow, P.Jean-Pierre, C.E.Heckler, J.Q.Purnell, L.J.Peppone, Y.Chen, M.N.Ling, G.R.Morrow, J.A.Roscoe, P.Bushunow, P.Jean-Pierre, C.E.Heckler, J.Q.Purnell, L.J.Peppone, Y.Chen, M.N.Ling, and G.R.Morrow. (2009) Acupressure bands are effective in reducing radiation therapy-related nausea. *Journal of Pain & Symptom Management*. 38:(3): 381-389.**
   Reason for exclusion: duplicate with previous search

7. **Smith,C.A., C.T.Collins, A.M.Cyna, and C.A.Crowther. (2006) Complementary and alternative therapies for pain management in labour.[update of Cochrane Database Syst Rev. 2003;(2):CD003521; PMID: 12804474]. [Review] [58 refs]. *Cochrane Database of Systematic Reviews*.4): CD003521.**
   Reason for exclusion: duplicate with previous search

8. **Taspinar,A. and A.Sirin. (2010) Effect of acupressure on chemotherapy-induced nausea and vomiting in gynecologic cancer patients in Turkey. *European Journal of Oncology Nursing*. 14:(1): 49-54.**
   Reason for exclusion: duplicate with previous search

9. **Turk,M.W., K.Yang, M.Hravnak, S.M.Sereika, L.J.Ewing, and L.E.Burke. (2009) Randomized clinical trials of weight loss maintenance: a review. [Review] [120 refs]. *Journal of Cardiovascular Nursing*. 24:(1): 58-80.**
   Reason for exclusion: duplicate with previous search

10. **Yeong,H.S., I.K.Tae, S.S.Mi, and J.Hee-Soon. (2004) Effect of Acupressure on Nausea and Vomiting During Chemotherapy Cycle for Korean Postoperative Stomach Cancer Patients. *Cancer Nursing*. 27:(4): 267-274.**
    Reason for exclusion: duplicate with previous search

I. Publications in German

Foreign language papers were part of the exclusion criteria. It was hoped that the following two papers could be translated and therefore included; however, this was not possible.

1. Litscher,G. (2004). Effects of acupressure, manual acupuncture and Laserneedle acupuncture on EEG bispectral index and spectral edge frequency in healthy volunteers. *Eur J Anaesthesiol.* 21:13-19.
Abstract: BACKGROUND AND OBJECTIVE: The main purpose of this study was to investigate the effects of sensory (acupressure and acupuncture) and optical stimulation (Laserneedle acupuncture) on electroencephalographic bispectral index, spectral edge frequency and a verbal sedation score. METHODS: Twenty-five healthy volunteers (mean age +/- SD: 25.5 +/- 4.0yr) were investigated during the awake state. The acupuncture point Yintang and a placebo control point were stimulated. The study was

performed as a randomized, controlled and partly blinded cross-over trial. RESULTS: Bispectral index and spectral edge frequency values both decreased significantly (P < 0.001) during acupressure on Yintang to values of 62.9 (minimum 35) +/- 13.9 bispectral index and to 13.3 (minimum 2.9) +/- 8.1 Hz (spectral edge frequency right) and 13.8 (minimum 2.7) +/- 7.3 Hz (spectral edge frequency left), respectively. Bispectral index was also significantly (P < 0.05) affected by Laserneedle acupuncture and acupressure on the control point but the changes were not clinically relevant, 95.4 +/- 4 and 94.2 +/- 4.8, respectively. All interventions significantly (Yintang: P < 0.001; control point: P < 0.012) reduced verbal sedation score. CONCLUSIONS: The study highlights the electroencephalographic similarities of acupressure induced sedation and general anaesthesia as assessed by bispectral index and spectral edge frequency

2. Litscher,G., L.Wang, I.Rotzer, and G.Schwarz. (2007) Multiparametric quantification of effects of acupressure in a patient with narcolepsy. *Schmerz Akupunkt*. 33:(2): 69-74.
No abstract available
Reason for exclusion: in German

3. Moncayo,R.M. (2006) Relaxation therapy with acupressure and eye movements. Result control based on applied kinesiology. *Deutsche Zeitschrift fur Akupunktur*. 49:(1): 2006.
Abstract
Within the field of psychoneuroimmunology the role of stress in inducing disease processes is well accepted. In our clinical practice as endocrinologists we are confronted with stress situations especially in cases of autoimmune hyperthyroidism (Graves' disease) or in patients undergoing treatment for in-vitro-fertilisation. In order to meet the clinical demand of these patients for a therapeutic approach for stress reduction, we have designed a combined relaxation treatment that is based on acupressure and Applied Kinesiology (AK). This non-pharmacological treatment includes the use of acupuncture points belonging to midline extraordinary vessels Ren mai and Du mai (Du mai 20, 24, 26; Ren mai 24, 21, 17, 15 und 14). AK is used to evaluate the effectiveness of the therapy. The patient defines for himself both the actual stressing situation and a desirable positive expectation related to it. The intensity of both situations is rated using a numerical scale, i. e. 0 to 7 for the daily burden, and 0 to 10 for the positive expectation. The validity of the grading is evaluated through AK testing. During each therapy cycle, all the points mentioned above are either massaged or tapped lightly. After each cycle the AK test is repeated in order to evaluate the therapeutic result. As soon as the numeric scale for the daily burden has been reduced to 0-1 the treatment goes on with the positive expectation. When the rating of the positive expectation has reached a value of 9–10, the treatment is finished by tapping the cardinal points SI 3 and LU 7. This 20–30 minute approach is well suited for dealing with stress situations arising from daily burdens. Additional therapeutical options are the use of controlled eye movements as well as anti-oxidants in the form of selenomethionine.
Reason for exclusion: in German

4. Schlager,A. (1998). [Acupuncture in prevention of postoperative nausea and vomiting]. *Wien.Med Wochenschr.* 148:454-456.
Abstract: In this review the effectiveness of the acupuncture point Pericard 6 (P 6) on postoperative nausea and vomiting (PONV) is described. Use of the acupuncture, acupressure as well as the laser stimulation of P6 proved as efficient prophylaxis of PONV in numerous studies. These methods are free of side effects and represent therefore a good alternative to the pharmacological prophylaxis and treatment of PONV.

J. Publications from second MeSH term seach
(see Appendix 4 for search details)

1. Matsumura,W.M. (1993). Use of acupressure techniques and concepts for nonsurgical management of TMJ disorders. *J Gen Orthod.* 4:5-16.
There was no abstract available for this publication and it was not possible to obtain a full text copy, it was therefore excluded.

2. Vickers,A.J. (1996). Can acupuncture have specific effects on health? A systematic review of acupuncture antiemesis trials. *J R Soc Med* 89:303-311.

This was referred to in an excluded letter :
Hoo,J.J. (1997). Acupressure for hyperemesis gravidarum. *Am J Obstet.Gynecol.* 176:1395-1397.
It was found to be indexed under 'acupuncture therapy ' and did not appear in any searches, original or those carried out on 24th August as the key words included 'acupuncture'. 34 studies were reviewed, seven of which referred to manual acupressure, three were before 1990, three were excluded from this evidence review and one was subsequently included from the MEDLINE 'acupressure' search of 24th August. (Belluomini,J., Litt,R.C., Lee,K.A., and Katz,M. (1994). Acupressure for nausea and vomiting of pregnancy: a randomized, blinded study. *Obstet Gynecol* 84:245-248.)

K. Mention acupressure/shiatsu but do not focus on it

1. Lee,J. Exploring chemotherapy-induced nausea and vomiting: the symptoms, interventions, and relationship to functional status. 143. 2008. University of California, San Francisco, M1 - Ph.D thesis.
This study focussed on the relationship of each component of CINV on the functional status of women undergoing chemotherapy for breast cancer and only mentioned acupressure.

2. Nield,M. (2007) Comparison of two acupressure methods for dyspnoea reduction. *Communicating Nursing Research (COMMUN NURS RES)*. 40:576.
Abstract not available

3. Ventegodt,S. and J.Merrick. (2009) A review of side effects and adverse events of non-drug medicine (Nonpharmaceutical complementary and alternative medicine): Psychotherapy, mind-body medicine and clinical holistic medicine. *Journal of Complementary and Integrative Medicine*. 6:(1).
Reason for exclusion: This is a non systematic review and considers only safety, not effectiveness

4. Zhou,X.B. (2006) Combined therapy of traditional Chinese medicine and western medicine for low back pain. *Chinese Journal of Clinical Rehabilitation*. 10:(47): Dec.
Abstract not available

Appendix 10 - Background review

Background information on Shiatsu and acupressure

Of the 146 publications that remained for screening and review, 56 publications were considered useful as background information but did not provide specific evidence on effectiveness of either Shiatsu or acupressure. 27 of these publications referred to Shiatsu (3 Watsu) and 30 to acupressure. Abstracts, where available are shown below, together with any applicable comments on the publications.

10.1 Shiatsu

Four papers were single case reports of adverse events that occurred following Shiatsu massage.

1. Herskovitz,S., Strauch,B., and Gordon,M.J. (1992). Shiatsu massage-induced injury of the median recurrent motor branch. *Muscle Nerve* 15:1215.
Comment: This letter expressed the concern that the popularity of massage techniques, particularly vigourous ones, may result in this type of injury. The case for concern was that of a 61 year old physician who underwent a professional Shiatsu massage which included ' the application of strong digital pressure in the region of the base of the palm and thenar muscles.' The day after Shiatsu, the recipient noticed 'painless weakness of the left thumb, without sensory symptoms'. Medical examination suggested 'isolated dysfunction of the recurrent thenar motor branch of the median nerve, apparently the result of focal trauma from the massage.' The symptoms improved after three weeks and normalised over the next few months. While it could be considered that that there is no direct evidence that the massage caused the injury, practitioners should be aware of this possible adverse event occurring.

2. Mumm,A.H., Morens,D.M., Elm,J.L., and Diwan,A.R. (1993). Zoster after Shiatsu massage. *Lancet* 341:447.
Comment: This letter referred to a case of varicella zoster virus diagnosed in a 64-year old woman seven days after receiving an 'overly vigorous Shiatsu massage'. The authors speculate that in this case 'zoster resulted from either direct trauma to the nerve or nerve root during the massage, or to subsequent inflammation causing swelling or immunological injury to the nerve'. They also state that varicella zoster virus is rarely diagnosed today, this patient having suffered a previous episode at the age of 11, and that much of the evidence for the existence of this condition is anecdotal. Although a causal link cannot be scientifically proven, this case raises awareness of possible adverse events.

3. Tsuboi,K. (2001). Retinal and cerebral artery embolism after "Shiatsu" on the neck. *Stroke* 32:2441.
Comment: This letter referred to the case of an 80-year old man who had been hospitalised for seven days following a transient ischemic attack. On the evening he was discharged, he received a Shiatsu massage on his neck for 10 minutes and 'immediately after rising, he was aware that the nasal half of his right visual field was impaired.' He was hospitalised for a further seven days and examinations revealed 'diffuse retinal edema with multiple emboli in many branches of the central retinal artery'. Although the author could not find 'any medical reports of cerebral or retinal artery embolisms directly caused by Shiatsu', he stressed that 'complications can be avoided if patients at high risk are properly informed beforehand of the potential association between embolic stroke and manipulation on the neck.'
This letter highlights a potential risk of 'embolic accidents' and 'serious neurological symptoms in patients with atherosclerotic extracranial carotid artery disorders'.

4. Wada,Y., Yanagihara,C., and Nishimura,Y. (2005). Internal jugular vein thrombosis associated with Shiatsu massage of the neck. *J Neurol Neurosurg Psychiatry* 76:142-143.
Comment: This letter suggested, that although possibly coincidental, a causal link between Shiatsu massage and IJV thrombosis 'supported by patient's claim of a massage induced swelling and pain in his neck, and by the temporal relation between the massage and the onset of symptoms that progressed to IJV and cerebral venous sinus thrombosis'. Although the exact mechanism of the thrombosis in this case could

not be determined, the authors state two possibilities. 'One possibility is that direct trauma or pressure may have induced both venous stasis and vascular injury during the Shiatsu massage. The other possibility is that extrinsic compression of the IJV by tissue swelling subsequent to trauma during the Shiatsu massage may have induced venous stasis, resulting in thrombosis at this unusual site'.
The authors refer to the previous case (Tsuboi,K. 2001) as a further incidence of 'vascular complications following Shiatsu massage' and 'would therefore like to draw attention to the possibility that Shiatsu massage of the neck may cause serious neurological complications'.

Case reports

1.Yeh, C.-C. M. F., Wu, C. T. M., & Huh, B. (2009), Collateral Meridian Acupressure Therapy Effectively Relieves Postregional Anesthesia/Analgesia Backache, *Southern Medical Journal*, 102(11): 1179-1182.

Comment: These case studies (2) report collateral meridian acupressure therapy which is a new therapy so this format is suitable (see also Yeh et al 2009 and Lin et al 2009 below). The cases are well reported and include objective outcomes (infrared thermography), but cannot be included due to their anecdotal nature.

2. Long,A.F., L.Esmonde, and S.Connolly. (2009) A typology of negative responses: a case study of shiatsu. *Complementary Therapies in Medicine*. 17:(3): 168-175.

Comment: The findings from this study have been included elsewhere – see Long 2008. This paper has created a typology of negative responses to Shiatsu, from case studies in three different countries (UK, Austria and Spain). It includes data from a large sample but there is a strong risk of bias from practitioners conducting data collection and the use of postal questionnaires (response rate 67%). Patients may have been reluctant to report 'negative' responses.

Clinical guidelines/news item

1. **Chevalier,D. (2007) The Role of Shiatsu in the Treatment of the Side-Effects of Chemotherapy. *Shiatsu Society News 103*.14-16.**

Comment: Although this paper reports an effectiveness study, it is reported as a news item so cannot be included in the review, nor quality assessed, due to lack of information on study methodology. It is a small study (16 patients) of existing patients, which is uncontrolled. It evaluates effectiveness of Shiatsu for chemotherapy side effects, using a before and after design and a 10 point symptom scale. Average rate of improvement was 64%. However, the anecdotal nature of this study give it limited value.

General information, surveys, uses of Shiatsu

1. Adams,G. (2002). Shiatsu in Britain and Japan: personhood, holism and embodied aesthetics. *Anthropology & Medicine* 9:245-265.

Abstract: In this paper, globalisation processes are examined through the prism of Shiatsu, an originally Japanese, touch-based therapy, now practised in Europe, Japan, North America, and many other places. Examining this emergent plane of therapeutic practice provides an opportunity to reflect on categories of personhood, notably that of the individual, and its place within processes of globalisation. The article is divided into two parts. In the first part the holisms inherent to East Asian medical practice and underlying notions of personhood in Japan and Britain are critically examined. The seemingly reductionistic practice of 'bodily holism' in Japan is shown to reflect socio-centred notions of the person. The concept of holism animating Shiatsu in a British school in London, far from being Japanese, 'ancient', or 'timeless', is shown to reflect individualism characteristic of the New Age movement. In the second part of the paper, using an auto-phenomenological approach, a description of practitioner and client's lived experience of Shiatsu is

given in case study form. This illustrates how 'holism' is felt within the context of a Shiatsu treatment. The aesthetic form of the Shiatsu touch described is shown to be implicitly individualising. This has, it is argued, profound implications for understanding the embodied dimensions of practitioner-patient encounters, the potential efficacy of treatment, and more generally the practice of globalised East Asian 'holistic' therapies in Britain and other settings.

2. Cheesman,S., Christian,R., and Cresswell,J. (2001). Exploring the value of Shiatsu in palliative care day services. *Int J Palliat.Nurs* 7:234-239.
Abstract: This qualitative study sought to evaluate the effects of Shiatsu therapy on clients attending hospice day services. Eleven clients with advanced progressive disease received five therapy sessions each at weekly intervals. Data about the effects was collected through five unstructured interviews with each client. Four of these were conducted before, during, and shortly after the therapy regime, and the fifth was undertaken four weeks after treatment ended. All the interviews were tape-recorded, transcribed and subject to content analysis. The results of the analysis revealed significant improvements in energy levels, relaxation, confidence, symptom control, clarity of thought and mobility. These benefits were of variable duration - in some instances lasting a few hours but in others extending beyond the 5-week treatment regime. Action to ensure research trustworthiness included keeping research journals to provide an audit trail, conducting member checks and using peer debriefing. The study involved three overlapping cohorts of participants in a data collection period that took approximately 6 months.
Comment: This is a purely qualitative study with no quantifiable or statistical analysis and therefore cannot be assessed as evidence. It does however, offer an insight into the possible benefits of the use of Shiatsu for palliative care patients.

3. Ferguson,P. (1995). Empowerment through self-healing. Shiatsu for nurses. *Revolution: The Journal of Nurse Empowerment* 1995 Winter; 5:44-46.
Comment: This introduces the practice of Shiatsu to nurses for patients and for themselves.

4. Fujisaki,N. and Fujisaki,M. (2004). The three principles of Shiatsu therapy and their effects. *Shiatsu Society News* 91:10-11.
Comment: This article has been included as requested by the Shiatsu Society UK to provide some background information.

5. Furlan,A.D., Brosseau,L., Imamura,M., and Irvin,E. (2002). Massage for low-back pain [Systematic Review]. *Cochrane Database of Systematic Reviews*.
Abstract: Background:, Low-back pain is one of the most common and costly musculoskeletal problems in modern society. Proponents of massage therapy claim it can minimize pain and disability, and speed return to normal function. Objectives:, To assess the effects of massage therapy for non-specific low-back pain., Search strategy:, We searched Medline, Embase, Cochrane Controlled Trials Register, HealthSTAR, CINAHL and Dissertation abstracts from their beginning to May 2001 with no language restrictions. References in the included studies and in reviews of the literature were screened. Contact with content experts and massage associations was also made., Selection criteria:, The studies had to be randomized or quasi-randomized trials investigating the use of any type of massage (using the hands or a mechanical device) as a treatment for non-specific low-back pain., Data collection and analysis:, Two authors blinded to authors, journal and institutions selected the studies, assessed the methodological quality using the criteria recommended by the Cochrane Back Review Group, and extracted the data using standardised forms. The studies were analysed in a qualitative way due to heterogeneity of population, massage technique, comparison groups, timing and type of outcome measured., Main results:, Nine publications reporting on eight randomized trials were included. Three had low and five had high methodological quality scores. One study was published in German and the rest in English. Massage was compared to an inert treatment (sham laser) in one study that showed that massage was superior, especially if given in combination with exercises and education. In the other seven studies, massage was compared to different active treatments. They showed that massage was inferior to manipulation and TENS; massage was equal to corsets and exercises; and massage was superior to relaxation therapy, acupuncture and self-care education. The beneficial effects of massage in patients with chronic low-back pain lasted at least one year

after the end of the treatment. One study comparing two different techniques of massage concluded in favour of acupuncture massage over classic (Swedish) massage., Conclusions:, Massage might be beneficial for patients with subacute and chronic non-specific low-back pain, especially when combined with exercises and education. The evidence suggests that acupuncture massage is more effective than classic massage, but this need confirmation. More studies are needed to confirm these conclusions and to assess the impact of massage on return-to-work, and to measure longer term effects to determine cost-effectiveness of massage as an intervention for low-back pain
Comment: This review referred to a conference abstract for an on going trial from 1998 investigating the 'Effectiveness of back school or Shiatsu massage reflex therapy on chronic low back pain: a prospective randomised controlled blind trial – Mandala 2001' No further publications for this trial have been found.

6. Galantino,M.L., Boothroyd,C., and Lucci,S. (2003). Complementary and alternative medicine interventions for the orthopedic patient: A review of the literature. *Seminars in Integrative Medicine.Vol.1 (2):* 65-79.
Abstract: New branches of established disciplines are continually being developed to help patients with chronic orthopedic ailments. What is thought to be conventional treatment varies between countries and changes over time. Therefore the boundary between complementary and conventional medicine remains blurred and constantly shifting. This article reviews the most frequently used CAM interventions for the orthopedic population and will include the use of massage, acupuncture, herbal medication, nutrition, chiropractic, osteopathy, Shiatsu, prayer/spirituality, visualization, hypnosis, relaxation, biofeedback, and various forms of exercise (e.g., Feldenkrais method, tai chi, and yoga).
Comment: This review includes a two page section on Shiatsu and spinal manipulation as therapies for low back pain and refers to one of the studies that have been reviewed as evidence:
Brady,L.H., Henry,K., Luth,J.F., and Casper-Bruett,K.K. (2001). The effects of Shiatsu on lower back pain. *J Holist Nurs* 19:57-70.

7. Harris,P.E. and Pooley,N. (1998). What do Shiatsu practitioners treat? A nationwide survey. *Complementary Therapies in Medicine*. 6(1):30-35.
Abstract: Objective: The study aimed to survey the illness-conditions presenting for Shiatsu treatment. Design: A nation-wide questionnaire survey was conducted of all qualified Shiatsu practitioners registered with the Shiatsu Society UK. Methods: Client and practitioner questionnaires were piloted during a preliminary stage. In the main survey, all registered Shiatsu practitioners in the UK (n = 397) were asked to complete structured questionnaires about themselves and three of their clients. Results: in the nation-wide survey 288 practitioners (73%) completed at least one client questionnaire, giving a total of 792 client questionnaires for analysis. It was evident from both the preliminary stage and the main survey that musculoskeletal and psychological problems were the most common conditions presenting for Shiatsu treatment. Conclusion: It was concluded that efficacy research in Shiatsu should focus on musculoskeletal and psychological problems particularly neck/shoulder and lower back problems, arthritis, depression, stress and anxiety
Comment: This survey was funded by the Research Council for Complementary Medicine (RCCM) and supported by the Shiatsu Society UK to ascertain the direction of future research into the efficacy of Shiatsu.

8. Pooley,N. (1998). The pinning down of Shiatsu, or what I learned from my research experience. *Complementary Therapies in Medicine* 6:45-46.
Comment: This provides a background, by one of the authors of the paper on the survey conducted on what Shiatsu practitioners treat (Harris and Pooley 1998).

9. Long,A.F. and Mackay,H.C. (2003). The effects of Shiatsu: findings from a two-country exploratory study. *J Altern Complement Med* 9:539-547.
Abstract: OBJECTIVES: To provide insight into client and practitioner perceptions of the effects of Shiatsu, in the short and longer term, and positive and negative in nature. DESIGN: A two-country, exploratory study was undertaken in the United Kingdom and Germany. In-depth interviews were undertaken with a purposive sample of 14 Shiatsu practitioners and 15 clients. Client interviews focused on

the experience of Shiatsu and perceptions of its effects, both positive and negative. Practitioners were also asked about factors that enhanced or inhibited successful treatment. The taped and transcribed data were analyzed using grounded theory, assisted by NVivo (QSR, Markham, Ontario, Canada) software. To enhance generalisability, the findings from the alternative country data set were presented to a further set of practitioners in each country and as a whole to an international meeting of practitioners from seven European countries. RESULTS: There was similarity in the perspectives of the clients and practitioners and participants from the United Kingdom and Germany. Both described a wide range of common, immediate and longer term effects. These included effects on initial symptoms, relaxation, sleeping, posture, and experiences of the body. A category of transitional effect arose, describing an effect that was not particularly positive and did not last long. Practitioners characterized this as being part of the healing response. Only a few negative effects were described by clients. One mentioned a negative physical reaction and two indicated difficulties coping with emotional reactions. While most practitioners conceived negative effects to be possible, these were more likely to be described as negative reactions. CONCLUSION: This exploratory study has shed greater light on the effects of Shiatsu. The sample findings provide a user and practitioner grounded base for the design of appropriate questions for exploration in a larger and more generalisable study of the effects of Shiatsu.
Comment: The full report, which was commissioned by the European Shiatsu Federation, provides more details of the study and its results:
Mackay H, Long AF. (2003) The Experience and Effects of Shiatsu: A Two Country Exploratory Study. Salford: Health Care Practice R&D Unit, University of Salford, Report No. 9, 2003.

10. Long,A.F. (2005). The effects and experiences of Shiatsu: a cross-European study. *Shiatsu Society News* 95:14-15.
Comment: This provides an overview of the above mentioned study.

11. Palanjian,K. (2004). Shiatsu. *Seminars in Integrative Medicine*. 2(3):107-115.
Comment: This provides the history, principles and philosophy, diagnosis, practices, techniques and treatments of Shiatsu. There is also a short section on RCTs that have been recently published, the majority of which refer to acupressure, including the use of acupressure bands.

12. Peace,G. and Manasse,A. (2002). The Cavendish Centre for integrated cancer care: assessment of patients' needs and responses. *Complement Ther Med* 10:33-41.
Abstract: The use of complementary therapies in combination with conventional medicine is increasing. In cancer care, as at the Cavendish Centre for Cancer Care in Sheffield, the range of therapies offered can include aromatherapy, massage, reflexology, Shiatsu, acupuncture, homeopathy, counselling, visualization, hypnotherapy, relaxation, healing and art therapy. Before offering any therapy careful assessment of patients' needs is important as patients seeking complementary therapies may present with unrealistic hopes and expectations of benefit. There are wide variations in provision of services offering complementary cancer care throughout the United Kingdom but few offer a comprehensive assessment which is used as a baseline for both planning treatment and evaluating its outcome and which is conducted by a trained and objective practitioner who has no investment in any specific therapy. We describe the model of care developed at the Cavendish Centre with particular emphasis on the assessment process. Our model of assessment provides an opportunity for patients to tell their story, make sense of the illness experience, construct meaning from it and set realistic expectations for the chosen intervention. It also offers patients involvement and choice in decisions about their care. In addition we present evaluative data from a case series of 157 patients, 138 of whom (88%) reported improvement in their main concern on MYMOP (Measure Your Medical Outcome Profile)
Comment: There is no specific reference to the use of Shiatsu in this particular centre, but this paper provides an example of a model of care for cancer patients.

13. Sommers,E., Porter,K., and DeGurski,S. (2002). Providers of complementary and alternative health services in Boston respond to September 11. *American Journal of Public Health* 92:-1598.
Abstract: Examined the use of complementary and alternative medical (CAM) treatments by those who responded to the September 11, 2001, attacks on the World Trade Center. 47 firefighters, police, emergency medical technicians, and other rescue personnel (aged 6-60 yrs) who responded to the

September 11 attack attended clinics and received services from acupuncturists, reiki practitioners, massage therapists, Shiatsu providers, and polarity therapists. Results show that 81 treatments were provided during the clinic sessions. Of these, 51% were acupuncture treatments, 15% were reiki sessions, 12% were Shiatsu, and 9% were massage. 51% of subjects (Ss) received a single treatment, 34% received 2 treatments, and 15% received 3-6 treatments. At least 8 Ss indicated that their treatment was their 1st use of CAM therapy. 12 Ss who received 1+ treatment reported improved relaxation and sleep, reduced pain and stress, and increased energy.
Comment: This describes the evaluation of stress reduction clinics that were set up. Twenty-five CAM practitioners, including one Shiatsu practitioner, provided the treatments.

14. Weintraub, M. I. (1996) Shiatsu massage therapy: a remarkable healing technique in spine pain. Journal of Back and Musculoskeletal Rehabilitation 7(3): 195-197.
Comment: This is the author's discussion and analysis of a study which he conducted in 1992. This study was an open and uncontrolled trial of a medically supervised programme created by the author. This programme consisted of 'Shiatsu, Swedish muscle massage and trigger point suppression (SSMMTPS) as a hands-on attempt to interrupt the pain cycle'. The publication of the study did not appear in any of the search results and a copy could not be obtained from the British Library and therefore could not be reviewed:
Weintraub M.I. (1992) Shiatsu, Swedish Muscle Massage, and Trigger Point Suppression in Spinal Pain Syndrome *American Journal of Pain Management (AJPM)* 2(2), 74-78.

15. White,A. (2002). The case for uncontrolled clinical trials. *Shiatsu Society News* 62:10-13.
Comment: This provides a trial protocol for undertaking uncontrolled trials to establish whether there is a 'clinical effect worth investigating'.

16.Yates,S. (2005). Shiatsu and acupressure in practice. *MIDIRS Midwifery Digest.*
Abstract: An Insight into the Use of Complementary Therapies in Maternity Care supplement. Use of Shiatsu in midwifery practice, including a summary of its benefits for the mother, baby, midwives and maternity units. A case study on setting up a Shiatsu service in the Borders Hospital, Scotland and comments from midwives who have attended Shiatsu courses are included.
Comment: In addition to detailing the process of setting up a service, the author lists a number of benefits of the use of Shiatsu from anecdotal evidence
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17. Long,A.F. (2009) The potential of complementary and alternative medicine in promoting well-being and critical health literacy: a prospective, observational study of shiatsu. *BMC Complementary & Alternative Medicine*. 9:19.

Comment: The findings from this study have been included elsewhere – see Long 2008. This paper reports on advice-giving in Shiatsu, rather than the effects of Shiatsu itself so it has not been included in the main review. For details of the quality assessment of this study, see the evaluation of Long 2008.

Water Shiatsu (Watsu)

Three publications referred to the aquatic use of Shiatsu.

1. Davies,L. (2003). Water and Shiatsu: water therapy and wombs. (Benefits of Watsu, water-based massage, for pregnant women and fetuses. *MIDIRS Midwifery Digest*.
Comment: This personal account provides an introduction into water Shiatsu (Watsu) which was developed in the early 1980s.

2. Vogtle,L.K., Morris,D.M., and Denton,B.G. (1998). An aquatic program for adults with cerebral palsy living in group homes. *Phys Ther Case Rep* 1:250-259.

Comment: This included individual case reports therefore was not included in the review of evidence.
Abstract: Six adults with cerebral palsy participated in aquatic therapy 2 days a week for 7 weeks. Activities included approximately 35 minutes of water Shiatsu (WATSU) using a modified head cradle sequence and approximately 15 minutes of Halliwick method activities focused on head, trunk, and extremity movement control. Activities were conducted by entry level occupational and physical therapy students who were trained in the specific techniques used. Outcome measures included passive range of motion (PROM) of the shoulder, elbow, hip, and knee joints, resting heart rate, blood pressure, pain rating, caretaker reports, and social skill measures. Caretaker reports of ease of care substituted for functional measures owing to clients' limited functional ability and potential for functional improvement. Outcomes suggest that the program was effective for improving PROM, decreasing pain, and providing a pleasureable social experience. Benefits were also realised by the students participating in the swim program, including skill development and appreciation of patients with disability with individuals

3.Chon SC,O.D.S.J. (2009) Watsu approach for improving spasticity and ambulatory function in hemiparetic patients with stroke.[Report]. ***Physiotherapy Research International*****. 14:(2): 128-136.**

Comment: This is a report of Watsu treatment (a therapy performed at water surface level, based on Shiatsu theory) for 3 patients with stroke. Although very well reported, including good detail of treatment procedure, and valid outcome measures used before and after treatment, the lack of a control group and small number give this little strength as evidence.

10.2 Acupressure

These publications provide further information on acupressure and may inform the direction of future research. Several of them are reviews that refer to the effects of acupressure on nausea and vomiting. The references lists of the reviews were checked to ensure that all acupressure studies had been included in the search results for screening. The majority of these acupressure references were for studies that were published prior to 1990 or included the use of devices such as wristbands.

Reviews of research on acupressure

1. Collins,K.B. and Thomas,D.J. (2004). Acupuncture and acupressure for the management of chemotherapy-induced nausea and vomiting. ***J Am Acad Nurse Pract*** **16:76-80.**
Abstract: PURPOSE: To review existing research, the National Institutes of Health (NIH) consensus statement, and federal regulations regarding the use of acupuncture and acupressure in the management of chemotherapy-induced nausea and vomiting in order to give nurse practitioners (NPs) the information they need to provide the best care for patients undergoing chemotherapy treatment for cancer. DATA SOURCES: Selected scientific literature and Internet sources. CONCLUSIONS: Research supports the effectiveness of acupuncture and acupressure for the treatment of chemotherapy-induced nausea and vomiting. Used in conjunction with current antiemetic drugs, acupuncture and acupressure have been shown to be safe and effective for relief of the nausea and vomiting resulting from chemotherapy. IMPLICATIONS FOR PRACTICE: Even with the best antiemetic pharmacological agents, 60% of cancer patients continue to experience nausea and vomiting when undergoing chemotherapy treatments. Because the NIH supports the use of acupuncture for nausea and vomiting, the NP is obligated to be knowledgeable about the use of these and other effective complementary treatments in order to provide the best care

2. Harris, P.E. (1997). Acupressure: a review of the literature ***Complementary Therapies in Medicine*** **5:156-161.**
Abstract: Acupressure is a means of manipulating the same acupoints that are used in acupuncture, but without the needles. A literature review was conducted in two parts. The first part examines Western research regarding the prophylactic use of single-point acupressure. The second reviews a sample of mainly Chinese clinical research concerning the restorative use of multipoint acupressure. The primary literature search was conducted using the Research Council for Complementary Medicine database

(CISCOM). The most convincing finding supporting the effectiveness of acupressure comes from methodologically rigorous studies of the use of PC6 as an antiemetic. A number of studies have shown that PC6 is more effective than placebo in reducing feelings of nausea during pregnancy, after surgery and in cancer chemotherapy. The scientific quality of most of the published studies examining the effectiveness of multipoint acupressure, predominantly auriculotherapy, has been poor, without adequate control groups, randomization, placebos, blinding and statistical analyses. There seems to be a cultural divide between theory and methodological rigour. The scientifically rigorous studies have tended to be atheoretical in selecting the acupoint for treatment and in explaining how the point may work

3. Hickman,A.G., Bell,D.M., and Preston,J.C. (2005). Acupressure and postoperative nausea and vomiting. *AANA.J* 73:379-385.

Abstract: Despite great strides during the preceding 3 decades, the ability to consistently eliminate postoperative nausea and vomiting (PONV) continues to elude anesthesia practitioners. The occurrence of PONV related to anesthesia and surgery prolongs hospital stays and increases healthcare costs. Protracted recovery times place constraints on patients, healthcare systems, and healthcare financiers. Many pharmacological antiemetics have been developed and are in use in the attempt to alleviate PONV. Side effects and cost profiles of many of these interventions, however, reinforce the broadly held belief that there remains opportunity for improvement. Because the Western culture almost exclusively favors evidence-based scientific practice and interventions, the search continues for an ideal, cost-effective, safe, and efficacious pharmacological agent to prevent PONV. Eastern culture, on the other hand, relies heavily on naturopathic remedies whose successful use has spanned thousands of years. Increasing attention has been given to the potential benefits of nonpharmacological intervention for the prevention of PONV in association with anesthesia care. Therefore, the purpose of this AANA Journal course will be to focus attention on what is known and what is unknown in the literature regarding use of the nonallopathic remedy of acupressure as a nonpharmacological alternative to commonly utilized antiemetic prophylaxis

Case reports/series

1. Yeh,C.-C.M.F., C.T.M.Wu, and B.Huh. (2009) Collateral Meridian Acupressure Therapy Effectively Relieves Postregional Anesthesia/Analgesia Backache.[Report]. *Southern Medical Journal*. 102:(11): 1179-1182.

Comment: 'Collateral meridian acupressure therapy' is a new treatment which makes this format suitable. This paper reports 5 case studies which are fairly comprehensively reported. It is, however, of limited use due to it's anecdotal nature.

2. Jui-An,L., W.Chih-Shung, L.Meei-Shyuan, K.Shan-Chi, C.Shun-Ming, J.J.-Y.Chen, and T.L.Chen. (2010) Successful Treatment of Primary Dysmenorrhoea by Collateral Meridian Acupressure Therapy.[Report]. *Journal of Manipulative & Physiological Therapeutics*. 33:(1): 70-75.

Comment: This is a case report of a single patient. This study also evaluates 'collateral meridian acupressure therapy' (see Yeh et al 2009 above). Although it is very comprehensively reported and has a long follow up, it was not included in the main review due to it's anecdotal nature.

Clinical Evidence reviews

This BMJ resource is a database of evidence for the effects of treatment for numerous conditions. '*Clinical Evidence* summarises the current state of knowledge and uncertainty about the prevention and treatment of clinical conditions, based on thorough searches and appraisal of the literature. It is neither a textbook of medicine nor a set of guidelines. It describes the best available evidence from systematic reviews, RCTs and observational studies where appropriate, and if there is no good evidence it says so.' (http://www.clinicalevidence.com/ceweb/about/index.jsp)

Three reviews included the effect of P6 acupressure, amongst other treatments, for nausea and vomiting. The most up to date review (2004) stated that it is likely to have a beneficial effect:

1. Oates-Whitehead,R. (2004). Nausea and vomiting in early pregnancy. *Clin Evid.*1840-1852.
2. Oates-Whitehead,R. (2003). Nausea and vomiting in early pregnancy. *Clin Evid.*1671-1682.
3. Jewell,D. (2003). Nausea and vomiting in early pregnancy. *Clin Evid.*1561-1570.

Another clinical guideline covered dysmenorrhoea
Proctor,M.L. and C.M.Farquhar. (2007) Dysmenorrhoea. *Clinical Evidence*. 03:(813): 1-24.

Comment: This review included acupressure as one of the treatments identified for dysmennorhea and concluded that there is moderate quality evidence for acupressure reducing pain compared to waiting list controls or sham treatment. This is based on two RCTs (one was included in the previous review, one was a device so would not be included).

Non systematic reviews

1. Lee,J., M.Dodd, S.Dibble, and D.Abrams. (2008) Review of acupressure studies for chemotherapy-induced nausea and vomiting control. *Journal of Pain & Symptom Management*. 36:(5): 529-544.

The purpose of this review was to evaluate the effects of a noninvasive intervention, acupressure, when combined with antiemetics for the control of chemotherapy-induced nausea and vomiting (CINV). Ten controlled acupressure studies were included in this review. The review evaluated one quasi-experimental and nine randomized clinical trials, which included two specific acupressure modalities, that is, acupressure band and finger acupressure. The effects of the acupressure modalities were compared study by study. Four of seven acupressure band trials supported the positive effects of acupressure, whereas three acupressure band trials yielded negative results regarding the possible effects of acupressure; however, all the studies with negative results had methodological issues. In contrast, one quasi-experimental and two randomized finger acupressure trials all supported the positive effects of acupressure on CINV control. The reported effects of the two acupressure modalities in each phase of CINV produced variable results. Acupressure bands were effective in controlling acute nausea, whereas finger acupressure controlled delayed nausea and vomiting. The overall effect of acupressure was strongly suggestive but not conclusive. Differences in the acupressure modality, the emetic potential of chemotherapeutic agents, antiemetic use, and sample characteristics of each study made study-to-study comparisons difficult. Suggestive effects of acupressure, cost-effectiveness, and the noninvasiveness of the interventions encourage researchers to further investigate the efficacy of this modality. Acupressure should be strongly recommended as an effective, nonpharmacologic adjuvant intervention for CINV control if its positive effects are reproduced in future acupressure clinical trials.

2. Abraham,J. (2008) Acupressure and acupuncture in preventing and managing postoperative nausea and vomiting in adults. [Review] [81 refs]. *Journal of Perioperative Practice*. 18:(12): 543-551

This literature review sets out to investigate the effectiveness of acupressure and acupuncture in preventing and managing postoperative nausea and vomiting (PONV) in adult patients. PONV is problematic, affecting patient satisfaction, delayed discharge and even patient re-admission. Current treatment of PONV constitutes a variety of drug therapies, which are only partially effective. With the integration of complementary and alternative medicines in healthcare, this review examined 10 research studies investigating the use of acupressure and acupuncture in treating PONV. Three studies found

acupressure to be effective in preventing PONV. However, population samples were small and the research designs had numerous anomalies. Overall the article suggests that acupuncture and acupressure are ineffective in preventing and managing PONV in adult patients. Further investigation of the effectiveness of acupressure and acupuncture, combined with current drug therapies, using well designed and adequately powered studies is needed. Published studies predominantly examined the use of P6 as the pressure point. Further studies should examine other 'acupoint' sites, to ascertain whether these are effective dependent upon the operative site.

3.Nunley,C., J.Wakim, and C.Guinn. (2008) The effects of stimulation of acupressure point P6 on postoperative nausea and vomiting: a review of literature. *Journal of PeriAnesthesia Nursing*. 23:(4): 247-261.

Postoperative nausea and vomiting (PONV) can complicate and delay patient recovery from general and neuraxial anesthesia. Even with a new generation of anesthetic drugs and antiemetics, a high number of patients are affected by PONV. PONV has a multifactor etiology, but there areways to reduce its occurrence. Although it is not a traditionally recognized method, stimulation of acupressure points, specifically P6, has been identified as a potentially effective method of reducing PONV. This study is a state of the science paper reviewing research on both pharmacologic and nonpharmacologic prophylaxis and various methods of acupressure. It was conducted to add information to the currently available knowledge regarding PONV in hopes of stimulating the use of acupressure for treatment of PONV. The study is divided into six categories: pathophysiology of PONV, background studies of PONV, nonpharmacologic prophylaxis, pharmacological prophylaxis, acupressure and related techniques, and benefits of routine antiemetic prophylaxis.

4.Freels and Coggins. Acupressure at the Neiguan P6 point for treating nausea and vomiting in early pregnancy: an evaluation of the literature. Mother Baby Journal (2000) 5(3): 17-22[54]
(THIS IS A DARE STRUCTURED ABSTRACT – ORIGINAL UNAVAILABLE)
Authors' objectives: To assess the efficacy of noninvasive stimulation at the Neiguan P6 acupoint in reducing nausea and vomiting in pregnant women.
Searching: MEDLINE was searched from 1966, CINAHL from 1982, and PsycINFO from 1967, using the following keywords: 'nausea/vomiting of pregnancy', 'acupressure', 'early pregnancy discomforts', 'pregnancy complications', 'nausea therapies', 'acupuncture', 'pressure', and 'nausea prevention and control'. The reference lists of identified studies were also examined.
Study selection: The inclusion criteria were not defined in terms of study design. Included studies were pre-test post-test longitudinal studies and controlled studies, including randomised, crossover, and placebo and non placebo-controlled designs.
Study selection: specific interventions studies that examined stimulation at the Neiguan point were considered. Actual interventions were Neiguan point acupressure compared with a sham point, including a dummy point at the elbow, and sensory afferent stimulation. Acupressure was applied via elastic bands (Sea-Bands) or was self-applied, whilst sensory afferent stimulation was applied using a transelectroneurostimulator unit.
Study selection: Pregnant women of gestational age 4 to 23 weeks were considered.
Outcomes: Nausea and vomiting were assessed using a variety of measurement tools. These included a rating scale of emetic complaints, as developed by Dundee et al. (see Other Publications of Related Interest); a Likert type scale; Multiple Affect Adjective Check List; Sickness Impact Profile; daily nausea graph; visual analogue scale; and Rhodes Index of Nausea and Vomiting.
How were decisions on the relevance of primary studies made? The authors do not state how the papers were selected for the review, or how many of the reviewers performed the selection.

[54] This study was identified in the 2010 search but not in the 2006 search. It was probably not indexed at that stage as this paper was only identified as a DARE abstract.

Validity assessment: No formal assessment of validity was undertaken, although some aspects of validity were commented upon in the data extraction table and in the text of the review.
Data extraction: The authors do not state how the data were extracted for the review, or how many of the reviewers performed the data extraction. The following information were reported in tabular format: author and year of publication, study design, the number of participants per treatment arm, intervention, outcome measures, and results.
Results: Eight studies (702 women) were included: 2 placebo-controlled, double-blind, cross-over randomised controlled trials (RCTs; n=69), 3 crossover RCTs (n=196), 1 RCT (n=60), one controlled trial (n=350), and one pre-test post-test study (n=27). Acupressure on nausea and vomiting (7 studies): 6 studies reported significant reductions with acupressure, compared with the control treatment. The study reporting no effect (crossover RCT with 157 women) showed a significant decrease in nausea and vomiting for both active treatment and placebo groups ($p<0.0009$). Sensory afferant stimulation (1 randomised cross-over study, the sample size was unclear): 15 out of 25 women reported a significant reduction in nausea and vomiting. Acupressure and affective state (1 crossover RCT with 16 women): acupressure reduced nausea, anxiety, depression, psychosocial dysfunction, and dysfunction in performing activities of daily living ($p<0.05$). There were several methodological flaws associated with the primary studies. These included poor questionnaire response rates; small sample size; women unsure about positioning of self-applied bands; no differentiation between nausea and vomiting; no specification of uni- or bilateral application; lack of control group; inclusion and exclusion criteria were unclear; the estimation of gestational age was described generally, and only 2 studies confirmed gestational age using ultrasound; the pressure application time varied both between and within studies; and in some cases, the placebo control actually caused some surface pressure to the Neiguan point.
Conclusion: The majority of studies demonstrated that acupressure could significantly reduce the amount of nausea and vomiting associated with early pregnancy.

5.Klein,J. (2004) Acupressure for nausea and vomiting in cancer patients receiving chemotherapy (Provisional abstract). *Br J Community Nurs.* 9:(9): 383-388.

Practitioners working with patients undergoing chemotherapy regularly encourage them to use acupressure in the form of Sea Bands™ for the relief of treatment related nausea and vomiting. This mini-review sets out to uncover and examine the evidence base for this recommendation. A mini systematic review was carried out to identify randomized controlled trials comparing the use of acupressure plus usual care with usual care alone. The population was adult patients receiving cancer chemotherapy. The outcome was nausea or vomiting duration or intensity. Searches on Medline, Embase, AMED, the Cochrane Library, Cancerlit and Cinahl identified two randomized controlled trials involving 482 patients which compared acupressure to no intervention control. The results suggest that acupressure may decrease nausea among patients undergoing chemotherapy but further work is required before conclusively advising patients on the efficacy of acupressure in preventing and treating chemotherapy induced nausea.
Comment: This review was not included in the original report, despite being from 2004, perhaps due to re-indexing of the journal. Although it is not a systematic review, it is “based on the same format as a systematic review” and it appears to be of moderate quality, with good search strategy but only one reviewer and no attempt at data synthesis.

Summary of systematic reviews

1. Ezzo,J., K.Streitberger, and A.Schneider. (2006) Cochrane systematic reviews examine p6 acupuncture-point stimulation for nausea and vomiting. *Journal of Alternative & Complementary Medicine*. 12:(5): 489-495.

Background: In 1998, the National Institutes of Health Consensus Statement on Acupuncture concluded that promising results have emerged showing the efficacy of acupuncture in adult postoperative and

chemotherapy induced nausea and vomiting. The acupuncture point, P6 had been the point used in most of the trials.
Objectives: To summarize Cochrane systematic reviews assessing P6 stimulation for nausea and vomiting.
Results: Reviews were found on postoperative sickness, chemotherapy-induced nausea and vomiting, and pregnancy-related nausea and vomiting. Results for postoperative nausea and vomiting show the most consistent results with 26 trials and more than 3000 patients showing the superiority of real P6 stimulation over sham for both adults and children and for both nausea and vomiting. Pooled data of trials including different antiemetics showed that P6 stimulation seems to be superior to antiemetic medication for nausea and equivalent for vomiting. P6 stimulation was similarly effective across the different methods of stimulation, both invasive or noninvasive. Results for chemotherapy-induced nausea and vomiting showed 11 trials and over 1200 patients. Electroacupuncture, but not manual acupuncture, was beneficial for first-day vomiting. Acupressure was effective for first-day nausea but not vomiting. Wristwatch-like electrical devices were not effective for any outcome. Results for pregnancy-related nausea and vomiting comprised six trials and approximately 1150 patients. Results were mixed with some trials showing positive and other trials equivocal results with no favor to a certain kind of method.
Conclusions: P6 stimulation may be beneficial for various conditions involving nausea and vomiting. The added value to modern antiemetics remains unclear. In patients on chemotherapy, future research should focus on patients for whom the problems are refractory. The next steps in research should include investigating whether acupuncture points added to P6 or individualizing treatment based on a Traditional Chinese Medicine diagnosis increases treatment effectiveness. It would also be worthwhile to identify predictors of response across the different conditions so that the individual patients can optimize acupuncture point therapy.

Comment: This is a summary of 3 Cochrane reviews so provides little additional information apart from suggestions for future research.

Reviews of non pharmacological interventions, including complementary and alternative treatments, for nausea and vomiting

Five reviews, where acupressure was included as an intervention, assessed the available evidence for the treatment of nausea and vomiting.

1. Aikins,M.P. (1998). Alternative therapies for nausea and vomiting of pregnancy. *Obstet.Gynecol.* 91:149-155.
Abstract: OBJECTIVE: To review available evidence about the effectiveness of alternative therapies for nausea and vomiting of pregnancy. DATA SOURCES: MEDLINE and 13 additional US and international data bases were searched in 1996-1997 for papers that described use of alternative medicine in the treatment of pregnancy and pregnancy complications, specifically those addressing nausea, vomiting, and hyperemesis. Bibliographies of retrieved papers were reviewed to identify additional sources. METHODS OF STUDY SELECTION: All relevant English language clinical research papers were reviewed. Randomized clinical trials addressing specifically the use of nonpharmaceutical and nondietary interventions were chosen for detailed review. TABULATION, INTEGRATION, AND RESULTS: Ten randomized trials studying the effects of acupressure, ginger, and pyridoxine on nausea and vomiting of pregnancy were reviewed. Evidence of beneficial effects was found for these three interventions, although the data on acupressure are equivocal. Insufficient evidence was found for the benefits of hypnosis. Other interventions have not been studied. CONCLUSION: There is a dearth of research to support or to refute the efficacy of a number of common remedies for nausea and vomiting of pregnancy. The best-studied alternative remedy is acupressure, which may afford relief to many women; ginger and vitamin B6 also may be beneficial

2. Anderson,F.W.J. and Johnson,C.T. (2005). Complementary and alternative medicine in obstetrics *International Journal of Gynecology & Obstetrics* 91:116-124.
Abstract: Objective: To identify, survey and review randomized controlled studies of the use of complementary and alternative medicine (CAM) for obstetric treatment or health promotion. Methods: The MEDLINE database was searched to identify randomized controlled trials of CAM treatment and therapies in obstetrics. Studies examining modalities for treatment or improvement of health status were reviewed. Results: Fifty-four articles assessing a variety of health modalities met the criteria for inclusion. Acupressure and ginger for prenatal nausea and vomiting, moxibustion for version of breech presentation, sterile water injections for back pain relief in labour, and perineal massage to prevent perineal trauma have three or more studies demonstrating beneficial effect. Other interventions have been studied less, and evidence for them is limited. Conclusions: Some CAM interventions have evidence of effectiveness for use in obstetric patients, while others require further investigation before they can be considered for use in practice

3. King,C.R. (1997). Nonpharmacologic management of chemotherapy-induced nausea and vomiting. *Oncol Nurs Forum* 24:41-48.
Abstract: PURPOSE/OBJECTIVES: To review the nonpharmacologic interventions indicated to prevent or control chemotherapy-induced nausea and vomiting. DATA SOURCES: Journal articles. DATA SYNTHESIS: Despite improvements in antiemetic drug therapy, as many as 60% of patients with cancer who are treated with antineoplastic agents experience nausea and vomiting. Anticipatory nausea and vomiting are thought to be caused by the behavioral process of classical conditioning. Most nonpharmacologic interventions that are used to prevent or control nausea and vomiting in patients with cancer are classified as behavioral interventions. Behavioral interventions involve the acquisition of adaptive behavioral skills to interrupt the conditioning cycle. CONCLUSIONS: Nonpharmacologic interventions appear to be effective in reducing anticipatory and post-treatment nausea and vomiting. IMPLICATIONS FOR NURSING PRACTICE: These behavioral interventions can be effective in reducing anticipatory and post-treatment nausea and vomiting. Oncology nurses must learn these nonpharmacologic techniques and teach their patients to use them in combination with their prescribed antiemetic therapy

4. Lee,A. and Done,M.L. (1999). The use of nonpharmacologic techniques to prevent postoperative nausea and vomiting: a meta-analysis. *Anesth.Analg.* 88:1362-1369.
Abstract: We assessed the efficacy of nonpharmacologic techniques to prevent postoperative nausea and vomiting (PONV) by systematic review. These studies included acupuncture, electroacupuncture, transcutaneous electrical nerve stimulation, acupoint stimulation, and acupressure. Of the 24 randomized trials retrieved by a search of articles indexed on the MEDLINE and EMBASE databases (1980-1997), 19 were eligible for meta-analysis. The primary outcomes were the incidence of nausea, vomiting, or both 0-6 h (early efficacy) or 0-48 h (late efficacy) after surgery. The pooled relative risk (RR) and numbers needed to treat (NNT) were calculated. In children, no benefit was found. Some results in adults were significant. Nonpharmacologic techniques were similar to antiemetics in preventing early vomiting (RR = 0.89 [95% confidence interval 0.47-1.67]; NNT = 63 [10-infinity]) and late vomiting (RR = 0.80 [0.35-1.81]; NNT = 25 [5-infinity]) in adults. Nonpharmacologic techniques were better than placebo at preventing early nausea (RR = 0.34 [0.20-0.58]; NNT = 4 [3-6]) and early vomiting in adults (RR = 0.47 [0.34-0.64]; NNT = 5 [4-8]). Nonpharmacologic techniques were similar to placebo in preventing late vomiting in adults (RR = 0.81 [0.46-1.42]; NNT = 14 [6-infinity]). Using nonpharmacologic techniques, 20%-25% of adults will not have early PONV compared with placebo. It may be an alternative to receiving no treatment or first-line antiemetics. IMPLICATIONS: This systematic review showed that nonpharmacologic techniques were equivalent to commonly used antiemetic drugs in preventing vomiting after surgery. Nonpharmacologic techniques were more effective than placebo in preventing nausea and vomiting within 6 h of surgery in adults, but there was no benefit in children

5. Pan,C.X., Morrison,R.S., Ness,J., Fugh-Berman,A., and Leipzig,R.M. (2000). Complementary and Alternative Medicine in the Management of Pain, Dyspnoea, and Nausea and Vomiting Near the End of Life: A Systematic Review *Journal of Pain and Symptom Management* 20:374-387.
Abstract: To review the evidence for efficacy of complementary and alternative medicine (CAM) modalities

in treating pain, dyspnoea, and nausea and vomiting in patients near the end of life, original articles were evaluated following a search through MEDLINE, CancerLIT, AIDSLINE, PsycLIT, CINAHL, and Social Work Abstracts databases. Search terms included alternative medicine, palliative care, pain, dyspnoea, and nausea. Two independent reviewers extracted data, including study design, subjects, sample size, age, response rate, CAM modality, and outcomes. The efficacy of a CAM modality was evaluated in 21 studies of symptomatic adult patients with incurable conditions. Of these, only 12 were directly accessed via literature searching. Eleven were randomized controlled trials, two were non-randomized controlled trials, and eight were case series. Acupuncture, transcutaneous electrical nerve stimulation, supportive group therapy, self-hypnosis, and massage therapy may provide pain relief in cancer pain or in dying patients. Relaxation/imagery can improve oral mucositis pain. Patients with severe chronic obstructive pulmonary disease may benefit from the use of acupuncture, acupressure, and muscle relaxation with breathing retraining to relieve dyspnoea. Because of publication bias, trials on CAM modalities may not be found on routine literature searches. Despite the paucity of controlled trials, there are data to support the use of some CAM modalities in terminally ill patients. This review generated evidence-based recommendations and identified areas for future research.

Comments or letters referring to reviewed studies

1. Anon (2006). "Needling" away your (aching) back pain. Acupuncture and acupressure both can provide long-lasting relief for low back pain, new studies, say *Health News* 12:11-12.

2. Frost,H. and Stewart-Brown,S. (2006). Acupressure for low back pain. *BMJ* 332:680-681.
Comment: Both of the above refer to the following study:
Hsieh,L.L., Kuo,C.H., Lee,L.H., Yen,A.M., Chien,K.L., and Chen,T.H. (2006). Treatment of low back pain by acupressure and physical therapy: randomised controlled trial. *BMJ*.
Abstract: OBJECTIVE: To evaluate the effectiveness of acupressure in terms of disability, pain scores, and functional status. DESIGN: Randomised controlled trial. SETTING: Orthopaedic clinic in Kaohsiung, Taiwan. PARTICIPANTS: 129 patients with chronic low back pain. INTERVENTION: Acupressure or physical therapy for one month. MAIN OUTCOME MEASURES: Self administered Chinese versions of standard outcome measures for low back pain (primary outcome: Roland and Morris disability questionnaire) at baseline, after treatment, and at six month follow-up. RESULTS: The mean total Roland and Morris disability questionnaire score after treatment was significantly lower in the acupressure group than in the physical therapy group regardless of the difference in absolute score (-3.8, 95% confidence interval -5.7 to -1.9) or mean change from the baseline (-4.64, -6.39 to -2.89). Acupressure conferred an 89% (95% confidence interval 61% to 97%) reduction in significant disability compared with physical therapy. The improvement in disability score in the acupressure group compared with the physical group remained at six month follow-up. Statistically significant differences also occurred between the two groups for all six domains of the core outcome, pain visual scale, and modified Oswestry disability questionnaire after treatment and at six month follow-up. CONCLUSIONS: Acupressure was effective in reducing low back pain in terms of disability, pain scores, and functional status. The benefit was sustained for six months

3. Brill,J.R. (1995). Acupressure for nausea and vomiting of pregnancy: A randomized, blinded study *Obstetrics & Gynecology* 85:159-160.
This comments on a study that did not appear in the initial searches as the MeSH terms for the publication included ‘acupuncture points’ and ‘acupuncture therapy / methods’ not ‘acupressure’. A copy was obtained and the study was subsequently reviewed:
Belluomini, J., Litt, R,C,, Lee, K.A., Katz, M. (1994) Acupressure for nausea and vomiting of pregnancy: a randomized, blinded study. *Obstet Gynecol*: 84(2):245-8.
OBJECTIVE: To evaluate the effectiveness of acupressure in reducing nausea and vomiting of pregnancy. METHODS: Symptomatic pregnant women were randomized to one of two acupressure groups: one treatment group using an acupressure point (PC-6) and one sham control group using a placebo point. Subjects were blind to the group assignment. Each evening for 10 consecutive days, the subjects completed an assessment scale describing the severity and frequency of symptoms that occurred. Data from the first 3 days were used as pre-treatment scores. Beginning on the morning of the fourth day, each

subject used acupressure at her assigned point for 10 minutes four times a day. Data from day 4 were discarded to allow 24 hours for the treatment to take effect. Data from days 5-7 were used to measure treatment effect. RESULTS: Sixty women completed the study. There were no differences between groups in attrition, parity, fetal number, maternal age, gestational age at entry, or pre-treatment nausea and emesis scores. Analysis of variance indicated that both groups improved significantly over time, but that nausea improved significantly more in the treatment group than in the sham control group (F1,58 = 10.4, P = .0021). There were no differences in the severity or frequency of emesis between the groups. There was a significant positive correlation (r = 0.261, P = .044) between maternal age and severity of nausea. CONCLUSIONS: Our results indicate that acupressure at the PC-6 anatomical site is effective in reducing symptoms of nausea but not frequency of vomiting in pregnant women.

4. Chernyak,G. (2003). Tender active acupoint is not an ideal control for acupressure study. *Anesth.Analg.* 97:925-926.

5. Usichenko,T.I. and Pavlovic,D. (2003). Suggesting the optimal control procedure for acupressure studies. *Anesth.Analg.* 97:1196-1197.

Comment: Both of the above refer to the following study:
Fassoulaki,A., Paraskeva,A., Patris,K., Pourgiezi,T., and Kostopanagiotou,G. (2003). Pressure applied on the extra 1 acupuncture point reduces bispectral index values and stress in volunteers. *Anesth.Analg.* 96:885-90.
Abstract: We investigated the effect of pressure application on the acupuncture point "extra 1" and on a control point on the bispectral index (BIS) values and on stress in 25 volunteers. In each volunteer, pressure was applied on the extra 1 point for 10 min and on a control point for 5 min on different days and in a randomized manner. The BIS value was recorded before applying pressure on the extra 1 point, during pressure application every 30 s for 10 min, and after pressure release. Regarding the control point, BIS values were recorded for 5 instead of 10 min during pressure application because acupressure on that point was associated with an unpleasant feeling. Each volunteer was asked to score stress before and after pressure application from 0 to 10. The BIS values were significantly reduced 2.5, 5, 7.5, and 10 min during pressure application on the extra 1 point ($P < 0.001$ for each comparison, respectively) and returned to the baseline values after pressure release. Pressure application on the control point decreased BIS values ($P < 0.01$ and $P < 0.05$ at 2.5 and 5 min, respectively). However, these values were maintained close to 90% and were significantly higher than those obtained during pressure on the extra 1 point ($P < 0.001$ and $P < 0.001$ for the 2.5- and 5-min comparisons). The verbal sedation score values obtained after pressure application on the extra 1 point were also lower when compared with the values obtained after pressure application on the control point ($P < 0.001$). IMPLICATIONS: This crossover study investigated the effect of pressure application on the acupuncture "extra 1" point in healthy volunteers. Acupressure applied for 10 min on the extra 1 point significantly reduced the BIS values and the verbal stress score when compared with acupressure applied on a control point

6. McDougall,G.J. (2005). Research review: the effect of acupressure with massage on fatigue and depression in patients with end-stage renal disease. *Geriatr.Nurs* 26:164-165.
This refers to the following study:
Cho,Y.C. and Tsay,S.L. (2004). The effect of acupressure with massage on fatigue and depression in patients with end-stage renal disease. *J Nurs Res* 12:51-59.
Abstract: Fatigue and depressive mood are the most significant symptoms experienced by patients with end-stage renal disease. The purpose of this study was to examine the effectiveness of acupressure with massage in fatigue and depression in patients with end-stage renal disease (ESRD) receiving hemodialysis treatment. The study applied an experimental pretest and posttest design. Sixty-two hemodialysis patients participated in the study. Data were collected from two hemodialysis clinics in major hospitals in southern Taiwan. Following consent to the study, subjects were randomly assigned to an acupressure group or a control group. Patients in the acupressure group received acupoint massage for 12 minutes per day, three days per week, for four weeks. Subjects in the control group only received routine unit care. The measures included the Revised Piper Fatigue Scale, and Beck ' s Depression Inventory. Descriptive statistics, chi 2

tests, t-test and analyses of covariance were used for data analysis. The results indicate that subjects experienced a moderate level of fatigue. Nearly 65 % of hemodialysis patients had a depressed mood. ANCOVA results indicated that fatigue (F((1.54)) = 9.05, p =.004) and depression (F((1.54)) = 4.20, p =.045) among patients in the acupressure group showed significantly greater improvement than patients in the control group. The findings of this study provide an interventional model for nurses taking care of ESRD patients

Acupressure as part of a package of care

1. Cutshall,S., J.W.Laura, E.Deborah, M.S.Thoralf, F.K.Ryan, and B.A.Bauer. (2010) Effect of massage therapy on pain, anxiety, and tension in cardiac surgicalEffect of massage therapy on pain, anxiety, and tension in cardiac surgical patients: A pilot study. *Complementary Therapies in Clinical Practice*.16(92)C95.

Objectives: To assess the role of massage therapy in the cardiac surgery postoperative period. Specific aims included determining the difference in pain, anxiety, tension, and satisfaction scores of patients before and after massage compared with patients who received standard care. Design: A randomized controlled trial comparing outcomes before and after intervention in and across
groups. Setting: Saint Marys Hospital, Mayo Clinic, Rochester, Minnesota.
Subjects: Patients undergoing cardiovascular surgical procedures (coronary artery bypass grafting and/or valvular repair or replacement) (N ¼ 58).
Interventions: Patients in the intervention group received a 20-minute session of massage therapy intervention between postoperative days 2 and 5. Patients in the control group received standard care and a 20-minute quiet time between postoperative days 2 and 5. Outcome measures: Linear Analogue Self-assessment scores for pain, anxiety, tension, and satisfaction. Results: Statistically and clinically significant decreases in pain, anxiety, and tension scores were observed for patients who received a 20-minute massage compared with those who received standard care. Patient feedback was markedly positive. Conclusions: This pilot study showed that massage can be successfully incorporated into a busy cardiac surgical practice. These results suggest that massage may be an important therapy to consider for inclusion in the management of postoperative recovery of cardiovascular surgical patients.
Comment: This study investigated a massage treatment which included acupressure as one of 7 different massage techniques, but no information is given on the specific effect of acupressure.

2. Bauer,B.A., M.C.Susanne, J.W.Laura, E.Deborah, K.M.Penny, M.W.Christina, M.B.Karen, F.K.Ryan, and T.M.S.III. (2010) Effect of massage therapy on pain, anxiety, and tension after cardiac surgery: A randomized study. *Complementary Therapies in Clinical Practice*.16(70): C75.

Integrative therapies such as massage have gained support as interventions that improve the overall patient experience during hospitalization. Cardiac surgery patients undergo long procedures and commonly have postoperative back and shoulder pain, anxiety, and tension. Given the promising effects of massage therapy for alleviation of pain, tension, and anxiety, we studied the efficacy and feasibility of massage therapy delivered in the postoperative cardiovascular surgery setting. Patients were randomized to receive a massage or to have quiet relaxation time (control). In total, 113 patients completed the study (massage, n ¼ 62; control, n ¼ 51). Patients receiving massage therapy had significantly decreased pain, anxiety, and tension. Patients were highly satisfied with the intervention, and no major barriers to implementing massage therapy were identified. Massage therapy may be an important component of the healing experience for patients after cardiovascular surgery.
Comment: This study uses the same intervention as Cutshall et al 2010 (see above)

Miscellaneous

1. Ostberg,O., Horie,Y., and Feng,Y. (1992). On the merits of ancient Chinese eye acupressure practices. *Appl Ergon.* 23:343-348.
Abstract: Chinese schoolchildren and adults with strenuous visual tasks routinely perform massage-and-pressure exercises on selected acupressure points around the eyes. This practice, taught by the Jing-Luo

school of acupuncture for more than 4000 years, is claimed to prevent and cure myopia and other afflictions thought to result from visual close work. A four-week pilot experiment was carried out with the aim of designing a proper study on the possible short-term benefits of eye acupressure programmes. Questionnaire data revealed that the subjects did experience various eye/vision symptoms as a result of the 90 min experimental task. This could not be verified by the measurements of accommodation precision and critical flicker fusion, nor could any beneficial effects of acupressure be seen over the four experimental weeks

Comment: The aim of this vision exercise programme was to enable the design of a study on the possible short – term benefits of eye acupuncture.

2. Wu,X., Bai,G., Wen,J., and Yang,J. (2005). Evaluation on the therapeutic effects of digital acupoint pressure for obstetric spastic cerebral palsy. *J Tradit.Chin Med* 25:247-251.

Abstract: To probe the evaluation methods for effects of TCM treatment of cerebral palsy through clinical observation on the digital acupoint pressure in treating obstetric spastic cerebral palsy. From 1998-2003, 40 cases of spastic cerebral palsy were treated with digital acupoint pressure therapy. Ten indexes including intelligence, language, salivation, hand-grasping, thumb-adduction, turnover, sitting, standing, walking, and scissors-gait were divided into the 4 grades of normal, mild abnormal, moderate abnormal, and severe abnormal (dysfunction), respectively marked as 6, 4, 2, and 0 point, with 2 points increased for improving each grade of each item after the treatment. Meanwhile, the ranges were recorded and evaluated before and after the treatment on shoulder-abduction, elbow-extension, wrist-extension, forearm-backward-rotation, hip-abduction, straight-leg-lifting, knee-extension, and ankle-dorsiflexion. Those with the improvement of 10 degrees, 15 degrees, 20 degrees, 25 degrees, and 30 degrees in the range of movement of their contractured joints would obtain respectively 1, 2, 3, 4, and 5 points. There were significant differences before and after the treatment in the 18 items under observation except for intelligence, with obvious improvement shown after the treatment ($P<0.01$), the effective rate being 92.5%. The therapeutic criteria set in this research are well established in reflecting the functional improvements of the patient

Comment: This was an observational study to 'probe the evaluation criteria for the TCM therapeutic effects on cerebral palsy'.

Appendix 11 – Included in review references

11.1 Shiatsu

Ballegaard,S., Norrelund,S., and Smith,D.F. (1996). Cost-benefit of combined use of acupuncture, Shiatsu and lifestyle adjustment for treatment of patients with severe angina pectoris. *Acupunct.Electrother.Res* 21:187-197.

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11.2 Acupressure

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Appendix 12 - Results from Index to Theses and ZETOC searches.

None of the results from either of these searches were included for review as they did not meet the inclusion criteria.

Index to Theses

http://www.theses.com/

This website provides a 'comprehensive listing of theses with abstracts accepted for higher degrees by universities in Great Britain and Ireland since 1716.'

Two searches were carried out in February 2006, one for 'Shiatsu' and one for 'acupressure'.
There were two results from both searches and one loan copy was ordered as one thesis referred specifically to Shiatsu. The abstracts as they appear on the website are shown below together with the reasons for exclusion.

12.1 Shiatsu search results

1. Pirie, Z. The impact of delivering Shiatsu in general practice.
2003, G5f
Ph.D., Sheffield, 53-13808
This thesis presents a PhD research study on the integration of a complementary medicine clinic in a general practice. It describes the impact of delivering Shiatsu on an inner-city general practice, its GPs, patients and the Shiatsu practitioner. Practitioner research was conducted utilising a postpositivist, constructivist epistemology and predominantly qualitative methods. These methods were integrated using Cunningham's (1998) Interactive Holistic Research (IHR) which includes action research. The qualitative findings were evaluated with Interpretive Phenomenological Analysis (Smith, 1995) and the quantitative data was assessed with a statistics package for the social services (SPSS).

The main impact of the Shiatsu clinic on the general practice was that GP consultations with referred patients significantly reduced in terms of duration and frequency and involved fewer prescriptions for medication. GPs claimed that the clinic saved practice resources, offered greater options for care, increased their confidence in referrals to Shiatsu, enhanced the reputation of the practice and encouraged a more holistic approach to health.

The referred patients presented a complex mix of chronic physical and psychological/emotional symptoms. After having Shiatsu, they claimed they experienced less pain, digestive disorders, stress, depression, anger and anxiety and more energy, immunity, relaxation and support. A cycle of improvement emerged that suggested how this was partly due to patients reassessing their health and adopting new behaviours to prevent and treat symptoms.

In this study, the researcher was both the researcher and the complementary practitioner. The main impact of the Shiatsu clinic on was on the role as practitioner and the challenge of working with a new patient group in a new setting and receiving detailed evaluation from the patients and GPs.
Reason for exclusion:
A loan copy of this thesis was obtained form the University of Sheffield for review. This was a predominantly qualitative research project with a sample of 10 patients who presented with a variety of health problems. Apart from a published abstract from a presentation at the 7th Annual Symposium on Complementary Health Care 7th–9th December 2000, Exeter, UK, which is shown below, no further publications were found for this author:

***Focus Altern Complement Ther* 2001; 6: 89**
Delivering Shiatsu in general practice
Pirie Z
Institute of General Practice and Primary Care, ScHARR, The University of Sheffield, Northern General Hospital, Sheffield, S5 7AU, UK
Objective
To assess the impact of delivering a Shiatsu clinic in an inner-city general practice.
Materials and methods
The impact of a Shiatsu clinic was measured by: analysing recruitment of patients (*n* = 10) via referral from four GPs; comparing GP and patient perceptions of patients' health; measuring changes in patients' health; length/content of consultations with their GPs; and the experiences and satisfaction of all involved. Qualitative data came from 30 semi-structured interviews with patients, six interviews with the GPs and the CPs' reflective journal. Quantitative data was gathered from two validated health questionnaires, the MYMOP and SF-12.
Results
Ten female patients aged between 27 and 63 years attended the Shiatsu clinic, receiving a total of 56 treatments. The most common symptom was clinical depression, reported by five (50%) of the 10 patients. Muscular pain and digestive symptoms were also common, and symptoms were mainly chronic, persisting over 10 years. However, during the study, patients and GPs reported many changes in these potentially very resistant symptoms and an improvement in health and well-being, including a dramatic reduction in medication and consultations.
Conclusion
Complementary medicine can be delivered effectively in general practice, increasing its equity of access to a range of patients in primary care. Several positive benefits can be associated with receiving Shiatsu and further research on clinical and cost effectiveness is warranted.

2. Burrows, R. Holistic approaches to health and well-being in Northern Ireland.
1993, B4
Ph.D., Queen's University Belfast, 45-3572
The thesis is an anthropological study of holistic approaches to health and well-being in Northern Ireland, which places these 'alternative' therapies within a wider new age movement. Definitions of holistic approaches to health-care are examined and a critique of conventional medicine is offered from a holistic perspective. Theories of social movements are analyzed and the new age movement is represented as an innovative form of the production of knowledge, with specific attention given to holistic practitioners and new age leaders who operate as 'movement intellectuals'. Central metaphors within the movement are identified and discussed, principally, 'nature', 'emotion', and 'the body'.
The researcher used participant observation to provide an in-depth analysis of specific therapies, including Shiatsu, aromatherapy, tai chi, and gestalt psychotherapy. As well as identifying the commonalities and divergences within movement discourses, the thesis seeks to contextualize what can be seen as a transcultural movement within a local, Northern Irish framework. New age communities and spirituality are understood as an aspect of a broad holistic movement which attempts to transform the world by transforming the self.
Reason for exclusion: Shiatsu was not the main subject area

12.2 Acupressure search results

1. Dent, H.E. Development of a research base and management position protocol for the use of nurses caring for patients with nausea and vomiting following acute myocardial infarction
1999, G5f
Ph.D., Exeter, 49-6544
To develop a knowledge base and management protocol for the use of nurses caring for patients experiencing nausea and/or vomiting occurring after acute myocardial infarction.

Study 1, an observational study with data collected on admission and at two hourly intervals for 24 hours, to determine: 1) Incidence of post-myocardial infarction nausea and/or vomiting occurring after commencement of medical treatment (PMINV), 2) Severity of PMINV measured by the number of episodes and a severity score, 3) Association of PMINV with site, size and thickness of infarction, previous infarction, left ventricular failure, opiate administration, thrombolysis/reperfusion, cardiac pain, autonomic disturbances, age and gender, 4) Effectiveness of antiemetic treatment, and whether some PMINV is severe, persistent and intractable to treatment, 5) Whether the results of previous studies into the incidence of, and factors associated with, nausea and/or vomiting at onset of infarction prior to commencement of medical treatment could be confirmed.
The incidence of nausea and/or vomiting at onset of infarction was not associated with site, size or thickness of infarction, previous myocardial infarction, gender, age, or autonomic disturbance. These results dispute the results of previous studies which have suggested variously that nausea and vomiting were associated with inferior, transmural and large infarctions, and vagal over-excitation. The results of studies which indicated the symptoms were not associated with site of infarction were confirmed.
Study 2 was a partially randomised, placebo-controlled clinical trial, carried out concomitantly with the observational study, to determine whether P6 acupressure, applied continuously by wristband to both wrists, was effective as an adjunct to standard antiemetic therapy during the 24 hours after admission to the coronary care unit.
P6 acupressure reduced the incidence ($p < 0.05$) but not severity of PMINV compared with placebo during the latter 20 hours of treatment, but no benefit was demonstrated during the first four hours.
Reason for exclusion: Acupressure bands were used in this research project.

2. Yang, J. Cancer chemotherapy and anti-emetics
1989, G5c
M.Med.Sci., Queen's University Belfast, 40-4058
In recent years significant advances have been made in the treatment of malignant disease with cytotoxic drugs, but nausea and vomiting remains a severe side effect of many regimens. In a 204 patient survey, looking at which factors predisposed to chemotherapy sickness, women were more prone than men. Women who have post-operative sickness were particularly prone with moderately emetic drugs. Men who suffer from travel sickness are more prone to chemotherapy sickness than those who do not. Fear of the effects of chemotherapy predisposes to sickness, as does expectation of sickness. This research explored the clinical use of antiemetic drugs and acupunture at p6 point or other means of stimulating p6. Using up to data methodology it involved the following: (1) Assessing the efficacy of invasive and non-invasive methods. (2) Prolonging the effect of p6 acupuncture by acupressure. (3) Comparing the efficacy of small and large electrodes. P6 acupuncture is an effective adjuvant to conventional antiemetic therapy for patients having cytotoxic drugs. Its efficacy is limited to about 8 hours, but the benefit can be prolonged by use of a Sea Band, pressed for 5 minutes every two hours. Best results are obtained with invasive acupuncture. Surface electrodes are not good as needing but are still very effective. The larger size is slightly better than the smaller one. Acupressure by Sea Bands is not very effective as a primary treatment in these patients. P6 acupuncture has no side effects.
Reason for exclusion: This research was conducted prior to 1990 and acupressure bands were used.

12.3 ZETOC (British Library Electronic Table of Contents) search

‘Zetoc provides access to the British Library's Electronic Table of Contents of around 20,000 current journals and around 16,000 conference proceedings published per year. The database covers 1993 to date, and is updated on a daily basis. It includes an email alerting service, to enable you to keep up-to-date with relevant new articles and papers.
Zetoc is free to use for members of JISC-sponsored UK higher and further education institutions. It is also available to NHS Scotland and Northern Ireland.’

It is not clear what the level of access is for the general public or non academic institutions. The database can be accessed at:

http://zetoc.mimas.ac.uk/

Two searches, one for Shiatsu and one for acupressure, were carried out in April 2006, both searches included conference proceedings. It was not possible to download references to Reference Manager®, copies of results were available via email from the site.

There were 57 results for Shiatsu and 220 for acupressure. There were a number of duplicates within the searches where the same result appeared twice with different identification numbers. In the acupressure search there were 45 results from 'Townsend Letter for Doctors and Patients', an online forum for complementary and alternative medicine, which referred to G-Jo acupressure 'a westernized version of the so-called "ah-shi" or "tender point" style of acupuncture without needles (acupressure)'. http://www.g-jo.com/faq.html

There were no abstracts available for a preliminary screening. All of the acupressure results were excluded according to the exclusion criteria. Copies of two publications from the Shiatsu results were obtained for further screening. These were collections of posters from a conference held in Japan in 2002 and therefore were not included for review.

Akira Fukuoka, Eriko Ueda, Hiroshi Fukuoka & Yuko Koyama (2002)
Comparison of the effectiveness that Shiatsu massage of cervico brachial area has on psychosomatic relaxation where Qi is applied and where it is not.
Journal of international Society of Life information Science: 20 (2) S 400 - 405.

Eriko Ueda, Hiroshi Fukuoka, Yuko Koyama & Akira Fukuoka (2002)
Usefulness of Shiatsu massage on cervico-brachial area and Transcutaneous Electrical Acupunkture-point Stimulation (TEAS) in dental treatment.
Journal of International Society of Life Information Science: 20 (2) S. 412 – 416