

The treatment of osteoarthritis health and social care essay



**ASSIGN
BUSTER**

Abstract

Background: Acupuncture has been demonstrated to be an effective modality of treatment for the relief of pain, and in China acupuncture has been used for many centuries for treating numerous disorders which impair function, including osteoarthritis (OA) of the knee. **Aim:** To evaluate randomised clinical trials (RCTs), which compare a form of needle acupuncture against a sham, for the symptomatic treatment of OA of the knee. **Data sources:** Articles written in the English language, from September 2002 to August 2012, sourced from MEDLINE, CINAHL and the Cochrane libraries databases. **Results:** A total of 4 trials, yielding 981 participants met the required inclusion criteria was analysed for this systematic review. **Conclusion:** Based on the findings from the studies reviewed, in the treating of the symptoms, pain and dysfunction, often associated with that of osteoarthritis of the knee, acupuncture should be considered as a viable alternative or adjunct treatment. **Key words:** Acupuncture; electro-acupuncture; osteoarthritis; knee.

Introduction

OA is the most common disease to affect the joint(s), and is regarded as being the main cause of disability among the elderly (Peat et al., 2001). The economic cost of OA to society is estimated of accounting for between 1 and 2. 5% of a developed countries gross national product (Brooks, 2006). The direct financial burden to the National Health Service (NHS) in treating OA and its associated conditions between 1998-9 was estimated to be in the region of £1. 1billion (Arthritis Research Campaign cited in Whitehurst et al., 2011). When other aspects are factored in which are linked to OA due to <https://assignbuster.com/the-treatment-of-osteoarthritis-health-and-social-care-essay/>

loss of production caused by being absent from work, the societal costs, at 1998-9 prices, were estimated to be in the region of £3.2 billion (National Institute for Health and Clinical Excellence, cited in Whitehurst et al., 2011). OA of the knee is not only the most common type of arthritis, but is also the main cause of functional impairment of any other chronic disease in the elderly (Guccione et al., 1994 cited in White et al., 2011), and no doubt accounts for a sizable chunk of the £3.2 billion cost to the United Kingdom's (UK) costs. Due to the aging population, the prevalence of OA of the knee, along with all the associated costs are expected over the next 25 years to steadily increase (Schiller et al., 2012).

The articular cartilage in patients with OA has been demonstrated to lose its smoothness, elasticity and mechanical resistance, and the movements of the joints subsequently wears out the cartilage; leading to reactive bone remodelling, which leads to the formation of micro-fractures, osteophytes, pseudocysts and subchondral ebumation, and exposure to the end of the articular bone (Setnikar, 1992, cited in Sangdee et al., 2002). The consequential coarseness of the articular cartilage surface educes secondary inflammatory reactions bone and synovial membrane. Unlike the inflammation associated with other inflammatory joint diseases and rheumatoid arthritis, the inflammatory aspect of OA is comparatively mild (Bradley et al., 1991, cited in Sangdee et al., 2002).

The National Institute for Health and Clinical Excellence (NICE) (2008) suggest various treatment strategies for the treatment of OA of the knee, which include non-pharmacological treatment (i. e. weight loss (if the patient is overweight), exercise, advice on appropriate footwear, using a

<https://assignbuster.com/the-treatment-of-osteoarthritis-health-and-social-care-essay/>

transcutaneous electrical nerve stimulation (TENS) device for the relief of pain and applying cold or heat packs to the skin when the knee hurts) and pharmacological treatment (i. e. topical analgesics, paracetamol, opioid analgesics, non-steroidal anti-inflammatory drugs (NSAIDs) and intra-articular corticosteroid injections).

Pharmacological treatments have been associated with many side effects. The long term use of paracetamol, for instance is associated with renal and hepatic impairment; and the use of NSAIDs, due to them inhibiting the biosynthesis of prostaglandin, has been directly implicated to several common and sometimes severe side effects, which include: hypertension, renal insufficiency, congestive heart failure, hyperkalemia and gastrointestinal bleeding. The latter alone is believed to cause approximately 2, 200 deaths and result in the emergency hospital admission of around 12, 000 patients per year in the United Kingdom alone (Towheed et al., 2006 cited in Manheimer et al., 2007). In lieu of the risks connected with various pharmaceutical interventions, a less toxic form of treatment for the symptoms associated with OA of the knee is needed.

Acupuncture has become popular over the years, and is widely regarded as an effective intervention in the treatment of various conditions. Despite its popularity, the exact mechanisms by which acupuncture exerts its effects are not clearly understood, and both the West and the East have philosophised how acupuncture works (Ernst, 2006). Western philosophy is rooted in science based theories which have endeavoured to explain the clinical effects (including the analgesic effects) induced by acupuncture, and arguably the most popular theory to emerge is the ' gate control' theory.

There are two different types of peripheral fibres found in the skin and muscle which conduct impulses towards the spinal grey matter: 1) myelinated 'A' delta fibres, associated with localised 'sharp' pain (also known as 'fast' pain in relation to the speed at which the nerve impulses reach the brain), and 2) the smaller, un-myelinated 'C' fibres, associated with chronic poorly defined pain (also known as 'slow' pain) (Pyne and Shenker 2008). The gate control theory proposed by Melzack and Wall (1965) cited in Pyne and Shenker (2008) suggests the inter-neurons (which contain enkephalin) located within the substantia gelatinosa layer of the superficial dorsal horn, located in the spinal cord, can be opened by nociceptive fibres, and closed by the larger 'A' delta fibres. Acupuncture (both manual and EA) have been found to stimulate the larger 'A' delta fibres and it is presumed the gating mechanism is activated by them, inhibiting the transmission of pain through the enkephalin dependent mechanisms. This theory can be used to explain the immediate relief of pain but fails to address the prolonged analgesic effects associated with acupuncture (Pyne and Shenker 2008). Eastern philosophy has arguably a more eloquent depiction, using terms such as 'qi' and 'meridian' to describe how acupuncture works (Mole, 2007). Qi is believed to be the ethereal substance of which everything is made from, whether it be in the form of the air we breathe, the substances our bodies are made of, the earth we live on or the universe (and everything within it) we live in (Mole, 2007). In regard to Qi, Wang Chong (a. d. 27-97) wrote:

Qi produces the human body just as water becomes ice. As water freezes into ice, so qi coagulates to form the human body. When ice melts, it

becomes water. When a person dies, he or she becomes spirit (shen) again. It is called spirit, just as melted ice changes its name to water (cited in Mole, 2007, p. 14).

A Meridian is believed to be a pathway/channel, which is responsible for the transportation of qi to all areas of the body, including the skin, muscles, ligaments, organs, joints and bones. There are believed to be many hundreds of channels within the body, of these only twelve of them are considered to be the main ones. These twelve meridians are named: lung, large intestine, stomach, spleen, bladder, kidney, pericardium, triple-burner, gall bladder and liver. With the exception of the triple-burner meridian, all the channels are named after an organ, due to them, at some point, penetrating the said organ. This does not mean the actions of the channel are exclusive to its said name, as all the meridians join at least two other main channels, and have branches along its length which go on to join the many other hundreds of pathways. Every area the channels traverse there are branches coming off and penetrating all there is around it, and because of this configuration, every channel has the potential to affect all areas of a persons' mental and physical wellbeing (Deadman, et al., 1998). Illness is said to occur when one or more of these meridians become blocked and the qi is no longer able to flow freely. One of the main things which can induce a blocked meridian is qi deficiency (which can be brought on by any one or combination of, old age, poor diet or lack of exercise) (Kaptchuk, 1985).

Acupuncture involves the insertion of fine, sterilised, single use needles into specific points called acupuncture points. These points are mostly located on the twelve main meridians, each of them having the capacity to amend

various biochemical and physiological conditions. By inserting the needles into specific points in the body, it is believed to aid the body in unblocking and improving the quality of qi in the meridian, which in effect helps return the patient back to a state of health, harmony and balance. Seen from a traditional Chinese perspective, acupuncture in many instances is a causal therapy (Ernst, 2006).

The notion of 'meridians' and 'qi' is not however entirely lost on western science, as was arguably first postulated by Myers (2001) who found, via numerous dissections of human body's, that there appeared to be a network of fascia, which Myers named 'Anatomy Trains', and on investigation discovered it had an estimated 80% correlation with that of meridians which led Myers to the hypothesis the meridians are no other than that of the fascia network. This hypothesis is supported by Bai et al. (2011) who describe fascia as soft tissue constituent of connective tissue which surrounds and penetrates all of the body's vital organs, bones, muscles and nerve fibres, creating an uninterrupted 3D matrix providing physiological support for the metabolically active systems of the body, comprised of specialised cells and tissues. If the meridians are fascia then Qi could well be one of, or a combination of: the mechanical distribution of forces through fascia; nerve signals; electrical signalling through the gap junctions amid perineurial cells; the continual flow of paracrine signalling molecules. A systematic review can be defined as a research project where all the publications using pre-defined criteria are sought, regarding a particular subject. The results are next combined and the findings summarised in such a way that it is deemed a useful tool to enable patients and policymakers to

make informed decisions regarding health care. An important strength of a systematic review is that the researcher's own bias is restricted by utilising a strict pre-defined methodology to extract all necessary data (Mulrow, 1994 as cited in White et al., 2006). This paper is the summation of a systematic review conducted to determine if acupuncture was effective in treating the symptoms associated with OA of the knee.

Aim of the Review

By systematically evaluating the evidence produced from the trials which met the inclusion criteria, it is the intention of this review to establish if acupuncture is an effective for treating the symptoms associated with OA of the knee. The null hypothesis states ' Acupuncture will not be effective in treating the symptoms associated with OA of the knee'.

Methods

Approach to the search of literature

A search of CINAHL (Cumulative Index to Nursing and Allied Health Literature) was also undertaken from September 2002 to August 2012, carried out as follows: 1) ' acupuncture' or ' electroacupuncture (searched as a key word) yielded 2, 987 hits; 2) ' osteoarthritis' (searched as a key word) yielded 3, 042 hits; 3) ' knee' (searched as a key word) yielded 6, 500 hits. When these 3 searches were combined together, it yielded 56 citations. A search of the Cochrane Library was also undertaken from September 2002 to August 2012, carried out as follows: 1) ' acupuncture' or ' electroacuncure' (searched as a key word) yielded 2, 702 trials; 2) ' osteoarthritis' (searched as a key word) yielded 1, 747 trials; 3) ' knee'

(searched as a key word) yielded 2, 909 trials. When these 3 searches were combined together, it yielded 75 citations. A search of MEDLINE (via PubMed) from September 2002 to August 2012 was carried out as follows: 1) 'acupuncture' or 'electroacupuncture' (searched as a key word) yielded 10, 516 hits; 2) 'osteoarthritis' (searched as a key word) yielded 24, 145 hits; 3) 'knee' (searched as a key word) yielded 44, 815 hits. When these 3 searches were combined together, it yielded 225 hits. A further search of 'randomised controlled trials (from these 225 hits) resulted in 68 citations.

Inclusion and exclusion criteria

English language trials, from the year September 2002 to August 2012, using human subjects, were included if the trials and depicted as RCTs comparing the effects of genuine acupuncture, using needles and/or conducting electricity through needles (EA) using a transcutaneous electrical nerve stimulation (TENS) machine (which is attached to the needle via a crocodile clip), against sham acupuncture (non-penetrating at acupuncture points or minimal acupuncture at non-acupuncture points), for the symptoms associated with OA of the knee. Trials were excluded if they were non-randomised or non-controlled; depicted case studies; were preliminary or pilot studies; studied the effects of other forms of acupuncture other than that of needle or EA (such as laser, acupressure or bee venom acupuncture); studied joints other than that of the knee; did not have a control group which evaluated acupuncture on its own (such as acupuncture combined with a pharmaceutical drug compared against sham acupuncture combined with a pharmaceutical drug); or were not available in English.

Results from included trials

A total of 4 trials, yielding 981 participants were analysed for this review.

Quality assessment and data extraction

Full text hard copies of all the trials were attained and subsequently read in full by C. J. H.. Data was extracted in accord with the pre-defined criteria of the Oregon CONSORT (Consolidated Standards of Reporting Trials) STRICTA (Standards for Reporting Interventions in Clinical Trials of Acupuncture) Instrument (OCSI) (Hammerschlag et al., 2010). Internal validity of the RCTs was evaluated using an eleven item scale designed by the Cochrane Back Review Group (see table 1) (Tulder et al., 2003). Participants: Participant numbers from each of the studies ranged from 68 (Jubb et al., 2008) to 570 (Berman et al., 2004). The mean age of the participants was 64. 4 (Berman et al., 2004, Jubb et al., 2008, Sangdee et al., 2002 and Witt et al., 2005). All of the participants in the included studies had previously been diagnosed with osteoarthritis of the knee in accord with criteria of the American College of Rheumatology (ACR) and/or through radiographic evidence (Berman et al., 2004, Jubb et al., 2008, Sangdee et al., 2002 and Witt et al., 2005). Groups: In order to meet the criteria for inclusion in this systematic review a study needed to be a RCT which had genuine acupuncture and a control group. Four of the trials evaluated genuine acupuncture to a sham acupuncture (Berman et al., 2004, Jubb et al., 2008, Sangdee et al., 2002 and Witt et al., 2005), 1 trial had an educational control (Berman et al., 2004) and 1 trial had a diclofenac (a type of non-steroidal anti-inflammatory drug), EA together with diclofenac, and placebo tablet together with placebo EA (Sangdee et al., 2002). Forms of acupuncture

treatment: The types of genuine acupuncture includes: needling with no electrical stimulation (Witt et al., 2005), EA on either all the acupuncture points (Sangdee et al., 2002) or a combination of needling without any electrical stimulation plus EA on a subset of the needles used (Berman et al., 2004 and Jubb et al., 2008) and a ring and plaster system (Jubb et al., 2008). Types of sham acupuncture includes: minimal acupuncture (needling superficially at non-acupuncture points (Witt et al., 2005), a ring and plaster system (Jubb et al., 2008), patch electrodes without any electrical current or needles (Sangdee et al., 2002) and tapping acupuncture points on of the knee with a needle guide tube (knees were obscured from the patients sight), plus the insertion of needles in non-acupuncture points in the patients visible abdomen (Berman et al., 2004). All of the studies' authors reported that trained professions administered the acupuncture treatments. In three of the studies the sensation of De qi (the most common sensations being pressure and soreness, followed by tingling, dull pain, numbness, warmth, heaviness, coolness and fullness) was elicited, which is believed to confirm the needle is inserted in the correct place (Berman et al., 2004, Jubb et al., 2008 and Witt et al., 2005). The same 2 points which make up Xiyan (eyes of the knee) were used in all 4 studies (Berman et al., 2004, Jubb et al., 2008, Sangdee et al., 2002 and Witt et al., 2005). The same 2 points were used in 75% of the studies: Zhu san li (stomach meridian point 36) and Yin ling quan (spleen meridian point 9) (Berman et al., 2004, Jubb et al., 2008 and Sangdee et al., 2002). The same 7 points were used in 50% of the studies: Qu quan (liver meridian point 8) (Sangdee et al., 2002 and Witt et al., 2005), Yang ling quan (gall bladder meridian point 34), Wei zhong (bladder meridian point 40), Cheng shan (bladder meridian point 57) (Jubb et al., 2008 and Witt et al., 2005).

<https://assignbuster.com/the-treatment-of-osteoarthritis-health-and-social-care-essay/>

al., 2008 and Witt et al., 2005), San yin jiao (spleen meridian point 6), Kun lun (bladder meridian point 60) and Tai xi (kidney meridian point 3) (Berman et al., 2004, Witt et al., 2005). One trial allowed the acupuncturist to individualise the treatments by deciding which points to use from a list of approved acupuncture points (Witt et al., 2005). Three of the studies needed a minimum of 8 acupuncture points (Berman et al., 2004, Jubb et al., 2008 and Witt et al., 2005). The remaining study needed just 4 acupuncture points (Sangdee et al., 2002). Three of the studies retained the needles in place for a minimum of 20 minutes (Berman et al., 2004, Sangdee et al., 2002 and Witt et al., 2005) and the remaining study needed acupuncture points located on the anterior aspect of the body and retained the needles for 10 minutes, then more acupuncture points were needed on the posterior aspect of the body, which were also retained for 10 minutes (Jubb et al., 2008). The four studies had a treatment period ranging from 5 to 26 weeks, with the total amount of treatment sessions varying from 10 to 23 (Berman et al., 2004, Jubb et al., 2008, Sangdee et al., 2002 and Witt et al., 2005). Design: Only 1 study appeared to give an explanation regarding the treatment and control interventions (Witt et al., 2005). All of the studies utilised a single-blind design. All the participants were blinded regarding being treated with genuine acupuncture or sham acupuncture (Berman et al., 2004, Jubb et al., 2008, Sangdee et al., 2002 and Witt et al., 2005). Participants however could not be blinded in the studies which used an education or waiting list control (Berman et al., 2004 and Witt et al., 2005), in every trial, group assignments were blinded to the assessors. In all studies pain was the common denominator as an outcome measure, and all the trials used the Western Ontario and McMaster Universities Osteoarthritis <https://assignbuster.com/the-treatment-of-osteoarthritis-health-and-social-care-essay/>

Index (WOMAC) pain subscale to measure pain (Berman et al., 2004, Jubb et al., 2008, Sangdee et al., 2002 and Witt et al., 2005). In addition to this, two used a visual analogue scale (VAS) to measure pain (Jubb et al., 2008, Sangdee et al., 2002). All the studies utilised the WOMAC stiffness and function scale to measure physical function (Berman et al., 2004, Jubb et al., 2008, Sangdee et al., 2002 and Witt et al., 2005). Two of the trials incorporated a patient global assessment, making them the only ones to integrate the 3 core set clinical guidelines as suggested by 'Outcome Measures in Rheumatology and Arthritis Clinical Trials' (Bellamy et al., 1997). Additional outcome measures included in the studies include: analysis of the concentration of plasma β -endorphin (Jubb et al., 2008), measurements on quality-of-life (Berman et al., 2004 and Witt et al., 2005), measurements based on performance, for example walk times (Berman et al., 2004 and Sangdee et al., 2002) and the physician global assessment (Sangdee et al., 2002). Outcomes: The only outcome which was reported by all the studies was pain; therefore pain will be this sections focal point. All the studies demonstrated a statistically significant reduction in pain in the genuine acupuncture group when compared to the control group (Berman et al., 2004, Jubb et al., 2008, Sangdee et al., 2002 and Witt et al., 2005). In addition to this one study also found the pain reduction was significantly greater in acupuncture group when compared to the group treated with the pharmacological drug diclofenac (Sangdee et al., 2002). All of the studies found in the acupuncture group there was a statistically significant improvement in the physical function when compared to the control group (Berman et al., 2004, Jubb et al., 2008, Sangdee et al., 2002 and Witt et al., 2005). Only 1 of the 2 trials that incorporated a patient global assessment

<https://assignbuster.com/the-treatment-of-osteoarthritis-health-and-social-care-essay/>

reported that the acupuncture group demonstrated significantly greater improvement when compared to the control group (Berman et al., 2004).

Discussion

Based on the findings of the 4 randomised controlled trials which were identified for this review, the evidence suggests genuine acupuncture is an effective form of treatment for the symptoms of pain and the physical dysfunction often associated with osteoarthritis of the knee when compared to sham acupuncture. There was however insufficient evidence to support the use of acupuncture for any other symptoms associated with osteoarthritis of the knee. Finding suitable placebo controls is one of the problems associated with studies of acupuncture. Acupuncture placebos used in trials include minimal needling, penetrating sham (the needling of points not recognised as being acupuncture points) or non-penetrating sham (White et al., 2006). However, as there appear to be no universally accepted forms of placebo, some of the methods utilised for the studies reviewed might not be adequate. This view is supported by Kaptchuk et al. (2006) study which suggests that non-penetrating sham acupuncture was found to have a greater affect for subjective pain outcomes than placebo tablets; and it could be argued that the findings from the studies which incorporated a non-penetrating sham acupuncture as there control produced distorted results of the true nature of genuine acupuncture. Randomised, placebo-controlled studies are generally considered to be the gold standard for evaluating of the efficacy of treatments, and obtaining valid informed consent is perceived to be a basic ethical necessity for this type of clinical research, this includes notifying prospective study participants they could be

randomly allocated to a sham control which has been designed to look identical to the experimental treatment undergoing evaluation (Miller and Kaptchuk, 2007). Despite this, out of the four studies reviewed, only the study carried out by Witt et al. (2005) demonstrated the participants had been informed. The lack of consistency in informing the participants that one or more treatments are undergoing evaluation could potentially impair the heterogeneity of this review. Three of the studies obtained De qi sensation (Berman et al., 2004, Jubb et al., 2008 and Witt et al., 2005). Research carried out by White et al., (2010) suggests there was no difference on the levels of pain relief experienced by patients with osteoarthritis with those who experienced the sensation of De qi to those where De qi was not elicited. This puts into question of the use of acquiring De qi in studies evaluating acupuncture as it could potentially make the participants aware they were receiving genuine acupuncture and not a sham form of acupuncture, undoing the blinding in the trials in the process.

Conclusion

Based on the findings from the studies reviewed, in the treating of the symptoms, pain and dysfunction, often associated with that of osteoarthritis of the knee, acupuncture should be considered as a viable alternative or adjunct treatment.