Original Article

Effectiveness of Yoga Intervention for Chronic Neck Pain: A Systematic Literature Review

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Abstract

Objective: This study aims to determine whether yoga interventions are effective in managing chronic neck pain
Methods: The design used in this study was a systematic literature review. Electronic databases used for literature review were PUBMED, Science Direct, Proquest and Google Scholar to identify all types of studies of yoga interventions in chronic neck pain. This research will be published in English within October 2008 and October 2018.
Results: Five articles were included in the review of this study and were identified. Critical assessment based on a trials. Yoga can significantly reduce the intensity of chronic neck pain for yoga groups in all trials. However, this research still needs further research to further explore the approaches to yoga iyengar intervention from various countries.
Conclusions: Several studies have concluded that yoga interventions are used to reduce the intensity of patients' chronic neck pain. All studies had significant results. However, the need for further research related to yoga interventions for chronic neck pain patients in various countries.

Keywords : Chronic neck pain, yoga, literature review.

Introduction

Chronic pain is highly prevalent (Fejer, Kyvik & Hartvigsen, 2006; Crook, J., Rideout, E., & Browne G, 1984), and has deleterious e□ects on the physical (Hagen et al, 2002) and mental health of those. Chronic pain also has a socio-economic impacts, such as direct costs, namely visits to the doctor, treatment, prescription drugs. Whereas indirect costs are a lack of absenteeism and work disability (Willich et al, 2006). Chronic neck pain is an important health problem for the global community which has a prevalence of up to 20% in the population working throughout the world (Michalsen et al, 2012). The average lifetime prevalence was around 50% (Fejer, Kyvik & Hartvigsen, 2006). According to Cote et al (2008) said that neck pain caused more than 10% of work absenteeism. The prevalence of chronic neck pain has increased which is associated with increasing economic development which can cause socio-economic negative effects on these conditions (Cheng, 2015). This finding implies that effective management and low funding is needed for the treatment of chronic neck pain. Previous research has shown that most people with chronic pain use alternative or complementary treatments to relieve their pain (Cramer et al, 2013).

Yoga can be applied to reduce pain intensity (Sharma, 2014). Yoga is considered a mind-body

treatment, part of complementary therapy and alternative medicine (Khalsa, 2004). From a psychological point of view, yoga can increase mental and physical awareness, increase self-sufficiency in controlling pain, change behavior and emotions to be positive (Wren et al, 2011).

Safe and cost-effective interventions consist of physical posture, breathing exercises, meditation, and relaxation. Yoga exercises have been suggested to reduce pain by lowering the regulation of the hypothalamic pituitary adrenal gland and sympathetic nervous system (Sharma, 2014). Yoga has been increasingly used to relieve pain, but the effectiveness of practice must be confirmed by clinical evidence (Cramer et al, 2013). The most common style of yoga taught in the United States and Europe is Iyengar yoga (Signet Market Research, 2000). Iyengar applied a variety of therapies to classical yoga postures for many health problems including chronic neck pain (Iyengar BKS, 1995). Yoga is increasingly proven to be effective in reducing pain and disability (Bussing et al, 2012), which accompanies various physical ailments (Barnes et al, 2008; Clarke et al, 2015). The accuracy of the study method, participant safety, results, and effects in research on yoga interventions must be considered. Therefore, the purpose of this review was to find out whether yoga interventions are effective in managing chronic neck pain.

Methods

Design: A Systematic literature review design was used for this study.

Search strategy and review process: A literature search was conducted to identify all controlled yoga clinical trials for chronic neck pain. The electronic databases used were PUBMED, Science Direct, Proquest and Google Scholar. All types of studies had been searched for within 2008 to 2018. The search terms in this study is yoga and chronic neck pain. Studies that have the potential to fulfill the requirements will be taken, and reviewed whether they are in accordance with the research criteria.The keywords "yoga" and "chronic neck pain" were used to identify relevant literature. We also manually checked the reference list from relevant reviews and include studies to take additional studies that potentially qualified.

Study selection

We deleted duplicate records independently, reviewed eligibility through screening titles and abstracts, and identified records that were left to be included, excluded or required further assessment. The inclusion criteria were as follows :

(1) Patients who experience chronic neck pain

(2) use yoga intervention iyengar 90 minutes every week for 9 weeks

(3) The results measured were the intensity of chronic neck pain.

Articles taken were all types of studies that tested yoga in humans of all ages and genders who suffered from chronic pain in the neck.

Data analysis

The process of selecting research using the PRISMA diagram approach for the literature review is shown (Figure 1) (Moher et al, 2010). The authors analyzed the literature in this review focusing on the effectiveness of yoga interventions to reduce the intensity of chronic neck pain. Explanation of data handling methods and study results including measurement of output can be seen in grid synthesis. The synthesized study considers quality ratings for each article, consistency of findings in all studies and considers studies that investigate similar interventions. This can be seen in (Table 1).

Results

Study characteristics

The characteristics of the study are illustrated in Figure 1, of all articles that met the requirements summarized in Table 1. The articles were published between 2012 and 2017. All of these studies were conducted in Germany. Participants involved in these 5 studies were 244 participants. Among these titles, 6 potential experiments were identified from PUBMED, 9 from Science Direct, 22 from Proquest and 923 from the Google Scholar database. After screening the title and full text 5 were obtained to be review articles, 1 qualitative article, and 4 RCT articles that satisfied inclusion criteria.

Description of intervention

All articles divided into two groups, namely the intervention group that received iyengar yoga interventions and the control group performed independent training and self-care (Cramer, Lauche, Hohmann, Lu, et al., 2013; Cramer, Lauche, Hohmann, Langhorst, et al, 2013; Brunnhuber and Kessler, 2012; Allende et al., 2017; Lauche and Cramer, 2012). All participants

experienced chronic neck pain. The participants of the 5 trial articles following the Yoga program heard 90 minutes every week for 9 weeks. Four RCT articles set the criteria for intensity of neck pain, which is a score of 40 mm or more on a 100-mm visual scale (VAS). Participants practice yoga to improve stability, flexibility, harmony, and mobility in muscles, joints, tendons, and strengthen muscles in the neck and shoulders. In the Iyengar yoga trial in five articles, participants trained every week for 9 consecutive weeks with a duration of 90 minutes for each intervention. Iyengar Yoga is carried out under the supervision of a yoga instructor or certified physiotherapist and has experience in treating patients with chronic neck pain. In all articles, the iyengar yoga intervention group was compared with the control group to evaluate the effect on chronic neck pain. The intensity of chronic neck pain with a value of $p < 0.001$ in three trials and a p value of 0.03 in one trial (Table 1).

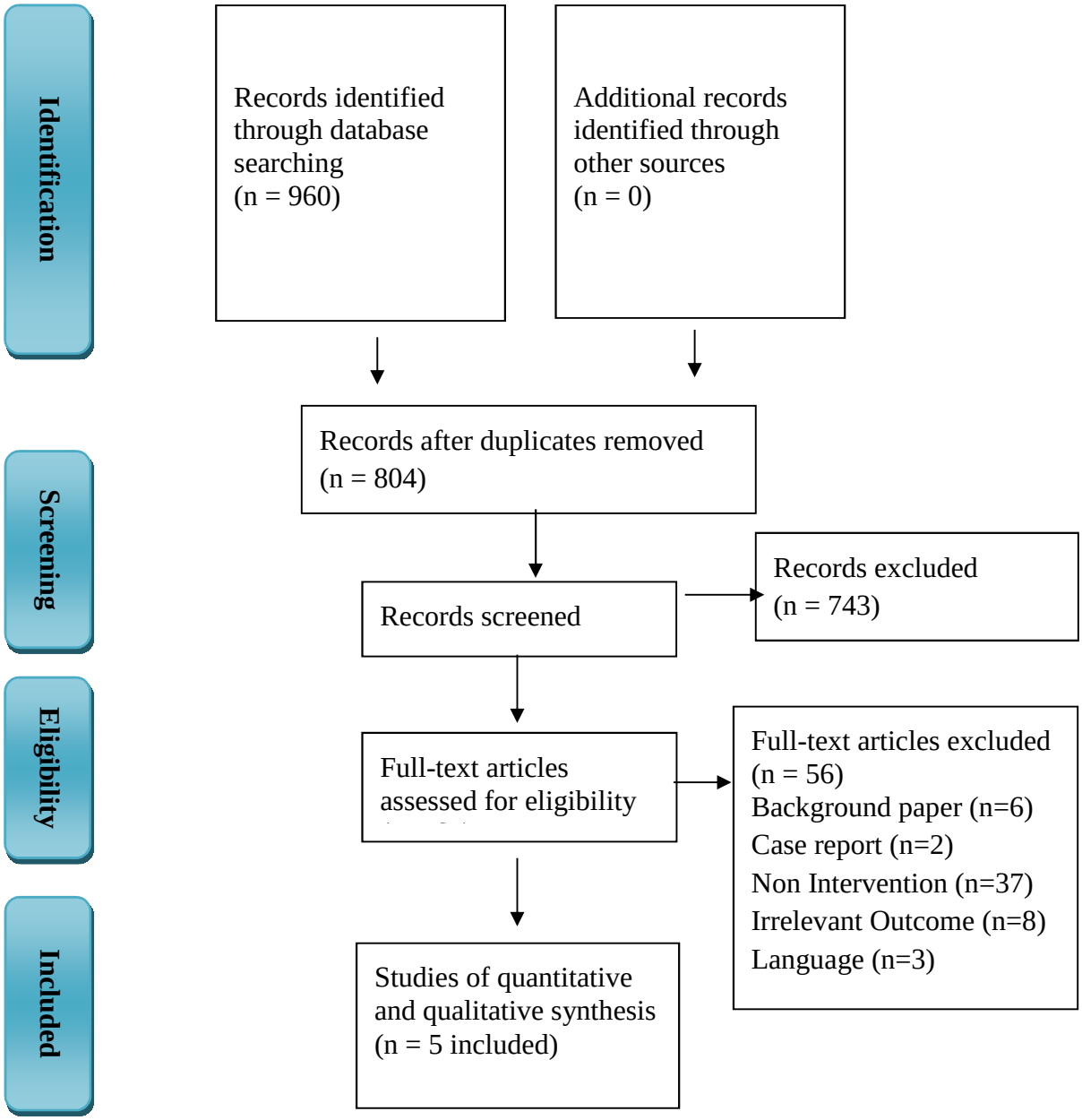

Figure.1 PRISMA Diagram chart of search and selection of literature

Table 1. Characteristics Of Included Trials

Researcher, Country	Research design	Objective	Participant	Intervention	Outcome Measures	Results
(Cramer, Lauche, Hohmann, Langhorst, & Dobos, 2013), Germany	RCT	To assess the effects of 9 weeks of yoga intervention on chronic non-specific neck pain 12 months after completion.	51 participants with chronic non-specific neck pain.	9 week yoga group intervention.	Measurement of pain intensity using VAS.	**Primary:** From the beginning to 12 months of follow-up, the pain intensity increased from 48.81 mm (SD = 17.71 mm) to 32.31 mm (SD = 20.68 mm) (P <0.001). Twenty-three patients (63.9%) received a reduction in pain intensity from the start of at least 30%, and 17 patients (42.2%) received at least 50% reduction. **Secondary : -**
(Cramer, Lauche, Hohmann, Lu, et al., 2013), Germany	RCT	To evaluate the effects of yoga Iyengar compared to exercise on chronic non-specific neck pain.	51 participants with chronic neck pain. Yoga interventions (n = 25) and exercise (n = 26).	Patients were randomly assigned to yoga or exercise. Yoga groups attended 9-week yoga courses and exercise groups received self-care guides with home-based exercises to relieve neck pain.	Measurement of pain intensity using VAS.	**Primary:** Patients in the yoga group reported a significantly lower neck pain intensity compared to the exercise group with an average difference: 13.9 mm (95% CI, 26.4 to 1.4), P = 0.03). **Secondary : -**
(Brunnhuber & Kessler, 2012), Germany	RCT	To evaluate the effectiveness of yoga Iyengar in chronic neck pain using randomized clinical trials.	77 participants with chronic neck pain who scored> 40 mm on a 100-mm visual analogue scale (VAS) were randomized to an Iyengar yoga program 9 weeks	The intervention group received weekly yoga practice for 90 minutes. While the control group received a standard self-care exercise guide.	Measurement of pain intensity using VAS.	**Primary:** Yoga programs are more useful than training and educational programs related to neck pain intensity (VAS) at week 10. The results of the analysis produce very significant group differences

			with a weekly 90-minute class (n = 38) or to a self-care / exercise program (n = 38)			(–20.1, 95% CI: –30.0, –10.1; P <.001). **Secondary :** At week 10, about 68% of subjects in the yoga group compared to 26% in the self-care / sports group rated the effectiveness of the intervention as good or very good using a 5-point Likert scale.
(Allende, Anandan, Lauche, & Cramer, 2017), Germany	RCT	To investigate the physical and behavioral effects of a 9-week yoga course on chronic non-specific neck pain.	47 participants who had non-specific neck pain. The participants were randomly assigned to either a yoga group (23) or an independent training group (24).	Iyengar yoga program 9 weeks.	Measurement of pain intensity using VAS.	**Primary:** Significantly an increase in the right model, X2 (~ 3) = 51.3, p <0.00001. These results indicated that participants' average NPI decreased by 2.33 from week to week. **Secondary : -**
(Lauche & Cramer, 2012), Germany	Qualitative Study	To find out the effect of yoga that is felt on body perception and psychosocial aspects of life for patients with chronic neck pain.	18 patients with chronic nonspecific neck pain were recruited from a larger randomized controlled trial of yoga for chronic neck pain.	The yoga program is heard 90 minutes once a week for 9 weeks.	Semi-structured interviews using audio recorders.	Primary: Study participants reported experience in the physical, cognitive, emotional, behavioral and social dimensions. They described active inner involvement during yoga practice, as well as renewed body awareness, a perceived internal locus of control, cognitive reevaluation of physical activity and increased acceptance of pain and disability. **Secondary : -**

Table 2. Critical appraisal RCT

No.	Appraisal Cheklist	(Cramer, Lauche, Hohmann, Langhorst, & Dobos, 2013)	(Cramer, Lauche, Hohmann, Lu, et al., 2013)	(Brunnhuber & Kessler, 2012)	(Allende, Anandan, Lauche, & Cramer, 2017)
1	Did the trial address a clearly focused issue?	Yes	Yes	Yes	Yes
2	Was the assignment of patients to treatments randomised?	Yes	Yes	Yes	Yes
3	Were all of the patients who entered the trial properly accounted for at its conclusion?	Yes	Yes	Yes	Yes
4	Were patients, health workers and study personnel 'blind' to treatment?	No	Yes	Yes	No
5	Were the groups similar at the start of the trial	Yes	Yes	Yes	Can't tell
6	Aside from the experimental intervention, were the groups treated equally?	Yes	Yes	Yes	Can't tel
7	How large was the treatment effect?	Yes	Yes	Yes	Yes
8	How precise was the estimate of the treatment effect?	Yes	Yes	Yes	Yes
9	Can the results be applied to the local population, or in your context?	Yes	Yes	Yes	Yes
10	Were all clinically important outcomes considered?	Yes	Yes	Yes	Can't tell
11	Are the benefits worth the harms and costs?	Can't tell	Can't tell	Can't tell	Can't tell

Table 3. Critical appraisal qualitative

No.	Appraisal Cheklist	(Lauche & Cramer, 2012)
1	Was there a clear statement of the aims of the research?	Yes
2	Is a qualitative methodology appropriate?	Yes
3	Was the research design appropriate to address the aims of the research?	Yes
4	Was the recruitment strategy appropriate to the aims of the research?	Yes
5	Was the data collected in a way that addressed the research issue?	Yes
6	Has the relationship between researcher and participants been adequately considered?	Yes
7	Have ethical issues been taken into consideration?	Yes
8	Was the data analysis sufficiently rigorous?	Yes
9	Is there a clear statement of findings?	Yes
10	How valuable is the research?	Yes

Critical appraisal in the article under study

The quality of the research included in this literature used the Critical Appraisal Skills Program (CASP) checklist to assess validity, reliability, and whether these studies are acceptable (CASP, 2018a; CASP, 2018b). The type of CASP used was adjusted to the research design. 4 RCT and 1 qualitative studies were concluded to be reliable and applicable because most studies reported having statistical effects and the results were consistent across studies. The findings of the 5 studies can generally be applied to the local context.

Discussion

This literature review was conducted to find out whether yoga intervention is effective in patients suffering from chronic neck pain. Yoga interventions used in the experiment are breathing techniques, posture, and relaxation. Previous research has shown that movements to strengthen and stretch the area of the scapula in the neck and the upper part of the shoulder provide effective assistance (Kim, 2016). A Significantly this literature shows that with yoga practice can reduce the intensity of the patient's neck pain and prevent functional defects. This finding supports in evidence-based treatment for chronic neck pain by doing yoga exercises.

Only 5 articles in this literature. However, the results of 4 RCTs and 1 of these qualitative studies show that yoga is useful for chronic neck pain and produces a strong basis for future studies. Yoga is also recommended because it is a safe and effective therapy for eliminating chronic neck pain. Thus, the results of this review indicate that patients with chronic neck pain can manage their own conditions.

Based on the findings of the study reviewed, iyengar yoga interventions must be applied with regular time, which is carried out 90 minutes every week for 9 weeks and several articles encourage participants to practice yoga at home for 10 minutes. In addition, the two groups must be involved in a program to improve understanding of yoga iyengar. However, iyengar yoga interventions may not be acceptable to certain communities such as rural areas in various countries, because a yoga teacher and a certified physiotherapist are needed that are difficult to obtain in rural areas.

Yoga interventions can be an additional intervention in reducing the intensity of chronic patient neck pain. This intervention is safe and can be applied to various populations and can be carried out by all nurses in accordance with the guidance of the therapist. However, this literature review only looked for the English database, but did not look for other databases, so there is a risk of incomplete retrieval. In addition, this study only covered literature published in Germany, which affects credibility. So, more research is required to further explore the approach of yoga iyengar intervention from various countries. Therefore, we hope researchers do more research to provide a more standard, scientific, and rational approach to clinical use.

Conclusion

The literature review related to iyengar yoga interventions for chronic neck pain reveals that in general, interventions can be used as a reference in reducing the intensity of pain in participants. In addition to reducing the intensity of pain yoga iyengar also helps report experiences on the physical, cognitive, emotional, behavioral and social dimensions. The patient conveys an inner involvement during yoga practice, and renewes body awareness.

Ethical aspects and conflict of interest: The author declare that he has no conflict of interest.

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