The Effectiveness Of Muscle Relaxation Therapy Methods Against Tension-Type Headache : Systematic Review

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Abstract. *Headache disorders are very common and often encountered in everyday practice. Tension-type headaches (TTH) are caused by persistent muscle tension in the head and neck, resulting in pain at the front and back of the head. Muscle relaxation techniques can be used as an alternative or complementary therapy for TTH. Methods. In this systematic review study, we aimed to determine the effectiveness of muscle relaxation therapy methods for TTH patients. We used the PRISMA-P 2020 flow chart and searched the Scopus, PubMed, and Cochrane databases. Results. We found eight studies that all showed positive impacts of muscle relaxation therapy on pain intensity, frequency, duration, threshold, and quality of life. The literature suggests that methods such as dry needling, biofeedback, stretching, acupuncture, massage, and manual therapy (myofascial inhibitory techniques and articulatory manipulations) can be effective for TTH. Conclusion Overall, we concluded that muscle relaxation therapy is an effective treatment for TTH.*

Keywords**:** *Effectivity, Therapy Methods, Muscle Relaxant, Tension-Type Headache*

Abstrak. Gangguan sakit kepala sangat umum dan sering dijumpai dalam praktik sehari-hari. Sakit kepala tipe tegang (TTH) disebabkan oleh ketegangan otot yang menetap di kepala dan leher, yang mengakibatkan rasa sakit di bagian depan dan belakang kepala. Teknik relaksasi otot dapat digunakan sebagai terapi alternatif atau terapi komplementer untuk TTH. Metode. Dalam penelitian tinjauan sistematis ini, kami bertujuan untuk menentukan efektivitas metode terapi relaksasi otot untuk pasien TTH. Kami menggunakan diagram alir PRISMA-P 2020 dan mencari di database Scopus, PubMed, dan Cochrane. Hasil. Kami menemukan delapan penelitian yang semuanya menunjukkan dampak positif dari terapi relaksasi otot terhadap intensitas, frekuensi, durasi, ambang batas, dan kualitas hidup. Literatur menunjukkan bahwa metode seperti tusuk jarum kering, biofeedback, peregangan, akupunktur, pijat, dan terapi manual (teknik penghambatan myofascial dan manipulasi artikulatoris) dapat efektif untuk TTH. Kesimpulan Secara keseluruhan, kami menyimpulkan bahwa terapi relaksasi otot adalah pengobatan yang efektif untuk TTH.

Kata Kunci: Efektivitas, Metode Terapi, Relaksan Otot, Sakit Kepala Tipe Tegang

1. Introduction

Headache disorders are common conditions that affect the nervous system. The World Health Organization reports that patients may experience recurring headaches over time, with approximately 90% of the world's population experiencing at least one headache per year. Headaches can be classified as primary or secondary, with four major groups of primary headaches identified by the International Headache Society: migraines, tension-type headaches, cluster-type headaches, and other primary headaches. Tension-type headaches are the most prevalent, accounting for 42 out of 100 cases.

According to the 2016 Global Burden of Diseases, Injuries, and Risk Factors Studies, 1.89 million people worldwide experience tension-type headaches. In Indonesia, research conducted in five major hospitals found that chronic tension-type headache affects 24% of patients, while episodic tension-type headache affects 31%. Although not usually serious, tension-type headaches can interfere with daily activities and are often associated with stress, anxiety, and depression.

Non-pharmacological therapies, such as muscle relaxation techniques, are often recommended for patients who cannot take certain medications due to allergies or pregnancy. However, in cases of chronic tension-type headaches, caution must be exercised to prevent drug-induced headaches or liver damage. The effectiveness of muscle relaxation therapy in treating tension-type headaches has been studied, but there is no consensus on the most effective technique.

Further research is needed to evaluate the effectiveness of different therapies based on parameters such as intensity, frequency, duration, pain threshold, and quality of life. A literature review of recent studies on the effectiveness of muscle relaxation therapy in tension-type headaches is necessary to provide more insights into this area.

2. Metode

The search was conducted from November 2021 to February 2022 using databases such as Science Direct, PubMed, and Cochrane. The search was conducted based on boolean OR and AND. The keywords used were ‘Tension-type Headache’, ‘Manual Therapy’, ‘Physiotherapy’, ‘Pressure Pain Threshold’, ‘Headache Frequency’, ‘Headache Duration’, ‘Headache Intensity’, ‘Headache Disability Inventory’ and ‘Quality of Life’ or equivalent terms. The selected study design was a quantitative experimental study that included a description of the muscle relaxation method used in the therapy and was published within 2016-2021.

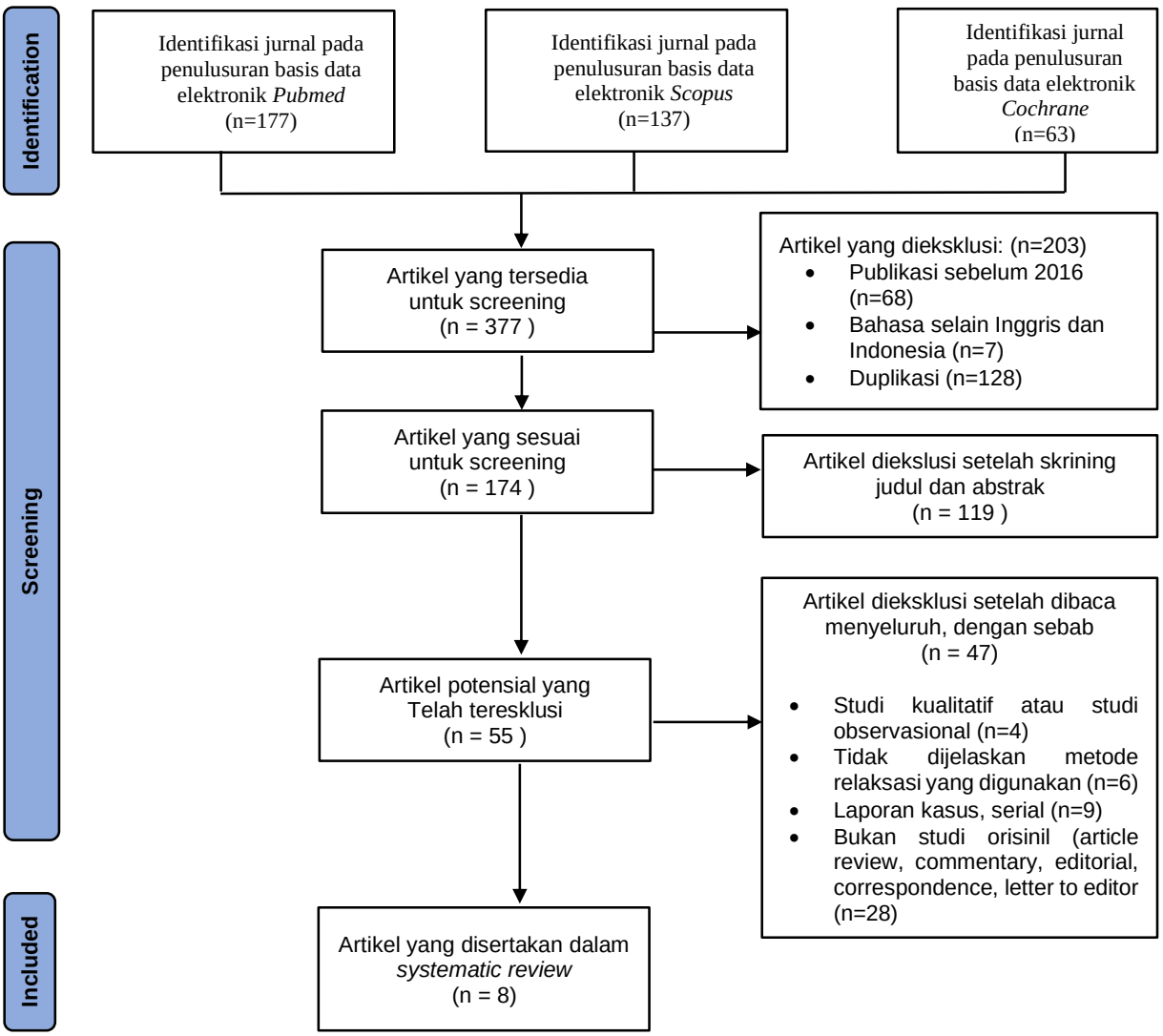

Figure 1. Schematic Diagram of Workflow

Next, an assessment of the quality of the study was carried out using the JBI Critical Appraisal Tools checklist for RCT study design which was carried out by the main author together with the supervisor. Consisting of 13 questions that can be answered with a table of "yes", "no", "unclear" or "not applicable". The literature is divided into good, medium and weak. It is said to be good if 80 % meet the answer yes, 50-80% is said to be moderate, and less than 50% is included in the weak JBI Critical Appraisal Checklist criteria.

3. Result

A total of 377 literature sources were obtained from three databases. After removing 128 duplicate titles, 68 sources published before 2016, and 7 sources in languages other than English and Indonesian, 174 sources remained. These sources were screened for relevance based on their titles and abstracts, resulting in 55 matches. The remaining eight sources were assessed for quality using the JBDI Critical Appraisal Checklist. The literature search and data extraction can be found in Figure 1 and Table 1, respectively. The results of data synthesis are presented in Table 2.

4. Discussion

This study aimed to determine the effectiveness of various relaxation techniques for patients with tension-type headaches. The study analyzed eight articles that used different approaches, including dry needling, biofeedback, stretching, acupuncture, massage, and manual therapy, consisting of myofascial inhibitory techniques and articulatory manipulations. The systematic literature review demonstrated that all of these techniques had a positive impact on TTH patients.

Different studies have identified various parameters that determine the positive impact of different therapeutic interventions. For instance, Lee (2019) discovered that biofeedback had a positive impact on five parameters: intensity, frequency, duration, level of pain, and quality of life. On the other hand, Gildir (2019) found four parameters that indicated a positive impact in dry needling for trigger point treatment. Similarly, Rahim (2016) employed a similar approach in massage therapy for myofascial trigger points, while Espí-López (2016) identified three parameters that determined the positive impact of spinal manipulation intervention: intensity, frequency, and duration. A study conducted by Georgoudis (2018), Espí-López (2016), and Monzani (2016) revealed that acupuncture, stretching, and various physiotherapy techniques, including diathermy, myofascial inhibitory technique, and suboccipital manipulation, improved the quality of life. Georgoudis (2017) also found that these treatments helped to reduce pain levels.

Interventions like manual therapy, massage, acupuncture, stretching, and dry needling work by affecting the neurophysiology in the soft tissue area. This reduces sensitivity to pain and inflammatory markers and modifies the cortical area involved in pain processing. 10 In cases of tension-type headaches, pericranial muscle pain is common, and an intervention that targets the soft tissue can help decrease local muscle tension.11

A previous study found that a single session of manual therapy had a positive impact on heart rate variability, anxiety, and pain in patients with chronic tension-type headaches.12 According to Espí-López (2016), manual therapy is effective in decreasing suboccipital muscle tension which triggers headaches through Suboccipital Inhibitory (SI). 13 It's important to keep in mind that this study had some limitations, such as the absence of prospective cohort studies and control groups without any therapy or placebo. Additionally, the parameters used were not uniform, which could affect the determination of the most effective approach. Further research with more specific guidelines and control groups could help address these limitations and strengthen the evidence for muscle relaxation therapy as a treatment for tension-type headaches.

5. Conclusion

Based on our analysis, it appears that muscle relaxation therapy can be an effective treatment for tension-type headaches. It may be worth considering this therapy as a potential option for patients experiencing this type of headache. However, it's important to note that further research with control groups and more specific recommendations for combining therapies could help strengthen the evidence for its effectiveness.

6. Authors contribution

HNH performed a systematic literature search, AYS, AI gave positive input in manuscript production. FAM revised the manuscript and edited in English version.

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