METHODS OF THERAPEUTIC INTERVENTION TO RELIEVE TENSION TYPE HEADACHE

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ABSTRACT

Introduction: The management of Tension-Type Headache (TTH), within its complexity, includes several alternatives for treatments. In Brazil, self-administered analgesic medications are frequently used to stop the malaise. On the other hand, use, diffusion and due knowledge of other methods and non-drug therapies available have become essential for the relief of those suffering from pain. Objective: Identify non-pharmacological methods and therapies used in scientific publications for the relief and treatment of TTH. Method: This is an integrative literature review study covering the period from 2000 to 2020, based on the consultation in the bibliographic databases of PubMed, Science.gov, Web of Science and the VHL Regional Portal, whose period of collection was carried out from August to November 2020. From the initial volume of 488 records, after selection using the inclusion and exclusion criteria, resulted in the selection of 10 original articles for analysis. Result: The use of randomized clinical trial studies prevailed. All studies showed a sample with a higher proportion of women, except one. All studies have shown positive results according to their purpose, revealing effective ways to relieve or treat TTH. Only one study to evaluate the beliefs regarding headache relief techniques did not show statistical significance. Conclusion: Therapies such as massage, acupuncture and dry needling have shown promising results for intervention in TTH. The combination of interventions and the use of innovative technology stood out.

Keywords: Tension-Type Headache; Complementary Therapies; Evaluation of Results of Therapeutic Interventions.

INTRODUCTION

Headache is one of the most frequent and ancient head disorders of mankind, with prehistoric records the disease appears in descriptions made by the Egyptian people. The first attempt to classify headache was presented in the first century, by Arateu da Cappadocia, a Greek doctor, who was attributed the discovery of the disease(1).

The current International Headache Classification 2018 (IHS) presents headaches systematized from the following groups: (I) primary headaches; (II) secondary headaches; (III) other painful cranial neuropathies, facial pain and other types of headache. Tension-Type Headache (TTH) is part of the first group, primary, these being the most prevalent in the population, affecting all age groups. It can be diagnosed as episodic or chronic. It is the most prevalent primary headache in the population worldwide, with a prevalence ranging from 30%

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to 78%, and has a high socioeconomic impact on the lives of those affected by the disease, as it is quite disabling[2,3].

TTH is described as a muscle contraction, a pain that can vary with regard to its intensity and duration, reported as a sensation of band tightening the head that may be the result of exposure to several factors. It has an expressive degree of complexity and can be treated with diverse types of interventions, whether these are medicated or not. No less important, and non-invasive, non-medicated treatments show favorable effects when used properly[4,5].

Prevailing in TTH, myofascial trigger points can demonstrate different behaviors, and the form of pain relief should suit the particularities of each patient. In view of the impact generated by headaches, understanding the functioning of pain triggers and the effectiveness of treatments to be administered to patients is necessary in view of the large dimension that the problem has for public health, involving personal, social and economic aspects[5,6].

The use of different alternatives to relieve headache is a practice that has developed since the beginning of the history of headache. Chinese medicine techniques such as acupuncture, massage, yoga, biofeedback and meditation have become objects of study in the past decade[7]. Knowing the treatments and their effects is essential for building better patient care. In view of the above, this review aims to identify the non-pharmacological therapeutic intervention methods used to relieve TTH.

METHOD

The present study is an integrative literature review. The period for the bibliographic survey was the years 2000 to 2020, on the platforms: Pubmed, Regional Portal of the VHL; Science.gov and Web of Science. The descriptors “Tension Type Headache” were used, in the restriction to the title, with the help of “and”, parentheses and others depending on the search location, concluding with the “site of pain” specification, results in the English language were considered.

On the basis of Pubmed, the scholarship holders were used as follows: (Tension Type Headache[Title]) AND (site of pain); On the VHL Regional portal: (ti:(Tension Type Headache)) AND (tw:(site of pain)); In the search made on Science.gov: site of pain / Title: Tension Type Headache / From: 2000 / To: 2020 e; In the Web of Science the formulation was used: TÍTULO: (Tension Type Headache) AND All fields: (site of pain) Allotted time:

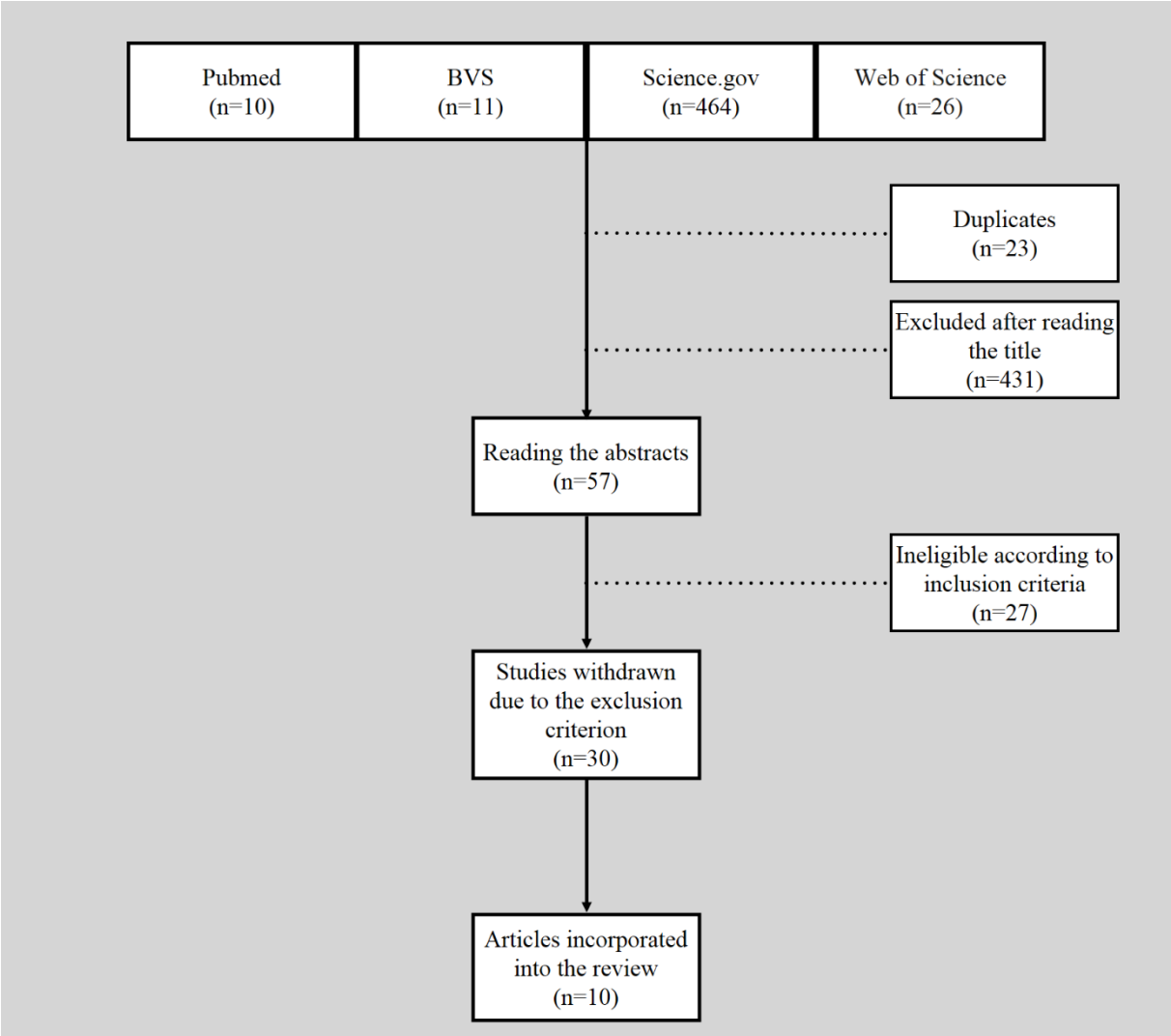
2000-2020. Dating and language limitations were performed according to the tools available in the databases.

The search was carried out on August 28 on the bases of Pubmed, BVS and Science.gov, the survey carried out on Web of Science occurred on November 28, both in the year 2020. A total of 511 documents were found. After a review verified by two of the authors, 23 duplicate studies were removed, leaving 488 writings. The next step was the analysis of titles, in which those that had “Tension Type Headache” in the title were selected, resulting in an amount of 57 studies to move on to the next stage.

The inclusion criteria consist of: (I) publication between 2000 and 2020; (II) be structured as an original scientific article; (III) make use of at least one statistical technique; (IV) present at least one technique that provides relief, in the short, medium or long term, of TTH. After applying these requirements, 27 writings were removed.

Finally, studies were excluded due to the following characteristics: (I) exclusively proposed invasive interventions to improve TTH were excluded; (II) used only drugs in their interventions; (III) literature reviews and; (IV) case reports. The application of the methodological procedure resulted in the selection of 10 articles, this process is elucidated in Figure 1.

Figure 1 - Selection of studies according to the method



RESULTS

The results from the research were compiled in Table 1, in which it is filled with: first author's last name, year of publication, country of realization, objective, method, conclusion, study limitations and possible bias.

Table 1 - Summary of studies related to non-pharmacological therapies for the treatment of TTH

Author/ Year/Place	Objective	Method	Conclusion	Study limitations and bias
Martins et al., 2001[8] Portugal	To compare maneuvers for pain relief during crisis, used by patients with TTH and migraine.	This comparative study involved 100 individuals diagnosed with migraine or TTH at the discretion of the International Headache Society (IHS). The subjects were interviewed, answering a questionnaire and a checklist that included demographic data, clinical data, information about headache and questions about behavior during headache attacks. For the statistical analysis, the Chi-square test with ANOVA analysis of variance and Pearson's correlation coefficient were used.	Migraine attacks had a lower frequency and duration when compared to those caused by tension headache. The most common behaviors identified were taking medications and isolating oneself. The most effective behaviors in the studied group were to put pressure on the pain site, take medication and use cold pads on the site.	Despite the large amount of information and analysis, techniques for relieving muscle tension were not used. Another restriction is the limited number of maneuvers used per patient.
Holroyd et al., 2001[9] USA	To evaluate the clinical efficacy of pharmacological behaviors and treatments, individually and in combination, used in chronic TTH.	Randomized clinical trial controlled by placebo. The study considered 203 participants diagnosed with chronic TTH. The following statistical tests were used: Planned comparisons, Test F, Fisher's exact test, Unilateral and bilateral test, Chi-square test, Analysis of variance, Log-linear analysis. All analyzes were performed using the SPSS program.	The most effective treatments for chronic TTH were the use of antidepressants and therapy to control stress. Combined therapies can increase results compared to individual treatments.	The study is unable to detect possible subtle effects of treatments.
Bag et al., 2005[10] Turkey	To compare patients with migraine and tension headache (TTH) in their behavior during attacks and maneuvers to relieve pain.	In this comparative study 130 outpatients who were seen by the neurology ward of the State Hospital of Erzincan, in Turkey, and diagnosed with tension headache (TTH) or migraine were included. The subjects completed a questionnaire and checklist that included demographic data, clinical data, information about headache and questions about behavior during headache attacks. For the statistical analysis, the Chi-square tests were used in conjunction with the ANOVA analysis of variance.	Patients with tension-type headache (TTH) had more frequent and lasting attacks, however less severe than migraine attacks. The results showed that the variables “press the place” and “change position” did not show statistical significance.	Despite involving a large sample of participants, it is important to notify that 73% of the participants were women. In addition, the lack of criteria in establishing the p-value can lead to confusion in interpretation. Although it presents several data related to pain, the study did not analyze the location of pain.

Tommaso et al., 2006[11] Italy	To examine clinical characteristics and laser-evoked potentials in two groups of patients with chronic TTH treated with two different approaches: prosthesis intraoral device and 10mg of amitriptyline per day.	Open randomized clinical trial with 18 participants who meet the criteria of chronic TTH associated with sensitivity of the pericranial muscles according to the IHS. A CO2 laser pulse generated the pain stimulus. The patients were consecutively allocated to two groups of the same size: the amitriptyline group and the intraoral device group. The ANOVA statistical test was used to compare the two groups.	The results of this study may suggest that in chronic TTH both interventions at the peripheral and central levels improve the result of headache.	A significant weakness of the study design was the lack of a placebo, making it impossible to compare with a group alongside the interventions. The authors also point out that an oral device can produce a placebo effect.
Endres et al., 2007[12] Germany	They investigated the effects of acupuncture on the frequency of TTH, using the techniques of accumulation verum and sham.	Randomized controlled, multicenter clinical trial. Its development took place in Germany, in twelve different states, involving 122 families. All patients were diagnosed with TTH individually using the IHS criteria. The interventional physicians were properly trained, and algorithms, without knowledge by the doctors, did the randomization.	Headache symptoms subsided considerably within six weeks of starting treatment and remained low for the next six months. In conclusion, acupuncture is a promising option for the treatment of TTH in the long term.	The study point out that the results obtained through acupuncture can be generated by psychological effects. It is clear that the physiological effects depend on the placement of the needle and the depth of insertion, information that is still uncertain.
Moraska e Chandler, 2008[13] USA	To evaluate the short-term changes in primary and secondary headache measures in patients with TTH receiving a structured massage therapy program with a focus on myofascial trigger points.	Pilot study based on the cohort methodology. It covered 18 participants with TTH, diagnosed by the IHS criteria. The study was carried out with the assistance of 6 properly trained massage therapists. These randomly received patients for two 45-minute sessions per week, over a six-week period. In the study, headache assessment tools were also used during the exposure period, such as the headache diary and the Headache Disability Index (HDI). Statistical measurements were made for analysis of variance of repeated measures, post hoc tests.	There was a reduction in the frequency, intensity and duration of headache attacks after the second phase, after three weeks of treatment. A drop in the level of intensity and duration of headache also decreased over three weeks after the end of treatment.	Without a baseline or control group, the ability to assess causality of treatment is restricted.
Castien et al., 2012[14] Netherlands	To describe the course of chronic TTH in participants who received manual therapy and develop a prognostic model to predict recovery in participants who received this	The cohort study, in which the results of a previously randomized clinical trial were evaluated. Both studies used manual therapy in patients with chronic TTH, according to the IHS criteria. For statistical analysis, univariate analysis of logistic regression and multiple logistic regression were used.	Participants with chronic TTH who received manual therapy showed a favorable course of symptoms in the short and long term. Absence of pain in multiple sites, coexisting migraine, greater pain intensity, greater active range of motion of the cervical and	The cohort study had a loss of 12% of the participants. Psychological or work-related variables were not considered. Finally, it was only possible to analyze a limited number of potential prognostic factors, based on previous studies.

	treatment.		greater resistance of the flexor muscles of the neck were associated with recovery.	
Georgoudis et al., 2017[15] Greece	To compare the analgesic effect of two pragmatic treatment protocols for TTH: acupuncture and stretching versus physiotherapy, acupuncture and stretching.	Multicentre randomized controlled trial, with 44 participants with TTH, divided into two groups, (I) received interventions by acupuncture and stretching and (II) accumulation, stretching and physiotherapy were performed. The Mechanical Pressure Pain Threshold (LDP) was considered as the main outcome measure. Analysis of variance, Eta squared and Bonferroni test were used for post hoc comparisons.	The LDP showed improvements in patients with TTH for both treatment protocols when compared within groups. Differences were observed between the two treatment protocols and between the groups, with physical therapy providing an increase in LDP.	A placebo or pseudo treatment group was not used, in addition the group that received physiotherapy intervention was treated for a longer time. The differentiation of participants in terms of sex has not been described and analyzed.
Mattoo et al., 2019[16] India	To explore the effect of repetitive low-frequency transcranial magnetic stimulation on pain caused by chronic TTH through objective and subjective pain assessments.	Randomized, controlled pilot study with 30 participants. The therapy consisted of 1200 biphasic pulses per session with five sessions per week for four weeks. Data collection was performed using the Numerical Pain Assessment Scale and questionnaires. Statistical tests were used: The D´Agostino-Pearson test, Mann-Whitney U test and t test.	There was a reduction in the impact of headache on daily life, reflected in the reduction of the anxiety trait and psychological pain beliefs.	Despite the fact that the study was controlled by placebo, the number of participants was still not sufficient to rule out the possibility of a greater placebo effect in the transcranial magnetic stimulation group.
Kamali et al., 2018[17] Iran	To compare the effectiveness of the dry needling technique with friction massage in the treatment of patients with tension-type headache.	Randomized clinical trial with 44 patients diagnosed with TTH by a neurologist were selected and examined for trigger points in the sub occipital, temporal region, in the sternocleidomastoid muscle and upper trapezius. Participants were randomly assigned to the intervention method group, rubbing massage or dry needling. The Kolmogorov-Smironov test, ANCOVA, paired t test and the Wilcoxon test were used.	Both therapies were equally effective in reducing the frequency and intensity of headache, however the pain threshold increased significantly after dry needling.	In the study, only the muscles previously studied and most frequently seen in tension headache (TTH) were evaluated and treated. In this sense, the results obtained would be more accurate if the treatment was adjusted to the location of the trigger points of each individual.

Of the 10 studies selected for the sample, 6 were carried out between 2000 and 2010 and 4 between 2015 and 2020, highlighting the relevance of some dated in 2019 (n=2). Half of the studies were carried out in Europe (n=5), the others: (n=2) were carried out in the United States of America (USA), (n=2) in the Middle East and (n=1) in India.

The objectives of the studies varied, however, there are some similarities between some articles such as the use of techniques involving needles and massages. As for the type of study, the use of randomized clinical trials prevailed. With regard to sex, all studies obtained a sample with a higher proportion of women, except the study carried out in 2017 in Greece[15] which did not differ between the sex of the participants. Most studies (n=9) had positive results according to their purpose, showing effective ways to relieve or treat TTH, only one study evaluating beliefs regarding headache relief techniques did not reveal necessary statistical significance [10].

It is important to note that the descriptor "site of pain" was not effective in the search for information related to the location of pain, since none of the studies found specifically analyzes this issue.

The analysis of limitations showed that most studies did not use a control group (n = 6), so the analysis of a possible placebo effect could not be performed. The study carried out in India in 2019[16], even with the use of a control group, reports difficulties in defining the extent of the placebo effect. It is also possible to identify in part of the articles that many of its limitations are related to the lack of results from previous studies.

DISCUSSION

The results of this integrative review indicate a differentiation in the types of non-pharmacological treatments for TTH. At the beginning of the 21st century, science was more focused on solutions to TTH explained from the behaviors and beliefs of the affected individuals[8,10]. With not very conclusive evidence, scientists started to propose headache relief from therapies like acupuncture[12,15], dry needling[17] and massages[13,14,17].

With more solid results, techniques were merged as done by Georgoudis et al.[15], who in their placebo-controlled study uses three techniques, acupuncture, stretching and physiotherapy, bringing positive results for the two treatments explored.

In the same perspective, Kamali et al.[17] compared the use of dry needles with the friction massage technique, concluding that both techniques proved to be effective. In addition to the chronology, other authors have proposed interventions based on technologies.

Tommaso et al.[11] compared the use of an oral prosthesis device with 10mg of amitriptyline. While Mattoo et al.[16] explored the effects of magnetic stimulation in patients with chronic TTH. In both studies, the alternative therapies used proved to be highly effective against headache in the face of the significant improvement in pain resulting from the experiment.

The results obtained by Kamali et al.[17] corroborate the findings of Gildir et al.[18] who used the dry needling technique in patients with chronic TTH. Both findings are similar in that they conclude that dry needling is effective in reducing the intensity and frequency of headache.

Lu et al.[19] in 2017, also based on the study by Endres et al.[12], reports a protocol to be used in randomized studies to evaluate long-term results of interventions with acupuncture in chronic TTH.

A 2018 publication by Gerber et al.[20], who also evaluated the trigger point release massage technique, suggests that it can reduce the frequency of TTH, a finding that corroborates Moraska's result[13]. The study by López et al.[21], reinforces the theory that treating TTH using massage in combination with another intervention technique brings better results. This result is also present in Gerber et al.[20] and strengthens the combined use of treatments.

CONCLUSION

Massage therapies have achieved considerably positive results without causing discomfort. Acupuncture and dry needling bring promising results, however, the use of fine needles limits the practice of this intervention, which can bring repulsion by the patient, among other adverse effects.

The combination of treatments and the use of innovative technologies stood out, but there is still no methodology to identify the best treatments for a patient. There are limitations in terms of methods, since technical and diagnostic competence directly influence the final result, and all treatments require interventions in specific muscles (massage) or trigger points (dry needling and acupuncture).

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