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The Effect of Psychological Therapies on Tinnitus Distress in Adults: a Meta-analysis

El efecto de las terapias psicológicas sobre la angustia por tinnitus en adultos: un metaanálisis

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ABSTRACT

This research is intended to document the effect of psychological therapies on distress caused by subjective tinnitus in adults. A systematic search was conducted on PubMed, Scopus and Web of Science, combining the following terms and synonyms: *"tinnitus", "distress", "AL cognitive behaviour therapy".* The process was carried out following PRISMA guidelines by two independent reviewers. Inclusion criteria were established to select studies, the target population being adult patients with chronic subjective tinnitus, studies in which the intervention was psychological therapy and outcome measures focused on the evaluation of tinnitus distress and the functional ability of the subject. Study quality was assessed using the Scottish Intercollegiate Guidelines Network system. A meta-analysis was conducted using Cohen's *d* and including type of therapy as a moderator. Ten randomised controlled trials were ultimately selected.

Four articles reported a statistically significant decrease in tinnitus distress severity scores and six articles show significant improvement in functional ability to cope with tinnitus symptoms. Two articles had no statistically significant results in any of the outcome measures. The type-of-therapy moderator reveals no significant effect, so there appears to be no difference based on therapy type.

In conclusion, a decrease in tinnitus distress scores and improvement in functional ability were observed after the intervention, but the available evidence did not allow a clear conclusion to be drawn as to the most effective intervention modality.

KEYWORDS

Tinnitus, cognitive-behavioural therapy, distress.

RESUMEN

Este trabajo pretende documentar el efecto de las terapias psicológicas sobre la angustia por tinnitus subjetivo en adultos. Se realiza una búsqueda sistemática en PubMed, Scopus y Web of Science combinando los siguientes términos y sinónimos: *"tinnitus", "distress", "AL cognitive behaviour therapy".* El proceso se realizó siguiendo las directrices del método PRISMA por dos revisores independientes. Se marcaron criterios de inclusión para seleccionar los estudios, siendo la población diana pacientes adultos con tinnitus subjetivo crónico, estudios donde la intervención fuera terapia psicológica y las medidas de resultado se centrarán en la evaluación de la angustia por tinnitus y la capacidad funcional del sujeto. La calidad de los estudios se evaluó siguiendo el sistema Scottish Intercolegiate Guidelines Network. Se realizó un metaanálisis utilizando las d de Cohen e incluyendo el tipo de terapia como moderador. Se seleccionaron finalmente diez ensayos controlados aleatorizados.

Cuatro artículos reportaban una disminución estadísticamente significativa en las puntuaciones referidas a la severidad de la angustia por tinnitus y seis artículos muestran mejora significativa sobre la capacidad funcional ante dichos síntomas. Dos artículos no arrojaban resultados estadísticamente significativos en ninguna de las medidas de resultado. El moderador referente al tipo de terapia no muestra efecto significativo, por lo que no parece haber diferencias por tipo de terapia.

En conclusión, se observó una disminución de las puntuaciones de angustia por tinnitus y mejora en la capacidad funcional tras la intervención, pero la evidencia disponible no permitió concluir de forma clara sobre cuál de las modalidades de intervención es más eficaz.

PALABRAS CLAVE

Tinnitus, terapia cognitivo-conductual, distress.

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CONFEDERACIÓN ESPAÑOLA DE FAMILIAS DE PERSONAS SORDAS
FOMENTANDO INCLUSIÓN. APOYANDO PERSONAS. AVANZANDO SOLIDARIAMENTE.

SPANISH CONFEDERATION OF FAMILIES OF DEAF PEOPLE
PROMOTING INCLUSION. SUPPORTING PEOPLE. ADVANCING TOGETHER.

1. THE EFFECT OF PSYCHOLOGICAL THERAPIES ON TINNITUS DISTRESS IN ADULTS

Tinnitus is the perception of sounds in the absence of an actual external sound stimuli (Kim et al., 2015), characterised by resembling whistles, buzzes, or whispers (Elgoyhen et al., 2015). This describes the subtype of tinnitus called subjective tinnitus. By contrast, objective tinnitus is caused by body-generated sound reaching the ear through conduction in body tissues (Møller, 2003). Another important characteristic is chronicity, with tinnitus lasting longer than three months being considered as chronic tinnitus (Rief et al., 2005).

With regard to its aetiology, tinnitus is explained by damage to the inner ear, where information travels to the central nervous system via the cochlea, which incorrectly sends information to the auditory cerebral cortex (Sclocco et al., 2019), in addition to environmental exposure to loud urban noise and ototoxic substances (Møller, 2003).

Tinnitus refers to the perception of ringing in the ears in the absence of an actual external sound stimuli, characterised by resembling whistles, buzzes, or whispers. This is what is referred to as subjective tinnitus

In terms of global prevalence, there is no gender difference, although it does increase with age, affecting 10% of young adults, 14% of middle-aged individuals and 24% of older adults (Jarach et al., 2022). In most cases, tinnitus is not a severe otological symptom, with only 2% of cases being severe (Jarach et al., 2022). For tinnitus to be considered distressful, a series of alterations must occur at the cortical level relating to higher cognitive functions such as attention, alertness and emotional processing, which transform the signal into a persistent and invasive 'phantom' perception that affects the individual's quality of life (Hong et al., 2016).

1. Assessment

A psycho-emotional assessment is often carried out using instruments such as the *Tinnitus Handicap Inventory* (THI) (Newman, Jacobson and Spitzer, 1996). This test seeks to measure the psychological impact and disability caused by the tinnitus in the patient. It consists of 25 items, each with 3 possible responses, with a cut-off of 7 points as the criterion for a significant reduction in outcome measures. Other important tinnitus assessment tests include the *Tinnitus Functional Index (TFI*; Meikle et al., 2012), which measures the severity and negative impact of tinnitus at the psychological and functional levels, with 25 Likert-type items and a cut-off of 13 points as the criterion for a significant reduction in outcome measures. In addition, the *Tinnitus Questionnaire* (TQ), created by Goebel and Hiller (1994), is used to measure tinnitus severity and to assess the relationship between different aspects of complaints and other psychological variables related to tinnitus through 52 items, with a cut-off of 8 points as the criterion for a significant reduction in outcome measures. Lastly, the *Tinnitus Reaction Questionnaire* (TRQ) is a 26-item self-reported questionnaire that seeks to address items related to personal and social disability as a result of tinnitus (Wilson et al., 1991), with a cut-off of 13 items as the criterion for a significant reduction in outcome measures. In general, for all the measures described, there is evidence of their adequate reliability and high convergence (Jacquemin et al., 2019).

1.2. Treatment

The medical provision to treat this condition is highly constrained by financial factors, availability and lack of resources (Hignett et al., 2018). The fact is that there is still no intervention that can completely cure tinnitus, according to McFerran (2019). Along these lines and with an emphasis on the importance of the psychological aspect of tinnitus, the systematic review conducted by Martínez-Devesa (2010) concluded that cognitive-behavioural therapy was effective in improving the quality of life of tinnitus patients. Another study also found that a variant of this therapy, relaxation therapy, is thus far supported by the most evidence (McKenna et al., 2014). The use of new digital technologies is now being promoted to overcome the aforementioned barriers relating to the shortage of face-to-face resources (Lupton, 2013). For this reason, online therapy is emerging as a way to provide

affordable and accessible care (Andersson, 2018). A recent systematic review by Beukes et al. (2019) concluded that online cognitive-behavioural therapy can be effective, but there was a clear lack of high-quality evidence to draw strong conclusions. In recent years, third-generation therapies have also been gaining momentum, with an emphasis on acceptance and mindfulness (Hayes and Hofmann, 2017). The systematic review conducted by Rademaker et al. (2019) studying the effect of mindfulness on the symptoms of distress caused by the presence of tinnitus concluded that there are beneficial effects in terms of decreasing tinnitus distress scores.

Systematic reviews on this topic have thus far studied each type of intervention separately and are at least five years old. Therefore, this work arises from the need to carry out a single study with current and concrete data that unifies and combines the most important aspects of cognitive-behavioural therapy, online cognitive-behavioural therapy and mindfulness for the management of tinnitus distress.

1.3. Objectives

The general objective is to document existing evidence on the effect of psychological therapies on subjective tinnitus distress in adult patients. This objective is established in order to answer the following question according to the PICO (Population, Intervention, Comparison, Outcome) strategy: Is the use of psychological therapies effective on symptoms of distress in adult patients with subjective tinnitus?

This general objective can be broken down into the following specific objectives:

To document:

1. The efficacy of psychological therapies on symptoms.
2. The effect of psychological therapies on the severity of psychological distress.
3. The effect of psychological therapies on functional ability.
4. The follow-up carried out in each study and to document changes in the outcome measures.
5. The drop-out rate in the groups.

The general objective of this study is to document existing evidence on the effect of psychological therapies on subjective tinnitus distress in adult patients

2. METHOD

2.1. Literature search

This work consists of conducting a meta-analysis following the criteria of the PRISMA statement (Page et al., 2021), a method based on compiling articles found in different databases following specific, strict search criteria and selecting works related to the proposed topic. Different inclusion criteria are also applied through the search engines of the different databases used in order to carry out a correct screening of the publications worked with.

In the search for publications of interest, the following combinations of key concepts were used to form the following operator strings: "(*tinnitus*) AND (*tinnitus therapy*) AND (*distress*)", "(*tinnitus*) AND (*cognitive behavioural therapy*)", "(*tinnitus patients*) AND (*tinnitus therapy*) OR (*cognitive behavioural therapy*) AND (*distress*)" and "(*tinnitus*) OR (*tinnitus relief*) AND (*brief cognitive*) AND (*distress*)". Each of these operator threads was inserted into the three databases, applying filters by date, language and type of publication (see Table 1 in the Appendix for details).

2.2. Inclusion criteria

The inclusion criteria used in this project are as follows:

- Articles published between 2013 and 2024.
- Scientifically rigorous, peer-reviewed articles.
- Written in English or Spanish.
- Ability to access the full text.
- The target population is adults aged 18 to 65 years with chronic (lasting more than three months) severe subjective tinnitus presenting with symptoms of distress and/or inability to cope with these symp-toms.
- The study type is categorised under randomised controlled clinical trials.
- Studies involving cognitive-behavioural therapy, online cognitive-behavioural therapy and/or mindfulness practice as an intervention for subjective tinnitus as primary treatment, alone or in combination with other traditional or psychological therapies.
- Articles that present as the main outcome measure the severity of the subjective tinnitus distress and functional ability to cope with tinnitus symp-

toms, according to THI or TQ assessment tools.
- Articles that present as an outcome measure the change in levels of psychological distress caused by the presence of tinnitus, according to the TFI or TRQ assessment tools.

This work consists of a meta-analysis that follows PRISMA statement criteria, a method based on the compilation of articles found in different databases

2.3. Screening process

Before starting the process, in order to integrate every publication found in the different databases, these were registered in the reference management tool *Zotero* (Roy Rosenzweig Center for History and New Media, 2016). Any articles found to be duplicated based on reading their titles, within and across databases, were eliminated.

The literature review comprised the following phases, which were executed systematically:

1. After searching the databases, two reviewers then independently selected the abstracts of articles that met the inclusion criteria outlined above.
2. After this initial screening, the results obtained by the two reviewers were pooled. Any discrepancies between the reviewers were resolved by discussion.
3. The whole process was repeated with the reading of the full articles. A discussion took place to resolve discrepancies between reviewers.

The distribution of publications for each of the databases used in phase 3, after reading the full texts, was: PUBMED: 12, SCOPUS: 7, and WEB OF SCIENCE: 11. After a thorough reading of these 30 articles, 10 were ultimately selected for the meta-analysis. A Kappa index of 0.927 was obtained in the calculation of inter-rater reliability, indicating an excellent degree of agreement. A parallel search for other articles was also carried out to create the theoretical corpus (see Figure 1 in the Appendix for details).

2.4. Risk of bias assessment

To conduct the analysis of methodological quality, two reviewers independently assessed the risk of bias in the included studies using a *Scottish Intercollegiate Guidelines Network* (SIGN, 2015) methodology checklist for randomised controlled clinical trials. These checklists are composd of three sections: the first assesses the internal validity of the study, the second assesses general aspects of each study and, lastly, the third section describes the study. Any differences between the two reviewers were resolved by discussion. The included studies were assessed in relation to ten questions about internal validity.

2.5. Method of analysis and synthesis of information

A quantitative synthesis of the information was carried out to combine the numerical results of each study, thus obtaining an overall estimation of the effect and allowing assessment of the heterogeneity across the studies ultimately included. Prior to this, and for each study, the means, standard deviations and sample sizes were collected to calculate Cohen's *d* (Cohen, 1988) as a measure of statistical effect size. The guide for interpreting this statistic was: 0.20 or lower, small; close to 0.50, medium-sized; and 0.80 or higher, large. Likewise, changes in outcome measures are considered significant if they are greater than 8 points on the TQ, 7 points on the THI, and 13 points on the TFI and TRQ.

2.6. Statistical method used in the meta-analysis

A meta-analysis was conducted in Jamovi (The Jamovi Project, 2023) using Cohen's *d* as the input and including type of therapy as a moderator. The analysis was performed using Fisher's correlation coefficient transformed from *r* to *z* as the outcome measure, fitting the data to a random effects model. The amount of heterogeneity *(tau²)* was estimated using the restricted maximum likelihood estimator (Viechtbauer, 2005). The *Q*-test for heterogeneity (Cochran, 1954) and the I^2 statistic are presented. If a degree of heterogeneity is detected, a prediction interval for the true results is also provided. Cook's distances are used to explore whether studies may be outliers and/or influential in the context of the model. The rank correlation test and regression test, using the standard error of the observed results as a predictor, were used to test for funnel plot asymmetry.

3. RESULTS

3.1. Main characteristics of the studies analysed

A total of ten articles were analysed, all published within the last ten years. Their common thematic origin is the effect of psychological therapies on symptoms of distress from subjective tinnitus in adult patients.

With regard to the demographic characteristics of the selected articles (see Table 2 in the Appendix for details), the works of Jasper et al. (2014) and Rheker, Anderson and Weise (2015) were conducted in Germany, the research by Cima, Van Breukelen and Vlaeyen (2018) was carried out in the Netherlands, and Belgium was the site of the research by Luyten et al. (2020). Research was also carried out in the United Kingdom by McKenna et al. (2017), Arif et al. (2017), Beukes et al. (2018) and Beukes et al. (2022), and there were two studies in the United States (Krings et al., 2015; Beukes et al., 2021).

Regarding the mean ages of participants, the studies by Jasper et al. (2014), Luyten et al. (2020) and McKenna et al. (2017) had a mean age ranging from 46 to 50 years old. The studies by Rheker, Anderson and Weise (2015), Arif et al. (2017), Cima, Van Breukelen and Vlaeyen (2018) and Beukes et al. (2018) had a mean age of 51–55 years old. Lastly, in the articles submitted by Krings et al. (2015), Beukes et al. (2021) and Beukes et al. (2022), the mean age was over 55 and under 60 years. Regarding participant gender, all the studies had a sample composed of men and women in equal proportion (Jasper et al., 2014; Krings et al., 2015; Beukes et al., 2018; Beukes et al., 2021; Beukes et al., 2022), except for the study by Rheker, Anderson and Weise (2015), in which women formed the majority, and the work of McKenna et al. (2017), Arif et al. (2017), Cima, Van Breukelen and Vlaeyen (2018) and Luyten et al. (2020), in which the majority were men.

As for tinnitus assessment tools, several studies used the THI test to examine the severity of tinnitus distress (Jasper et al., 2014; Rheker, Anderson, & Weise, 2015; Cima, Van Breukelen, & Vlaeyen, 2018; Beukes et al, 2018), the TFI test for functional ability related to tinnitus-induced distress (Krings et al., 2015; McKenna et al., 2017; Beukes et al., 2018; Luyten et al., 2020; Beukes et al., 2021; Beukes et al., 2022), the TQ test to study the severity of psychological distress caused by tinnitus (McKenna et al., 2017; Cima, Van Breukelen, & Vlaeyen, 2018; Luyten et al, 2020) and, lastly, the TRQ test to observe the severity of tinnitus distress at a psychological level and its relationship to personal and social disability resulting from tinnitus (Arif et al., 2017).

Finally, all the articles analysed are randomised controlled clinical trials.

An analysis of ten articles was conducted, all published within the last ten years. Their common thematic origin is the effect of psychological therapies on symptoms of distress from subjective tinnitus in adult patients

3.2. Assessment of the risk of bias

Regarding the risk of bias, all the studies analysed addressed a clearly formulated PICO question and involved the random assignment of subjects to each group. Only in the articles by Krings et al. (2015) and Luyten et al. (2020) used appropriate blinding methods. Regarding group similarity at baseline, five articles meet this criterion (Krings et al., 2015; Rheker, Anderson and Weise, 2015; Beukes et al. 2018; Beukes et al., 2021; Beukes et al., 2022). Moreover, in all the studies, relevant outcomes were measured in a standardised, valid and reproducible manner. All the articles carried out a complete follow-up, except for the studies by Jasper et al. (2014), Krings et al. (2015) and Arif et al. (2017). Similarly, only in the studies by Cima, Van Breukelen and Vlaeyen (2018) and Beukes et al. (2018) were all subjects analysed in the group to which they were assigned and, lastly, only the article by Beukes et al. (2018) was multicentre. Therefore, the article with the lowest risk of bias is that conducted by Luyten et al. (2020), followed by Krings et al. (2015) and Beukes et al. (2018). The study with the highest risk of bias is that of Jasper et al. (2014), followed by McKenna et al. (2017) (see Table 3 in the Appendix for details).

3.3. Synthesis of the results of the studies

3.3.1. Efficacy with regard to symptoms

In relation *to objective 1* of this study (see Table 4 in the Appendix for details), two of the ten studies included in the research (Cima, Van Breukelen and Vlaeyen, 2018; Luyten et al., 2020) established face-to-face

cognitive-behavioural therapy as the main treatment. In general, these studies show that this therapy has proven to be effective in symptoms of distress generated by the presence of chronic subjective tinnitus in adult patients of both sexes. The study by Krings et al. (2015), also shows consolidated results. Following this line of research, the studies show that the application of online cognitive-behavioural therapy is also beneficial for symptoms of distress caused by tinnitus (Jasper et al., 2014; Rheker, Anderson & Weise, 2015; Beukes et al., 2018; Beukes et al., 2021; Beukes et al., 2022). Finally, two articles (McKenna et al., 2017; Arif et al., 2017) show that mindfulness-focused therapies also have positive effects, both in reducing tinnitus distress and accepting psychological symptoms.

Several of the studies demonstrate that the use of online cognitive-behavioural therapy is beneficial for symptoms of distress caused by tinnitus

3.3.2 Effect on severity and functional ability

In relation to *objective 2* and *objective 3* (see Table 4 in the Appendix), Jasper et al. (2014) conducted a study to investigate the effects of face-to-face cognitive behavioural group therapy and an online cognitive-behavioural therapy treatment on tinnitus distress compared with a control group based on a self-help programme. The results show that both therapies are effective in reducing tinnitus-induced distress with no significant differences between the two treatment groups. A year later, Krings et al. (2015), conducted a study with main objective of examining tinnitus-related functional ability, as measured by the TFI, using cognitive-behavioural therapy in combination with D-cycloserine administration. The study found that the treatment group obtained better TFI scores compared with the control group that received placebo. That same year, Rheker, Anderson and Weise (2015), conducted a study whose main objective was to investigate the role of therapeutic support alongside online cognitive-behavioural therapy compared with another group that received this same therapy without therapeutic support. The results show that both groups had significant improvements in tinnitus measures on the THI, showing that online cognitive-behavioural therapy is effective in reducing tinnitus-related symptoms and improving psychological distress. Subsequently, McKenna et al. (2017) conducted a study to determine whether mindfulness is an effective treatment for tinnitus and whether it is more effective than a relaxation-training treatment. In terms of tinnitus distress severity, the results show that both groups had a significant reduction in the TQ, although this was significantly greater in the mindfulness group. With reference to impact on functional ability, as measured by the TFI, the results showed that the score was significantly lower after treatment in both groups, but there was no significant difference. That same year, Arif et al. (2017) conducted a study in which the main objective was to compare the effectiveness of mindfulness and relaxation therapy in reducing tinnitus-related distress and improving quality of life, showing a decrease in TRQ scores, with a reduction in psychological distress and the impact of tinnitus on quality of life, as well as a significant improvement in the perception of tinnitus severity in both groups. A year later, Cima, Van Breukelen and Vlaeyen (2018) conducted a study comparing two groups, one based on sound therapy and one on cognitive-behavioural therapy (the experimental group). The study found that patients in the experimental group were less affected by the severity of tinnitus symptoms. With regard to psychological severity, patients in the cognitive-behavioural therapy group had a decreased perception of tinnitus severity and were less affected than patients who received sound therapy, although not significantly so. In the same year, Beukes et al. (2018) set out to test whether an online cognitive-behavioural therapy intervention is at least as effective as individualised face-to-face clinical care in reducing tinnitus distress. To achieve this, the study established the group receiving online cognitive-behavioural therapy as the experimental group and the group receiving standard clinical care as the control group. The results indicate that the two therapies are equally effective, since no significant differences in treatment effectiveness were found between the groups.

The main objective of the study conducted by Luyten et al. (2020) was to determine whether a bimodal therapy for subjective chronic tinnitus resulting from the combination of EMDR (Eye Movement Desensitisation Reprocessing) therapy and tinnitus re-training therapy has a clinically significant different efficacy compared with the bimodal therapy composed of cognitive-behavioural therapy and tinnitus re-training therapy (experimental group). The results show that both therapies decreased the TQ score, leading to a significant improvement in the perception of psychological symptoms and tinnitus distress. For TFI, there was a decrease in total

score for both therapies. In the study by Beukes et al. (2021), which sought to evaluate the effectiveness of online cognitive-behavioural intervention (experimental group) versus applied relaxation intervention, the results show that the estimated difference in subject functional ability and tinnitus severity was more significant in the experimental group. A year later, the same author (Beukes et al. 2022) conducted a trial with the primary objective of evaluating the efficacy of online cognitive-behavioural therapy compared with standard clinical care in tinnitus management to determine whether there are changes in the degree of distress perceived. The results indicate that the post-treatment effect

Studies show that cognitive-behavioural therapy is effective in improving the quality of life of adult patients with subjective tinnitus

was significantly lower in the online cognitive-behavioural therapy group.

3.3.3. Follow-up data

In relation *to objective 4* (see Table 4 in the Appendix for details), in the study by Jasper et al. (2014), follow-up was carried out 6 months after the end of treatment. In the study conducted a year later by Rheker, Anderson and Weise (2015), follow-up was carried out at 12 months. McKenna et al. (2017) conducted follow-up at one and six months after the intervention. In Cima, Van Breukelen and Vlaeyen (2018), follow-up was carried out at 3, 8 and 12 months. That same year, in the study by Beukes et al. (2018), follow-up was conducted 2 months after the end of the intervention. Luyten et al. (2020) conducted a follow-up 3 months after the end of treatment. In the study by Beukes et al. (2021), follow-up was carried out 2 months after the end of the treatment phase. One year later, that same author (Beukes et al., 2022) conducted a follow-up 2 months after the end of the intervention. Lastly, in the studies by Krings et al. (2015) and Arif et al. (2017), there was no follow-up after the end of treatment.

3.3.4. Drop-out rate

Turning to *objective 5*, the drop-out rate is shown below, with the studies grouped by the type of therapy used in each.

Regarding classical cognitive-behavioural therapy, in Krings et al. (2015), the drop-out rate in the group receiving medication alongside cognitive-behavioural therapy is 5.88%, compared with 11.76% in the group receiving placebo. In Cima, Van Breukelen and Vlaeyen (2018), the drop-out rate for the group that received cognitive-behavioural therapy is 29.95% and 17.14% in the sound therapy group. In the study by Luyten et al. (2020), in the cognitive-behavioural therapy group, the drop-out rate is 4.44%.

In relation to online cognitive-behavioural therapy, in Jasper et al. (2014) the drop-out rate in the online cognitive-behavioural therapy group is 17.07%, versus 14.63% in cognitive behavioural group therapy. In Rheker, Anderson and Weise (2015), in the group that received support alongside online cognitive-behavioural therapy, the drop-out rate is 28.57%, compared with 42.85% in the group that did not receive support. In Beukes et al. (2018), a drop-out rate of 23.91% is observed in both groups. Subsequently, in the study by Beukes et al. (2021), the drop-out rate in the online cognitive-behavioural therapy group is 77.7%, compared with 68.25% in the control group. Lastly, in Beukes et al. (2022), the drop-out rate in the experimental group that received online cognitive-behavioural therapy was 83.54%, compared to 77.21% in the group that received standard clinical care.

With regard to mindfulness therapy, in McKenna et al. (2017), 15.38% of the sample in the mindfulness group was lost, while in the relaxation group this figure was 25%. In the study conducted by Arif et al. (2017), the dropout rate is 19.04% in the mindfulness group and 38.63% in the relaxation group.

3.4. Meta-analysis results

A total of ten studies were included in the analysis. The estimated mean of Fisher's *r-z* transformed correlation coefficient based on the random effects model was 0.73 (95% CI): 0.52 to 0.93) (see Figure 2 in Appendix for details). Therefore, the mean result differs significantly from zero(z = 6.98, p < 0.0001). With regard to the inclusion of type of therapy as a moderator, this is found not to have a significant effect (p = 0.44 > 0.05), so there appear to be no differences by type of therapy (see Table 5 in the Appendix). Regarding the heterogeneity of the results, the true results appear to be heterogeneous (Q(9) = 64.88, p

When therapy type is included as a moderator, no significant effect is observed. This suggests that there are no differences based on type of therapy

< 0.0001, tau^2 = 0.08, I^2 = 83.09%), since the actual results of the studies generally follow the same lines as the estimated mean result. In the identification of outlier or influential studies, the study conducted by Beukes et al. (2021) had a value over ± 2.80, which was atypical, while Cima, Van Breukelen and Vlaeyen (2018) and Beukes et al., (2021) could be considered overly influential. There is also no symmetry in the funnel plot. (See Figure 3 in Appendix for details).

4. DISCUSSION

In terms of the efficacy of psychological therapies on subjective tinnitus distress symptoms in adult patients, in line with previous studies (Martínez-Devesa, 2010), cognitive-behavioural therapy was found to be effective at improving the quality of life of patients with tinnitus. The studies by Cima, Van Breukelen and Vlaeyen (2018), Krings et al. (2015) and Luyten et al. (2020) support this assertion, as they can all prove the effectiveness of this therapy, whether administered individually, as in the case of Cima, Van Breukelen and Vlaeyen (2018), or in combination with other therapies (Krings et al. (2015); Luyten et al. (2020)) on the severity of tinnitus distress and functional ability. Conversely, the online variant of cognitive-behavioural therapy is also an effective treatment alternative, but, as stated by Beukes et al. (2019), with a certain lack of evidence. For this reason, in subsequent years, studies have been conducted to demonstrate further evidence for this type of intervention, with the studies by Beukes et al. (2020) and Beukes et al. (2021) concluding that online cognitive-behavioural therapy is an effective therapy for the perception of severity and an individual's functional ability, also observed in the study by Rheker, Anderson and Weise (2015) and in Beukes et al. (2018). However, as the study by Jasper et al. (2014) shows, there are no significant differences in effectiveness between classical cognitive-behavioural therapy and its online version. Similarly, Beukes et al. (2021) found online cognitive-behavioural therapy to be more effective for these symptoms than relaxation therapy, in contrast to the findings of McKenna et al. (2014), who concluded in their study that relaxation training was the most effective variant of cognitive-behavioural therapy. Lastly, mindfulness is also effective for tinnitus symptoms, as shown in the study conducted by Rademaker et al. (2019), albeit without relevant results. There is a need for further study of this type of therapy, since very positive results have been found in terms of tinnitus symptom severity, as can be seen in the study by McKenna et al. (2017) and on the subject's functional ability to cope with these symptoms (Arif et al., 2017).

In terms of the follow-up of outcome measures and drop-out rate in the chosen studies, only two of the ten articles manage to conduct a complete long-term follow-up (Rheker, Anderson, & Weise, 2015; Cima, Van Breukelen, & Vlaeyen, 2018), providing their studies with more evidence of their results than studies that did not conduct follow-up (Krings et al. 2015; Arif et al., 2017). With regard to drop-out rate, this was found to be low in studies using cognitive-behavioural therapy and mindfulness, suggesting good patient motivation and therapeutic alliance. However, for online cognitive-behavioural therapy, in Beukes et al. (2021), the total drop-out rate was very high, in excess of 75% losses; similarly, in Beukes et al. (2022), losses exceeded 80%, indicating a low adherence rate.

The studies that used cognitive-behavioural therapy and mindfulness had a low drop-out rate, suggesting good patient motivation and therapeutic alliance

4.1. Limitations

The results should be interpreted in the light of the following limitations. The first shortcoming refers to the sample size of some of the groups, which varies widely from study to study: in some of the studies included, the sample exceeds 100 subjects, while in others it is no more than 30 subjects, which means that they cannot be representative of the target population in some cases. Therefore, the possibility of generalising the results is limited. Additional biases may also exist with regard to sample demographic data. The established age range, from 18 to 65 years, is somewhat

broad, which may lead to changes in outcome measures with the passing of time, since hearing is a sense that deteriorates with age and tinnitus is closely associated with hearing loss. Lastly, with regard to outcome measures and different follow-up periods, it is worth highlighting the possibility that the data may be affected by the presence of external variables that are difficult to control, such as subject motivation to take tests, understanding the instructions for the different types of therapies, control of environmental variables and accessibility to the different resources for online therapy.

4.2. Future lines of research

We propose that research into the use of psychological therapies for subjective tinnitus distress symptoms may contribute to the scientific understanding of tinnitus, thereby allowing further exploration of the mechanisms of action of each therapeutic approach and their impact on the quality of life of tinnitus patients. Online cognitive-behavioural therapy can be considered a modality that is potentially an equally effective and more accessible alternative to face-to-face therapies (Beukes et al., 2022), since tinnitus clinics are not always easily accessible due to geographical limitations and service provision constraints. There is also a need for further studies employing strategies to improve adherence and participation in online psychological therapies (Beukes et al., 2021).

5. CONCLUSIONS

This paper has synthesised the existing literature on the effect of psychological therapies on subjective tinnitus distress symptoms in adult patients. The results should be interpreted considering the quality of the documents included, concluding that there is an improvement in tinnitus symptoms both in terms of symptom severity and the development of functional ability in tinnitus sufferers after psychological treatment. However, it is not possible to draw firm and clear conclusions as to which type of intervention is most effective, so further research into its efficacy is needed. Similarly, the long-term effects remain uncertain, so longitudinal studies are desirable. This work could be a starting point for future research into the combined implementation of these three types of therapies, rather than their implementation in isolation, as has been the case in previous years.

6. REFERENCES

Andersson, G. (2018). Internet interventions: Past, present and future. *Internet Interventions, 12*, 181–188.

*Arif, M., Sadlier, M., Rajenderkumar, D., James, D. & Tahir, T. (2017). A randomised controlled study of mindfulness meditation versus relaxation therapy in the management of tinnitus. *The Journal of Laryngology & Otology, 131*, 501–507.

*Beukes, E.W., Andersson, G., Allen, P.M., Manchaiah, V. & Baguley, D.M. (2018). Effectiveness of Guided Internet-Based Cognitive Behavioral Therapy vs Face-to-Face Clinical Care for Treatment of Tinnitus: A Randomized Clinical Trial. *JAMA Otolaryngology Head Neck Surgery, 144*(12), 1126–1133.

Beukes, E.W., Manchaiah, V., Allen, P.M., Baguley, D.M. & Andersson, G. (2019). Internet-Based Interventions for Adults With Hearing Loss, Tinnitus, and Vestibular Disorders: A Systematic Review and Meta-Analysis. *Trends in Hearing*. *23*, 1–22.

*Beukes, E., Andersson, G., Fagelson, M.A. & Manchaiah, V. (2021) Dismantling internet-based cognitive behavioral therapy for tinnitus. The contribution of applied relaxation: A randomized controlled trial. *Internet Interventions, 12*(25), 100402.

*Beukes, E., Andersson, G., Fagelson, M. & Manchaiah, V. (2022). Internet-Based Audiologist-Guided Cognitive Behavioral Therapy for Tinnitus: Randomized Controlled Trial. *Journal Medicine Internet Research, 24*(2), 275–84.

*Cima, R. F. F., Van Breukelen, G., & Vlaeyen, J. W. S. (2018). Tinnitus-related fear: Mediating the effects of a cognitive behavioural specialised tinnitus treatment. *Hearing Research, 358*, 86–97.

Cochran, W. G. (1954). The combination of estimates from different experiments. *Biometrics, 10*, 101–129.

Cohen J. (1988). *Statistical Power Analysis for the Behavioral Sciences.* New York, NY: Routledge Academic.

Elgoyhen, A.B., Langguth, B., De Ridder, D. & Vanneste, S. (2015). Perspectives from human neuroimaging, *Nature Reviews. Neuroscience, 16*(10), 632–642.

Goebel, G. & Hiller, W. (1994). The tinnitus questionnaire. A standard instrument for grading the degree of tinnitus. Results of a multicenter study with the tinnitus questionnaire. *HNO, 42*(3), 166–172.

Hayes, S.C. & Hofmann, S.G. (2017). The third wave of cognitive behavioral therapy and the rise of process-based care. *World Psychiatry, 16*(3), 245–246.

Hignett, S, Lang, A., Pickup, L., Ives, C., Fray, M., McKeown, C., Tapley, S., Woodward, M. & Bowie, P.(2018). More holes than cheese. What prevents the delivery of effective, high quality and safe health care in England? *Ergonomics, 61*(1), 5–14.

Hong, S.K., Park, S., Ahn, M.H. & Min, B.K. (2016). Top-down and bottom-up neurodynamic evidence in patients with tinnitus. *Hearing Research, 342*, 86–100.

Jacquemin, L., Mertens, G., Van de Heyning, P., Vanderveken, O.M., Topsakal, V., De Hertogh, W., Michiels, S., Van Rompaey, V. and Gilles, A. (2019). Sensitivity to change and convergent validity of the Tinnitus Functional Index (TFI) and the Tinnitus Questionnaire (TQ): Clinical and research perspectives. *Hear Research,* CD31514042.

*Jasper, K., Weise, C., Conrad, I., Andersson, G., Hiller, W. and Kleinstäuber, M. (2014). Internet-based guided self-help versus group cognitive behavioral therapy for chronic tinnitus: a randomized controlled trial. *Psychotherapy Psychosomatics, 83*(4), 234–46.

Jarach, C.M., Lugo, A., Scala, M. Brandt, P.A.V.D., Cederroth, C.R., Odone, A., Garavello, W., Schelee, W., Langguth, B. & Gallus, S. (2022). Global prevalence and incidence of tinnitus. A Systematic Review and Meta-analysis. *Jama Neurology, 79*(9), 888–900.

Kim, H.J., Lee, H.J. An, S.Y., Park, B., Kim, S.W., Lee, J.S., Hong, S.K. & Choi, H.G. (2015). Analysis of the prevalence ans associated risk factors of tinnitus in adults, *PlOs One, 10*(5).

*Krings, J.G., Wineland, A., Kallogjeri, D, Rodebaugh, T.L., Nicklaus, J., Lenze, E.J. & Piccirillo, J.F. (2015). A novel treatment for tinnitus and tinnitus-related cognitive difficulties using computer-based cognitive training and D-cycloserine. *Otolaryngology Head and Neck Surgery, 141*(1), 18–26.

Lupton, D. (2013). The digitally engaged patient, Self-monitor ing and self-care in the digital health era. *Social Theory & Health, 11*(3), 256–270.

*Luyten, T.R., Jacquemin, L., Van Looveren, N., Declau, F., Fransen, E., Cardon, E., De Bodt ,M., Top-

*The ten articles on which the results are based are marked with *.*

sakal, V., Van de Heyning, P., Van Rompaey, V. & Gilles, A. (2020). Bimodal Therapy for Chronic Subjective Tinnitus: A Randomized Controlled Trial of EMDR and TRT Versus CBT and TRT. *Frontiers in Psychology 10*, 11:2048.

Martínez-Devesa, P., Perera, R., Theodolou, M & Waddell, A. (2010). A cognitive behavioural therapy for tinnitus. *Cochrane Database System Review,* CD005233.

McKenna, L. Handscomb, L., Hoare, D.J. & Hall, D.A. (2014). A scientific cognitive behavioral model of tinnitus: Novel conceptualizations of tinnitus distress. *Frontiers in Neurology, 5*, 196.

*McKenna, L., Marks, E.M., Hallsworth, C.A. & Schaette R. (2017) Mindfulness-Based Cognitive Therapy as a Treatment for Chronic Tinnitus: A Randomized Controlled Trial. *Psychotherapy Psychosomatics, 86*(6), 351–361.

McFerran, D.J., Holme, R., Large, C.H. & Baguley, D.M. (2019). Why is there no cure for tinnitus? *Frontiers in Neuroscience, 13*, 802.

Meikle, M.B., Henry, J.A., Griest, S.E., Stewart, B.J., Abrams, H.B., McArdle, R., Myers, P.J., Newman, C.W., Sandridge, S., Turk, D.C., Folmer, R.L., Frederick, E.J., House, J.W., Jacobson, G.P., Kinney, S.E., Martin, W.H., Nagler,S.N., Reich, G.E., Searchfield, G., Sweetow, R. & Vernon, J.A. (2012). The tinnitus functional index: development of a new clinical measure for chronic, intrusive tinnitus. *Ear and Hearing, 33*(3),443.

Møller, A. (2003). Pathophysiology of tinnitus. *Otolaryngology Clinical North America, 36*(2), 249–266.

Newman, C.W., Jacobson, G.P. & Spitzer, J.B. (1996). Development of Tinnitus Handicap Inventory. *Otolaryngology Head Neck Surgery, 122*, 143–148.

Page, M. J., McKencie, J.E., Bossuyt, P.M., Boutron, I., Hoffman, T.C, Mulrow, C.D. & Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *International Journal of Surgery, 88*, 105906.

Rademaker, M.M., Stegeman, I., Ho-Kang-You, K.E., Stokroos, R.J., Smit & A.L. (2019). The Effect of Mindfulness-Based Interventions on Tinnitus Distress. A Systematic Review. *Frontiers in Neurology,* 10:1135.

* Rheker, J., Andersson, G. & Weise, C. (2015). The role of “on demand” therapist guidance vs. No support in the treatment of tinnitus via the internet: A randomized controlled trial. *Internet Interventions 38(2).*

Rief, W., Weise, C., Kley, N., & Martin, A. (2005). Psychophysiologic treatment of chronic Tinnitus: A Randomized Clinical Trial. *Psychosomatic Medicine, 67*(5), 833–838.

Roy Rosenzweig Center for History and New Media (2016). Zotero [Computer software]. Retrieved from www.zotero.org/download

Scottish Intercollegiate Guidelines Network (SIGN). (2015). Methodology Checklist. https://www.sign.ac.uk/assests/sign50_checklist.pdf

Sclocco, R., Garcia, R.G., Kettner, N.W., Isenburg, K., Fisher, H.P., Hubbard, C.S., Ay, I., Polimeni, J.R., Goldstein, J., Makris, N., Toschi, N., Barbieri, R & Napadow, V. (2019). The influence of respiration and brainstem and cardiovagal response to auricular vagus nerve stimulation: A multimodal ultrahigh-field (7T) fMRI study. *Brain Stimulation, 12,* 911–921.

The Jamovi Project (2023). jamovi. (Version 2.4) [Computer Software]. Retrieved from https://www.jamovi.org.

Viechtbauer, W. (2010). Conducting meta-analyses in R with the metafor package. *Journal of Statistical Software link, 36*, 1–48.

Wilson, P.H., Henry, J., Bowen, M. & Haralambous, G. (1991). Tinnitus reaction questionnaire; psychometric properties of a measure of distress associated with tinnitus. *Journal Speech Hear, 34,* 197–201.

7. APPENDIX

Table 1: *Keyword combinations and search results*

	Pubmed	Scopus	Web of Science
"(tinnitus) AND (tinnitus therapy) AND (distress)"	18	59	146
"(tinnitus) AND (cognitive behavioural therapy)"	12	94	73
"(tinnitus patients) AND (tinnitus therapy) OR (cognitive behavioural therapy) AND (distress)"	516	15	1739
"(tinnitus) OR (tinnitus relief) AND (brief cognitive) AND (distress)"	1	0	3352

Table 2: *Demographic characteristics of the studies analysed*

Authors	Country	Design	Sample	Assessment tools
Jasper et al. (2014)	Germany	ECA	Gender (% men): 51.3 (9.8) Mean age: 46 (39.0)	THI: Severity
Krings et al. (2015)	United States	ECA	Gender (% Men): 50% Mean age: 59 (49–66)	TFI: Functional ability
Rheker, Anderson & Weise. (2015)	Germany	ECA	Gender (% Men): 21 (37.5) Mean age: 51.09 (11.02)	THI: Severity
McKenna et al. (2017)	United Kingdom	ECA	Gender (% Men): 66 (54) Mean age: 50 (16)	TQ: Psychological distress TFI: Functional ability
Arif et al. (2017)	United Kingdom	ECA	Gender (5 Men): 59 Mean age: 53.8 (11.6)	TRQ: Severity and functional ability
Cima, Van Breukelen and Vlaeyen (2018)	The Netherlands	ECA	Gender (% Men): 62.6% Mean age: 54.19 (11.54)	THI: Severity TQ: Psychological distress
Beukes et al. (2018)	United Kingdom	ECA	Gender (% Men): 55 (60) Mean age: 52.96 (12.07)	THI: Severity TFI: Functional ability
Luyten et al. (2020)	Belgium	ECA	Gender (% Men): 63 (70.8) Mean age: 47.87 (12.67)	TQ: Psychological distress TFI: Functional ability
Beukes et al. (2021)	United States	ECA	Gender (% Men): 64 (51) Mean age: 56 (13)	TFI: Functional ability
Beukes et al. (2022)	United Kingdom	ECA	Gender (% Men): 78 (49.3) Mean age: 57 (19–84)	TFI: Functional ability

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Table 3: *Risk of bias assessed with SIGN*

	Jasper et al. (2014)	*Krings et al. (2015)*	*Rheker, Anderson and Weise (2015)*	*McKenna et al. (2017)*	*Arif et al. (2017)*	*Cima, Van Breukelen & Vlaeyen (2018)*	*Beukes et al. (2018)*	*Luyten et al. (2020)*	*Beukes et al. (2021)*	*Beukes et al. (2022)*
PICO	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**
Subject assignment	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**
Blinding	C	**A**	**B**	C	**B**	**B**	**B**	**A**	C	**B**
Blinded patients/ investigators	C	**A**	C	C	**B**	**B**	**B**	**A**	C	C
Similarity of groups	**B**	**A**	**A**	**B**	**B**	**B**	**A**	**B**	**A**	**A**
Group treatment	**B**	**A**	**A**	**B**	**B**	**B**	**B**	**A**	**A**	**B**
Standardisation of measures	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**
Follow-up	**B**	C	**A**	**A**	C	**A**	**A**	**A**	**A**	**A**
Subject analysis	**B**	**B**	**B**	**B**	**B**	**B**	**A**	**B**	C	**B**
Multicentre studies	D	D	D	D	D	D	**B**	D	D	D

Note. (A) Adequately met, (B) Partially met, (C) Not adequately met, (D) Not applicable. Cells with A and B are highlighted in bold.

***Table 4**: Changes in outcome measures and follow-up.*

Authors	Groups	Outcome measures and monitoring				Cohen's *d*	
		T0 (PRE)	T1 (POST)	T2 (F/UP 1)	T3 (F/UP 2)	Pre-Post	
Jasper et al. (2014) (6 months)	Online CBT (*n* = 41)	40,34(17,65)	26,67(20,75)	24,56(34,09)	-	0,71	THI
	Group CBT (*n* = 41)	44,33(19,7)	27,70(21,93)	26,96(21,79)	-	0,81	
	Self-help programme (*n* = 44)	40,23(20,54)	37,46(18,94)	NO F/UP,	-	0,14	
Krings et al. (2015) (NO F/UP)	CBT(+Medication) (*n* = 17)	47(18,16)	38(16,43)	NO F/UP,	-	0,52	TFI
	CBT(+Placebo) (*n* = 17)	44(16,30)	41(15,94)	NO F/UP,	-	0,49	
Rheker, Anderson & Weise. (2015) (12 months)	Online CBT (+Support) (*n* = 56)	60,85(17,32)	38,80(19,30)	37,05(20,48)	-	0,51	THI
	Online CBT (no support) (*n* = 56)	58,50(16,56)	35,88(19,30)	33,25(22,90)	-	0,53	
McKenna et al. (2017) (1–6 months)	Mindfulness (*n* = 39)	47,7(13,8)	31,4(16,1)	30,9(16,8)	28(18,1)	0,48	TQ
	Relaxation training (*n* = 36)	48,1(14,1)	38,2(14,3)	36.2(P15, 9)	35,6(16,8)	0,69	
	Mindfulness	60,6(16)	42,2(19,2)	42,5(21,5)	37,2(24,1)	0.46	TFI
	Relaxation training	62,8(15,8)	49,2(19)	49,7(21)	49(21,1)	0.77	
Arif et al. (2017) (NO F/UP)	Mindfulness (*n* = 42)	39,40(15,412)	15,06(13,124)	NO F/UP,	-	0.64	TRQ
	Relaxation therapy (*n* = 44)	41,77(17,709)	19,59(13,751)	NO F/UP,	-	0.57	
Cima, Van Breukelen and Vlaeyen (2018) (3-8-12 months)	CBT (*n* = 247)	39,25(22,78)	34,25(26,12)	28,85(24,38)	26,45(22,78)	0.20	THI
	Sound therapy (*n* = 245)	38,73(23,16)	37,38(26,91)	34,14(30,79)	33,51(28,98)	0.05	
	CBT	49,39(18,54)	42,01(22,02)	36,47(20,44)	33,43(18,86)	0.36	TQ
	Sound therapy	48,87(19,19)	45,51(22,19)	42,36(24,42)	42,12(24,56)	0.16	
Beukes et al. (2018) (2 months)	Online CBT (*n* = 46)	44,57(23,40)	22,33(19,63)	17,78(14,77)	-	0.46	THI
	Routine clinical care (*n* = 46)	47,13(20,31)	28,74(20,07)	27,11(21,62)	-	0.91	
	Online CBT	55,01(21,58)	27,88(20,84)	22,85(19,26)	-	0.54	TFI
	Routine clinical care	56,57(20,61)	34,88(24,91)	32,51(23,28)	-	0.95	
Luyten et al. (2020) (3 months)	CBT (+TRT) (*n* = 45)	41,21(17,04)	29,40(18,35)	29,26(18,55)	-	0.66	TQ
	EMDR (+TRT) (*n* = 46)	39,65(15,19)	31,26(17,69)	27,74(17,10)	-	0,51	
	CBT (+TRT)	49,60(21,93)	33,56(23,15)	34,49(23,63)	-	0,71	TFI
	EMDR (+TRT)	53,88(18,40)	42,18(20,67)	37,71(21,41)	-	0.47	
Beukes et al. (2021) (2 months)	Online CBT (*n* = 63)	50,52(26,65)	28,95(20,75)	27,16(20,78)	-	0.90	TFI
	Relaxation training (*n* = 63)	48,70(25,51)	32,13(21,38)	23,81(9,87)	-	0.70	
Beukes et al. (2022) (2 months)	Online CBT (*n* = 79)	54,04(17,85)	29,44(19,60)	25,10(19,46)	-	0.54	TFI
	Routine clinical care (*n* = 79)	53,93(17,32)	47,35(21,25)	32,82(26,80)	-	0.33	

Note. The grey cells indicate changes above 8 points on the TQ, 7 points on the THI and 13 points on the TFI and TRQ; the blue cells indicate Cohen's *d* for each study. The blue cells indicate medium- or large-effect sizes (*d* > 0.50). This arbitrary cut-off point is not strictly adhered to; values close to 0.50 are also reported.

CBT= cognitive-behavioural therapy; TRT= Tinnitus Retraining Therapy; EMDR= Eye Movement Desensitisation and Reprocessing.

Table 5: *Random effects model (k=10)*

	Estimate	se	*Z*	*p*
Intercept	0.42	0.41	1.02	0.3
Moderator	0.17	0.23	0.76	0.44

Figure 1: *Study selection flowchart*

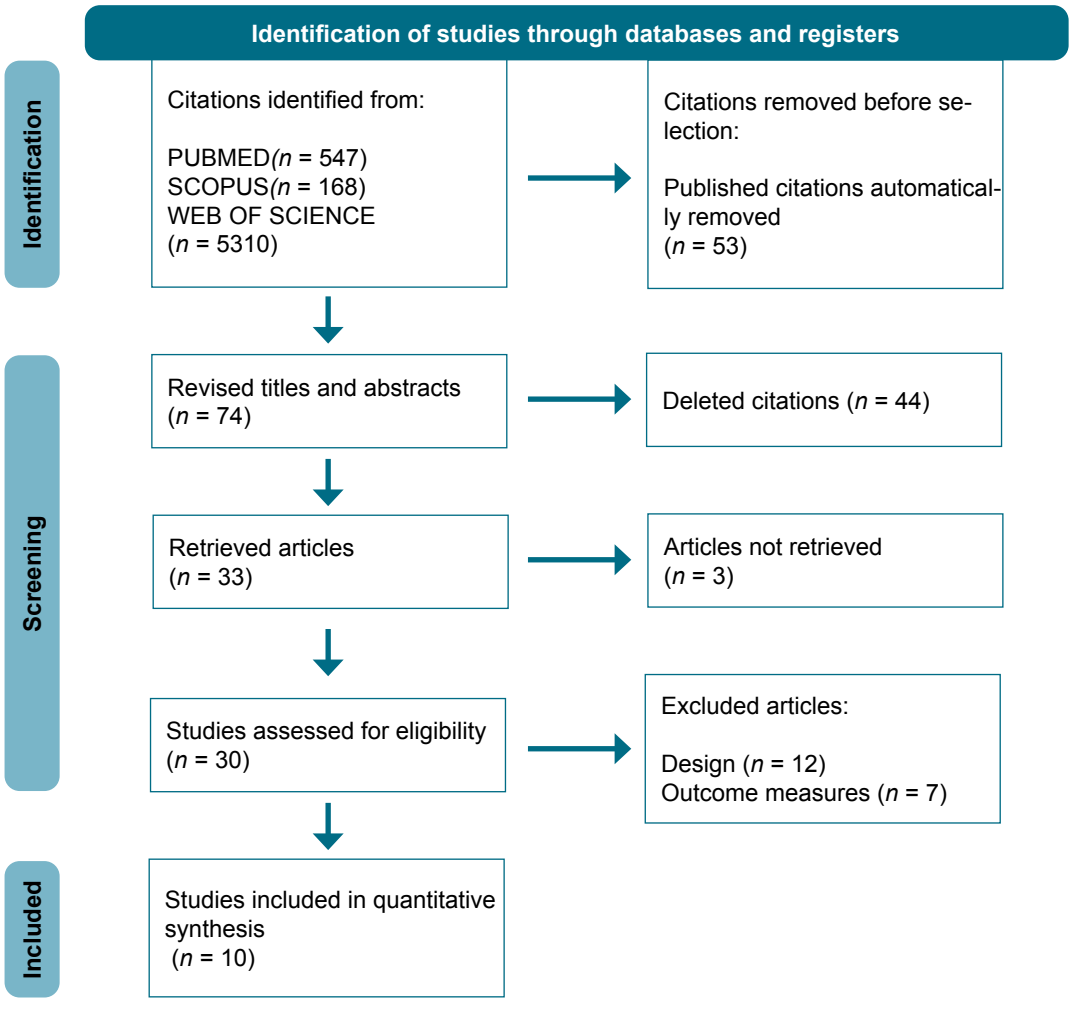


Figure 2: *Forest Plot*

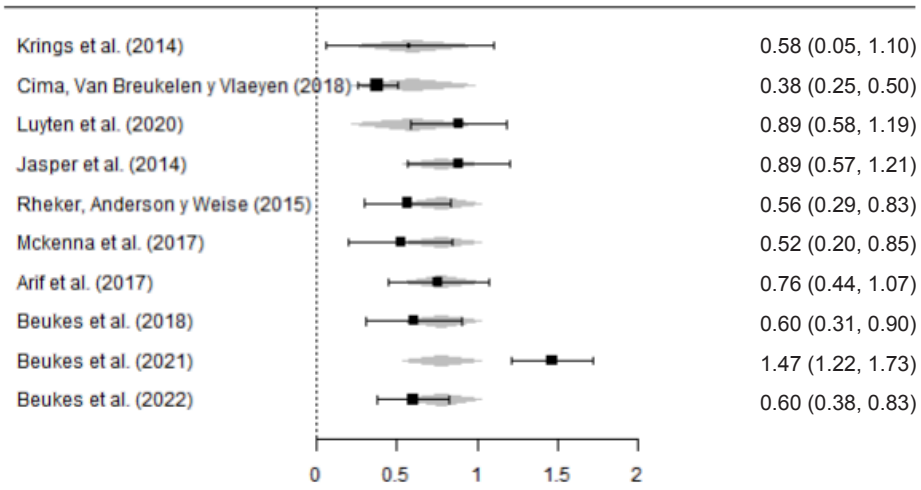
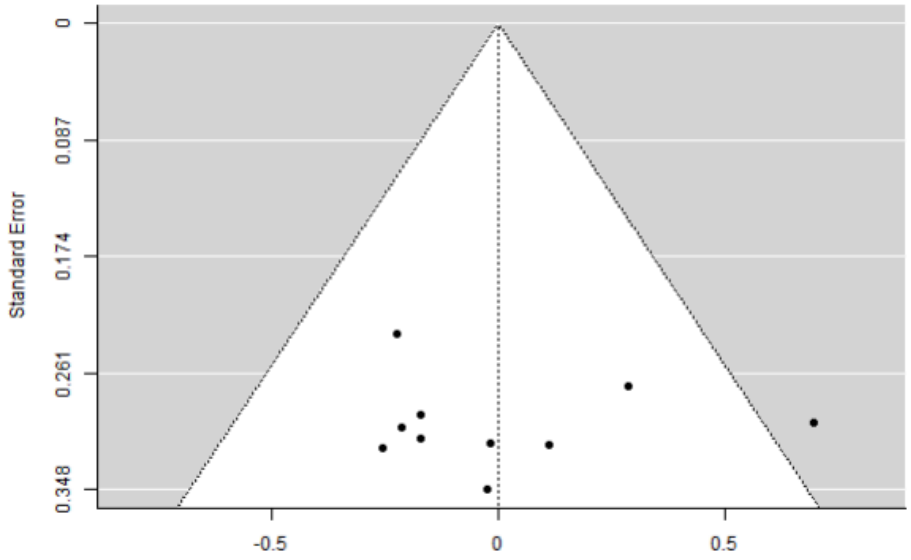


Figure 3: *Funnel plot*



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