Hypnotic-based intervention for people with non-communicable diseases : A scoping review

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Abstract

This scoping study aimed to explore the use of hypnotic-based interventions for individuals with Non-Communicable Diseases (NCDs). Four research questions were addressed: the types of hypnosis-based interventions, the types of NCDs studied, the targeted outcomes, and the evidence of effectiveness. Using Arksey and O'Malley's framework, a systematic search of databases (Cochrane Library, Google Scholar, Scopus, PubMed) was conducted from March to April 2021. Studies published in English between 2001 and 2021, employing Randomized Controlled Trials (RCTs), were included. Out of 6,382 unique records, 11 primary studies met the inclusion criteria, encompassing 589 participants across four NCD subgroups: diabetes, chronic respiratory diseases, cancer, and cardiovascular diseases. Five types of hypnotic interventions were identified: mindfulness, relaxation, self-hypnosis, hypnotherapy, and cognitive behavior therapy plus hypnosis. The outcomes assessed included pain, fatigue, anxiety, sleep quality, dyspnoea, emotion, panic, and quality of life. While the results suggest that hypnotic-based interventions hold promise as supportive therapy for NCD patients, especially in addressing psychological symptoms, the evidence remains inconclusive. Further research is needed to establish the overall effectiveness of hypnosis in this context. Nonetheless, these findings highlight the potential of hypnosis to complement medical treatments for NCDs.

Introduction

Non-Communicable Diseases (NCDs) are chronic conditions that cannot be transmitted from person to person and are characterized by their long duration or lifelong impact on individuals. These diseases have become a significant public health concern globally due to their prevalence and devastating effects on populations worldwide. Every year, NCDs claim at least 41 million lives, accounting for approximately 71% of all deaths globally (World Health Organization, 2021). The four main types of NCDs that cause the most deaths include cardiovascular disease (17.9 million), cancer (9.3 million), respiratory disease (4.1 million), and diabetes (1.5 million).

The burden of NCDs is disproportionately high among low-and-middle-income countries where more than three-quarters of global NCD-related deaths occur before reaching the age of 70 years. This disparity underscores the need for targeted interventions aimed at reducing premature mortality rates associated with these conditions (World Health Organization, 2023). In addition to causing immense human suffering, NCDs also pose substantial socioeconomic challenges. They threaten progress towards achieving sustainable development goals, particularly those related to improving healthcare access and reducing poverty (Richter et al., 2022).

Managing these chronic conditions often requires long-term treatment regimens that can lead to psychological challenges such as fatigue, anxiety, and depression. These mental health issues can interfere with treatment adherence and success (Intarakamhang et al., 2020; Santos et al., 2013). While Cognitive Behavioral Therapy (CBT) has been and any other Therapy extensively explored as a complementary treatment for NCDs, hypnotic-based interventions remain underutilized despite promising results in certain studies (Carlson, 2018; Montgomery et al., 2017).

Early detection, screening, treatment, and palliative care are essential components in managing NCDs effectively. However, accessing timely medical attention remains a challenge for many people worldwide due to limited healthcare resources and infrastructure issues prevalent in low-and-middle-income countries (World Health Organization, 2023). The associated financial costs and time commitments, coupled with psychological problems, further exacerbate the challenge. Common symptoms like fatigue, depression, hopelessness, and anxiety often hinder patients from fully engaging in treatment (Carlson, 2018; Montgomery et al., 2017). These psychological issues underscore the need for complementary therapeutic approaches that address both the physical and emotional demands of NCDs.

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The interplay between psychological factors and the management of Non-Communicable Diseases (NCDs) has garnered significant attention in recent research. Studies indicate that psychological resilience—defined as the ability to adapt and recover from adversity—plays a crucial role in patients' adherence to treatment protocols and overall health outcomes (Artsanthia *et al.*, 2019; Intarakamhang *et al.*, 2020; Santos *et al.*, 2013). The importance of psychological support is underscored by the prevalence of non-adherence to medical advice, which manifests as failure to maintain healthy lifestyles, neglecting prescribed medications, and discontinuing treatments prematurely (Montgomery *et al.*, 2017). These behaviors highlight the necessity of integrating psychological interventions into standard patient care practices.

Several psychological therapies have been identified as beneficial for patients dealing with NCDs. Cognitive Behavioral Therapy (CBT), mindfulness practices, and hypnotherapy are among the modalities studied for their effectiveness in improving mental health and supporting treatment adherence (Intarakamhang *et al.*, 2020; Montgomery *et al.*, 2017). Hypnotherapy, in particular, has gained recognition for its ability to produce rapid results with fewer sessions compared to traditional therapies. This can be especially advantageous for NCD patients who often face barriers such as fatigue or anxiety during lengthy treatment regimens.

Hypnosis offers unique advantages by improving physical and psychological well-being through its influence on the endocrine and autonomic nervous systems (Montgomery *et al.*, 2017). These improvements not only benefit patients by enhancing their quality of life but also alleviate the workload on healthcare providers by promoting better patient engagement and adherence to treatment protocols (Carlson *et al.*, 2018; Guy *et al.*, 2017).

The mechanisms through which psychological factors influence health outcomes are multifaceted. Stress management skills associated with high psychological resilience can lead to lower levels of stress hormones like cortisol, which are linked to various physical health issues including hypertension and cardiovascular disease (Jiakponna *et al.*, 2024). Additionally, resilient individuals are more likely to engage in heart-healthy behaviors such as regular exercise and balanced nutrition, further mitigating risks associated with NCDs.

Moreover, there is a bidirectional relationship between mental health disorders and NCDs. Individuals suffering from chronic illnesses often experience increased rates of depression and anxiety, which can exacerbate their physical conditions (NCBI). Conversely, existing mental health conditions may predispose individuals to develop NCDs due to factors such as poor lifestyle choices or inadequate healthcare access

Given the potential benefits, this study aims to address four key questions: (1) What types of hypnosis-based interventions are used for NCDs? (2) Which NCDs have been researched with hypnosis? (3) What outcomes are targeted by these interventions? (4) Is there evidence supporting the effectiveness of hypnosis for NCDs? By exploring these questions, this review seeks to fill a critical gap in understanding how hypnosis can support NCD management and improve patient outcomes.

Method

Scoping studies are used to quickly map the key concepts underlying the research area and the evidence found from the research (Mays *et al.* (2001), p. 194; emphasis in original). This research was conducted due to the limited number of studies using the Randomized Controlled Trial (RCT) method. While the inclusion of RCTs is justified for their high level of evidence, the exclusion of other study designs such as observational and qualitative studies was based on the initial goal of providing a comprehensive overview of high-quality evidence. RCTs offer rigorous evaluation but may not capture all relevant evidence, especially in fields like hypnotic interventions where qualitative insights could be valuable. Future reviews should incorporate other study designs to address this gap.

The scoping review approach was deemed suitable for providing an overview of the research area on hypnotic-based interventions, serving as a preliminary study before more specific research. The review followed the framework by Arkey & O'Malley (2005), which includes stages such as identifying the research question, identifying relevant studies, study selection, charting the data, collating, summarizing, and reporting the results.

The search aimed to collect primary research as comprehensively as possible to answer the research question. Searches were conducted through electronic databases, reference sources, key journals, and relevant networks, organizations, and conferences Arkey & O'Malley (2005). The conditions for the search included time span and language criteria set at the beginning.

The search was conducted using the Cochrane Library, ProQuest, Scopus, PubMed, and Google Scholar. The search period was from March 15, 2021, to April 15, 2021. Only studies published in English and within the last 20 years (2001 to 2021) were included. Searches were performed immediately before the final analysis, and additional studies were retrieved as needed for inclusion.

We selected original articles published in English that used primary data and employed a Randomized Controlled Trial approach. The inclusion criteria were studies on hypnotic-based interventions for non-communicable disease patients, with participants aged 18 and older capable of undergoing psychological therapy.

Exclusion criteria included non-peer-reviewed sources and studies of low quality. Articles that did not meet the scope of the review or were deemed of insufficient quality were identified and excluded based on predefined criteria. Journals were sourced from the Cochrane Library, ProQuest, Scopus, PubMed, and Google Scholar. The search was conducted from March 15 to April 15, 2021.

After obtaining articles, duplicates were removed, and titles and abstracts were reviewed to determine initial eligibility. Full-text articles were then independently assessed by the first and second authors according to the criteria, with discrepancies resolved through discussion until consensus was reached.

Data extraction involved independently by two researchers to minimize bias, with discrepancies resolved through discussion or consultation with a third researcher. The extracted data included study characteristics, participant

demographics, intervention types, outcomes, and findings. Data extraction was managed using Rayyan, ensuring consistency across studies.

The data synthesis process involved tabulation, where information such as author, year of publication, location, target population, methods, and main results was organized. Preliminary synthesis was reviewed by the research team and stakeholders to validate data relevance and accuracy. Further analysis included exploring relationships between findings through conceptual mapping to identify connections and form comprehensive insights relevant to the research question. Thematic narrative analysis was used to qualitatively analyze categories according to main themes and answer research questions regarding types of non-communicable diseases, hypnotic-based interventions, targeted outcomes, and evidence of effectiveness.

Results

The search yielded 6382 unique records, 10 primary studies were included. Five types of hypnotic-based intervention were widely described in the study, namely: Mindfulness (n=1), Relaxation (n=2), Self Hypnosis (n= 4), Hypnotherapy (n=2) and Cognitive Behavior Therapy plus Hypnosis (n =1). The sample studied was n=(655) participants consisting of four subgroups: Diabetes (n=105), Chronic Respiratory Diseases (n=199), Cancer (n=330), Cardiovascular Diseases (n=21). Some of the outcomes found in the research included Pain (n= 1), Fatigue (n= 4), Anxiety (n= 2), Sleep Quality (n= 1), Dyspnoea Symptom (n= 1), Emotion (n=1), Panic (n=1), Quality of Life (n=1).

Mindfulness- Based Meditation

Developed by Professor Kabat-Zinn (1990), at the University of Massachusetts Medical Center in the 1970s, a stress reduction method is called Mindfulness Based Stress Reduction. This method uses a combination of mindful meditation, body awareness, exploration of behavior patterns, thoughts, feelings and actions. Even though this method actually comes from spiritual teachings, this program itself is secular, meaning it does not involve religious matters.

Mindfulness can be defined as an awareness of accepting and investigating without judgment the current experience, including bodily sensations, mental states, thoughts, feelings, urges and memories, to improve well-being and reduce suffering.

The study: One study that examined the use of mindfulness based meditation for diabetes sufferers (Hussain & Amira, 2019), used an RCT approach involving 105 people with the outcome of reducing pain. This study compared the mindfulness-based meditation (MM) group with the progressive relaxation (PM) group and also the control group (CM). 16 intervention sessions were carried out for each group. The PM group was conducted for 16 sessions. In each session, they sit quietly for 5 minutes, then continue with progressive muscle relaxation for 23 minutes, and 2 to 3 minutes of awakening. The MM group was carried out for 16 sessions combining meditation and cognitive therapy activities. Meanwhile, the CM Group was also held for 16 sessions, where the activities consisted of 15 minutes of discussion, 20 minutes of sitting quietly and relaxing as much as possible.

Participants in this study consisted of elderly female patients with diabetes (n=105). Women included in the inclusion criteria are women who have been diagnosed with type 1 and type 2 diabetes for more than 12 months and are more than 55 years old. The studies found examined pain outcomes, impressions of change and satisfaction. Measurements in this study were carried out at baseline, four weeks, eight weeks and twelve weeks at follow-up. Results Both MM and PM groups experienced a significant (P < .05) decrease in mean daily pain in the last 24 hours at the end of the study compared with baseline (28.7% and 39.7%, respectively). Likewise, the patient global impression of change and patient satisfaction. However, for the CM group the results were not significant (P> 0.05)

Relaxation

Relaxation in psychology was popularized by Dr. Edmund Jacobson through his work on Progressive Relaxation, which involves tensing and relaxing specific muscle groups to achieve a state of overall body relaxation. More recent research has supported the effectiveness of relaxation techniques for reducing stress and improving mental well-being (Manzoni *et al.*, 2010; McCallie *et al.*, 2006).

In the following years, other methods like Autogenic Training were developed by Johannes Schultz and Wolfgang Luthe, emphasizing the power of self-suggestion. Further developments in relaxation and meditation have been made, with modern adaptations, such as Benson's relaxation response technique, being used to help manage stress in everyday life (Jain *et al.*, 2015).

Interventions: Two studies employed relaxation techniques, both using Randomized Controlled Trials (RCTs), though each utilized a distinct approach. In one study from Chegeni *et. al* (2018), progressive muscle relaxation (PMR) was used, where participants practiced exercises targeting major muscle groups to promote physical and mental relaxation. These exercises were performed twice daily on weekdays over the course of eight weeks, guided by audio recordings lasting at least 30 minutes per session. The other study from Golding *et al.* (2015) focused on autogenic self-help relaxation, an imagination-based technique. Participants listened to a 20-minute autogenic relaxation CD five times per week, following its instructions, and recorded their practice in a diary. Both approaches aimed to enhance relaxation, but through different methods: physical focus in PMR and mental imagery in autogenic relaxation.

Sub-groups: this study had a sample of n = 122 participants from 2 subgroups: Chronic Obstructive Pulmonary Disease (n = 1) and Stroke (n = 1).

Target outcomes: Intervention effects were assessed on a range of self-reported health outcomes, the most common being Fatigue (n = 1), Sleep Quality (n = 1) and Anxiety (n = 1). Both studies examined short-term impacts, namely one, two and three months after the first session. Meanwhile, another study examined at baseline and after eight weeks.
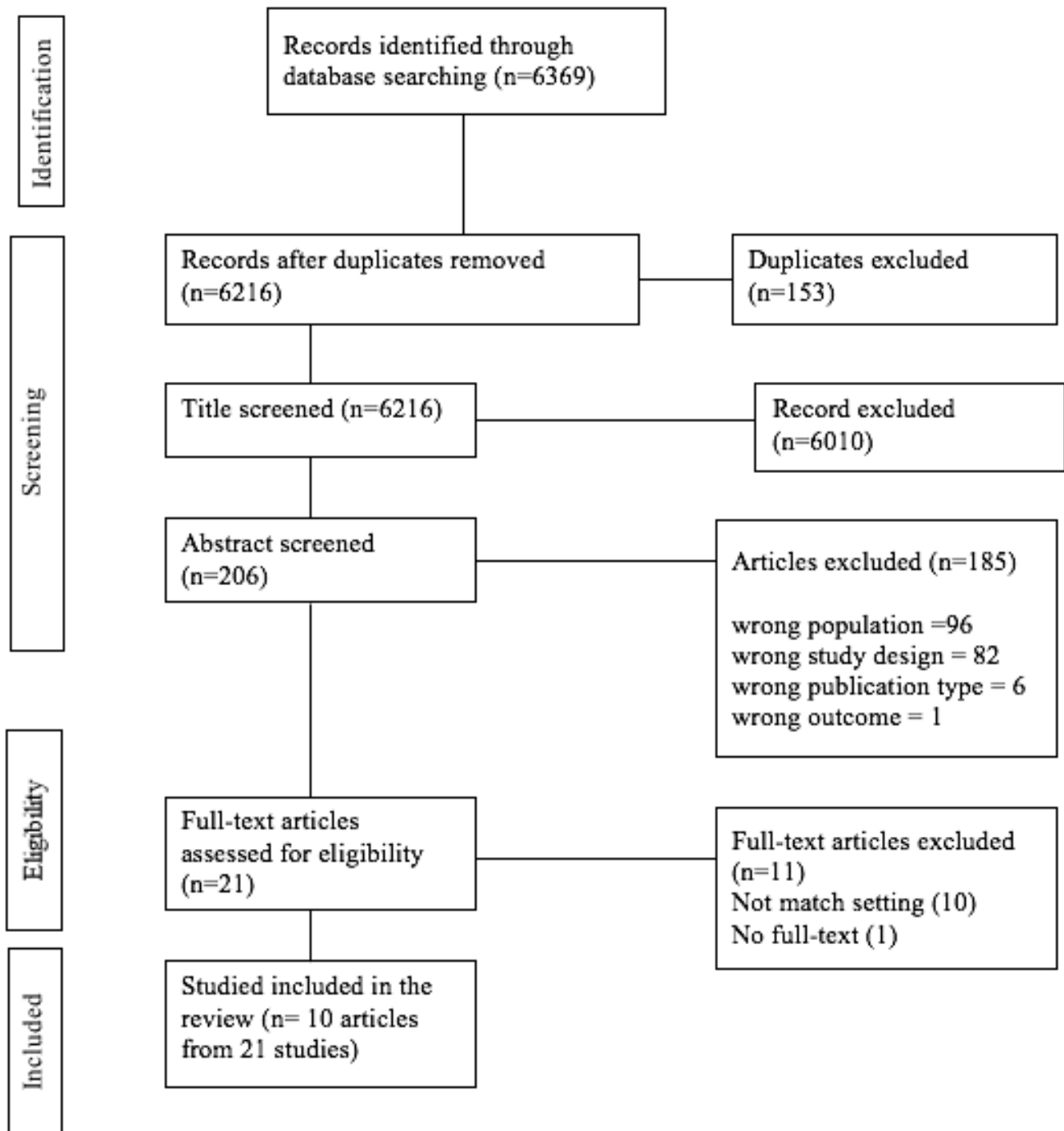
Picture 1. Literature search process

Table 1. The Articles Examined in This SLR Study and Intervention Characteristics

Author(s)	Title	Sample	Outcome Measurements	Study and Interventions	Results
Nadia Hussain, Amira S & 2019	Mindfulness-Based Meditation Versus Progressive Relaxation Meditation: Impact on Chronic Pain in Older Female Patients With Diabetic Neuropathy	Diabetes (n=105)	Pain	Mindfulness	Improvement in pain management
Chegeni et al & 2018	The effect of progressive muscle relaxation on the management of fatigue and quality of sleep in patients with chronic obstructive pulmonary disease: A randomized controlled clinical trial	COPD (n=91)	Fatigue, Sleep Quality	Relaxation	It was determined that PMR decreased patients' fatigue level and improved some sleep quality subscales
Golding et al, 2015	Self-help relaxation for post-stroke anxiety: A randomised, controlled pilot study	Stroke (n=21)	Anxiety	Relaxation	Participants who received the relaxation training were significantly more likely to report reduced anxiety compared to those who had not received the training
Gregoire et al & 2018	randomized controlled trial of an 8-week intervention combining self-care and hypnosis for post-treatment cancer patients: study protocol	Breast Cancer (n=88)	Fatigue & Wellbeing	Self Hypnosis	Fatigue and emotional distress decrease, sleep and emotional regulation improve.
Laidlaw & Willet & 2002	Self-Hypnosis Tapes for Anxious Cancer Patient: an Evaluation using Personalised Emotional Index (PEI) Diary Data	Cancer (n=27)	Emotion & Panic	Self Hypnosis	The relaxation group appeared to have a higher increase compared to the breathing training group, in terms of increasing positive emotions.
Zobeiri et al & 2009	Hypnosis for the Management of Anxiety and Dyspnea in COPD: A Randomized, Sham-Controlled Crossover Trial	COPD (n=21)	Anxiety	Hypnotherapy	Decrease in anxiety and an improvement in the quality of respiratory function after hypnosis was carried out in Chronic Obstructive Pulmonary Disease patients.
Liossi & White & 2001	Efficacy of clinical hypnosis in the enhancement of quality of life of terminally ill cancer patient	Terminaly Ill Cancer (n=78)	Quality of life	Hypnotherapy	Hypnosis was effective in reducing anxiety and depressive experiences, improving their psychological quality of life and individual activity levels
Montgomery et al & 2009	Fatigue During Breast Cancer Radiotherapy: An Initial Randomized Study of Cognitive–Behavioral Therapy Plus Hypnosis	Breast Cancer (n=42)	Fatigue	CBT Plus Hypnosis	Intervention that combines cognitive-behavioral therapy with hypnosis is considered effective in controlling fatigue in breast cancer patients undergoing radiotherapy.

Evidence-based: The PMR program significantly reduced fatigue but showed no effect on global sleep quality or its subscales, including sleep disturbances, use of sleeping medication, and daytime dysfunction. In contrast, the self-help autogenic relaxation program reported a reduction in anxiety. After one month, participants indicated a noticeable decrease in anxiety compared to the control group, a trend that continued through the second and third months.

Self-Hypnosis

Self hypnosis is a form, process and result of a state of hypnosis that is induced by oneself. This method can be used as a sole therapy or used to strengthen other therapies being carried out.

In general, the procedures used are the same as hypnotherapy which is carried out in one-to-one sessions with a therapist, the only difference is that all hypnotherapy procedures are carried out by the patient independently.

The advantage of using self-hypnosis is that it can be done anywhere, at any time and under various conditions, because the patient does not need to go to a certain place or carry out certain activities that require certain abilities. Self hypnosis can be done even by patients who experience physical limitations.

Interventions: Four studies describe the use of self-hypnosis, all three using randomized controlled trials. Three studies used a self-hypnosis program for cancer patients and one study for asthma patients. Two studies were for cancer patients who had undergone treatment, the other was for cancer patients who experienced anxiety. Meanwhile, research for asthma aims to overcome dyspnea symptoms.

Research by Gregoire *et al.* (2018) was carried out for 8 weeks. Combining self care and hypnosis. Participants were given a task at home between sessions, to report on how they managed their daily lives. For example, adjusting self-expectations, increasing self-esteem, revising self-narratives, adapting social roles, discovering personal boundaries and needs, assertiveness, identifying situations and feelings of helplessness, accepting that not everything can be controlled, differentiating between personal and sick, managing ruminants, and so forth.

In a hypnosis session, the first meeting is mostly used to provide information about hypnosis, and at the end of the session, 15 minutes of hypnosis activities are carried out under supervision. Then participants received a hypnosis CD to listen to at home. The next study was also carried out by Gregoire *et al.* (2020) by combining self-care and hypnosis. However, the difference is that in this study, each session was held for two hours, and a total of eight times. Between sessions, participants are given tasks to carry out self-care. At the end of each intervention session, hypnosis is carried out together, guided by the therapist, for 15 minutes. At home, participants perform self-hypnosis themselves. Meanwhile, studies from Laidlaw & Willet (2002) used 10 minute relaxation recordings, which involved hypnotic induction and detailed progressive muscle relaxation with calm suggestions, both of which were delivered in the context of hypnosis. Listening to recordings is done three times a day, recommended in the morning after waking up, in the evening before going to bed and in the middle of the day. Data

collection was carried out for 3 weeks while the intervention took place. Research conducted by Zobeiri *et al.* (2009). The Hypnosis session lasts 45 minutes. This session usually begins with a pre-hypnotic interview during which the concept of hypnosis is introduced to the patient. Then patients are taught how to use imagery to achieve relaxation (progressive muscle relaxation) and imagery to help relieve dyspnoea (by imagining the appearance of their lungs can change from experiencing dyspnoea to a healthy condition).

Sub-groups: this study had a sample of n = 219 participants from 4 studied and 1 subgroup: Cancer (n = 3), Asthma (n = 1).

Target outcomes: Intervention effects were assessed on a range of self-reported health outcomes, the most common being fatigue (n= 2), wellbeing (n= 2), mindfulness (n= 1), emotion (n= 1), panic (n= 1) , Asthma Symptoms Severity (n=1).

Evidence-based: According to research results by Gregoire *et al.* (2018). Fatigue and emotional distress decrease, sleep and emotional regulation improve. Patient coping with partner/family, and communication between the two becomes better. Spousal distress decreases. There is a positive relationship between reducing patient distress and reducing attention bias. Gregoire e*t al.* (2020) continued their research with the same results, namely decreased fatigue and emotional distress, sleep and emotional regulation improved. Apart from that, the patient's coping with the partner/family, as well as communication between the two, improves and the partner's distress decreases. Confirming previous research that there is a positive relationship between reducing patient distress and reducing attention bias. This research shows the role of self-care and self-hypnosis in increasing self-esteem and reducing emotional distress in cancer patients. Apart from that, this intervention also improves the patient's emotional regulation abilities, and also improves the participant's level of mindfulness. This research also revealed that increasing levels of mindfulness can also be a predictor of decreasing emotional distress. Intervention sessions allow patients to take time for themselves, to think about themselves, about what is important to them, and about how to implement self-care in their daily lives. This includes engaging in meaningful activities, refocusing on positive experiences and managing experiences non-judgmentally. Two types of therapy, self-care and self-hypnosis can actually complement each other to increase the patient's ability to experience mindfulness. Positive results were also reported by Laidlaw & Willet (2002), that the participants' diaries showed that the PEI scores were getting better from day to day in the self-hypnosis group for both the relaxation and breathing training groups. The relaxation group appeared to have a higher increase compared to the breathing training group, in terms of increasing positive emotions. The same thing happens for a decrease in negative emotions. There was an increase in the freedom from panic attacks by 16%. From 54% to 70% after intervention was given. Research by Zobeiri *et al.* (2009) stated that self-hypnosis can overcome symptoms but does not change lung function, at least in a short period of time.

Hypnotherapy

Division 30 of the American Psychological Association defines hypnosis as a state of consciousness involving focused attention and reduced peripheral awareness characterized by an increased capacity to respond to suggestion (Lynn *et al.*, 2015). Hypnotherapy has been widely used for patients with psychological disorders and as adjuvant therapy for patients with medical disorders.

Several studies have shown the efficacy of hypnosis in helping patients reduce pain in patients experiencing burns (Patterson *et al.*, 1989), bone marrow sampling procedures and childbirth (Ewin, 2001; Mendosa & Capafons, 2009). Apart from that, hypnotherapy is also used for various adjuvant therapies to overcome obstacles to the treatment process due to feelings of fear of undergoing certain medical procedures (Carlson, 2018), fatigue (Montgomery *et al.*, 2017), and anxiety (Liossi& White, 2001).

Interventions: Two studies describe the use of hypnotherapy, using randomized controlled trials for patients with chronic obstructive pulmonary disease (COPD), terminal illness and asthma. Research for COPD was found to use hypnotherapy compared to sham techniques (Hernan *et al.*, 2020). Meanwhile, research for cancer by Liossi& White (2001) used a comparison with standard care, namely standard medical care and psychological support in the form of counseling using a cognitive-existential model approach for 30 minutes per week. Then research for Asthma

The study conducted by Liossi& White (2001) implemented group hypnosis for 30 minutes per week for 4 sessions. Hypnosis interventions include: induction, suggestions for symptom management and ego strengthening and post-hypnotic suggestions for comfort and increasing benefits during treatment. Suggestions are also adjusted to patient complaints, such as analgesic suggestions for residual pain, suggestions to reduce anxiety, for nausea and vomiting management, insomnia, breathlessness and fatigue. Meanwhile, ego strengthening suggestions are carried out to bring up inner coping strategies and increase self-efficacy (Brown & Fromm, 1986). Assessment using self-report was carried out at baseline and after intervention, supplemented with semi-structured interviews. Meanwhile, the study conducted Hernan *et al.* (2020) divided participants randomly into two groups. The first group was the group that was given hypnosis for 15 minutes and then took a 24 hour break and then did shaming. Meanwhile, the second group was the group that was given sham for 15 minutes, then paused for 24 hours, then given 15 minutes of hypnosis. Measurements were taken before and after the intervention was given, both in hypnosis and sham sessions. Hypnosis and sham are actually similar, but there are differences in several procedures. For example, if in hypnosis there is an induction procedure, then in sham it is text reading. If in hypnosis you do hypnosis suggestions, then in sham you do visualize the text.

Sub-groups: this study had a sample of n = 71 participants from 2 studies and 2 subgroups: Chronic Obstructive Pulmonary Disease (n = 1) and Cancer (n = 1).

Target outcomes: The effect of the intervention was assessed on a range of self-reported health outcomes, the most common being Quality of Life (n=1), Anxiety (n=1), Depression (n-1), Anxiety (n=1), quality of respiratory function (n=1).

Evidence-based: According to research results Hernan *et al.* (2020), there was a decrease in anxiety and an improvement in the quality of respiratory function after hypnosis was carried out in Chronic Obstructive Pulmonary Disease patients. Apart from that, it was also found that Hypnosis was more effective than Sham in reducing anxiety. Meanwhile, the results of research by Liossi& White (2001) found that hypnosis was effective in reducing anxiety and depressive experiences, improving their psychological quality of life and individual activity levels. Hypnosis interventions focus on symptom management and ego strengthening in reducing emotional distress, increasing mental adjustment to cancer and promoting effective coping strategies. This can reduce anxiety, lack of rest, anxious thoughts, depression, sadness, demoralization, low self-esteem and pessimism.

Cognitive-Behavioral Therapy plus Hypnosis

Cognitive Behavior Therapy (CBH) and Hypnosis have several similarities that make them both compatible (Friedberg, 1987; Golden, 1983). Imagery and relaxation techniques are often found in both approaches. There are the same cognitive processes, namely the process of imagining, expectations and attitudes. We can find the integration of this approach in research conducted by Wolpe (1958). Systematic Desensitization Technique is a therapy technique based on imagery, which has been developed by Wolpe to cure excessive fear and phobias.

Initially Wolpe used hypnosis to reduce anxiety during systematic desensitization, but because many patients refused to undergo hypnosis, he replaced it with progressive relaxation techniques. However, Wolpe & Lazarus (1966) reported the use of hypnosis in systematic desensitization in about a third of the cases they treated. Godfried (1971) said that the effectiveness of Systematic Desensitization can increase when clients are taught coping techniques to reduce their anxiety.

Furthermore, cognitive behavioral techniques and hypnosis contributed to the formation of Cognitive Behavior Hypnotherapy (CBH) techniques, namely techniques that are an integration of Cognitive Behavior Therapy and Hypnotherapy. In fact, Cognitive Behavior Therapy is also the result of the integration of two approaches, namely the traditional Behavior Therapy (BT) approach with the addition of a cognitive component.

Interestingly, the CBT and Hypnosis approaches have several similar concepts regarding the formation of anxiety. As Araoz (1885); Alladin (2007) said, what causes emotional disorders is Negative Self Hypnosis (NSH). This is in the form of self-suggestion that continuously has a negative tone. This NSH phenomenon is what Ellis (1962) called self-talk irrational (Irrational Selftalk). Meanwhile, there are those who call this phenomenon automatic negative thinking (Automatic Negative Thought), while Nolen-Hoeksema (1991) calls it negative rumination (Negative Rumination).

Interventions. The combined approach of hypnosis and cognitive behavior therapy was found in a study conducted by Montgomery *et al.* (2009) in breast cancer patients undergoing radiotherapy. Using Randomized Controlled Trials, the study was divided into two groups, namely the Cognitive-Behavioral

Therapy plus Hypnosis (CBTH) group and the Standard Medical Care (SMC) group. Participants in the CBTH group are told about the CBT component, that one thought about an event can influence emotions, behavior and physical conditions. Meanwhile, the explanation of hypnosis is that hypnosis is to control symptoms related to cancer and the treatment being undertaken.

The first treatment procedure carried out was brief hypnosis (15 minutes) when participants underwent preradiotherapy, as follows: 1. dealing with misunderstandings about the concept of hypnosis, 2. hypnotic induction suggestions for physical and mental relaxation, 3. guided imagery of a peaceful and safe place, 4. suggestions to increase the level of hypnosis, 5. specific suggestions to reduce fatigue, reduce distress, increase the sense of relaxation, increase well-being, increase energy. In this session, participants were also given time to make the suggestions they wanted. 6. Participants were given a hypnosis CD to listen to at home.

The second treatment was also carried out when participants underwent preradiotherapy, namely by meeting with a therapist for 30 minutes to be taught about CBT skills including how to admit negative beliefs about radiotherapy, fatigue, and the emotional, psychological and physical impacts of these beliefs. Furthermore, participants are also taught how to challenge these beliefs and replace them with more effective methods. Apart from that, there are behavioral strategies to overcome fatigue and several activities that help. Next, participants were given a workbook to record their thoughts, done weekly for 6 weeks. The therapist met participants twice a week for a total of 12 meetings. Fatigue is measured daily and weekly using the fatigue subscale of the Functional assessment of Chronic Illness Therapy (FACIT).

Sub-groups. This study had a sample of n = 42 participants from 1 study and 1 subgroup: Cancer (n = 1).

Target outcomes. Intervention effects were assessed on a range of self-reported health outcomes, Fatigue (n=1), Neuroticism (n=1)

Evidence-based. According to research results by Montgomery *et al.* (2009), shows that an intervention that combines cognitive-behavioral therapy with hypnosis is considered effective in controlling fatigue in breast cancer patients undergoing radiotherapy.

Discussion

Over the past 20 years, ten RCT studies have examined hypnotic-based interventions across four main types of non-communicable diseases (NCDs): cardiovascular diseases, cancer, chronic respiratory diseases, and diabetes. Among these, self-hypnosis is most widely used, with four studies specifically focusing on this method. Self-hypnosis is advantageous because it can be utilized by patients who face barriers to other forms of intervention, such as those with movement limitations or difficulties in verbal communication. Patients can engage in self-hypnosis through audio recordings, making it accessible even for those who struggle with direct interaction (Elkins *et al.*, 2012). However, it is crucial to consider that the effectiveness of self-hypnosis varies across studies. Some research highlights its benefits, while others report limited or no effects (Gordon *et al.*, 2010; Lang *et*

al., 2015). This discrepancy could be influenced by placebo effects and patient expectations. The role of these factors underscores the need for more robust study designs that can control for such influences (Wells & Kaptchuk, 2012).

However, for patients who may need education about self-management knowledge, how to relieve symptoms or even need intense support, they can also have one-to-one therapy sessions. This one-to-one therapy requires the patient to meet directly with a therapist and carry out several procedures, starting from education and a series of other stages of therapy. This research also found other therapeutic modalities that use relaxation and state hypnosis, such as mindfulness-based meditation and relaxation. These variants are actually very similar to self-hypnosis because they involve imagery and relaxation, although in different terminology

Apart from that, hypnosis can also be used together with other therapeutic modalities, either as a complement or as an adjuvant. For example, in the Cognitive Behavior Therapy plus Hypnosis (CBTH) intervention, hypnosis can help to reduce the symptoms felt by patients related to the pain they suffer and the side effects of the treatment they are undergoing (Elkins& Patterson, 2007), while cognitive behavioral therapy can help patients to manage their thoughts which usually also experience distortion, and also the conditioning of certain behaviors (Nakao *et al.*, 2021). Meanwhile, hypnosis can also be used to support other main therapies (adjuvant), for example the use of hypnosis to help strengthen the application of self-care to patients. Hypnosis can help self-care be applied more strongly in their daily lives, so that the targets of the main therapy can be achieved. Apart from being beneficial for the patient, it turns out that the changes that occurred in him due to the intervention made his relationship with his family better.

Although hypnosis appears promising for helping patients with non-communicable diseases, significant changes in organ function need to be investigated again. Because in the research found, hypnosis plays a more important role in reducing symptoms of physical pain and also psychological obstacles, while changes in organ function have not been found, at least for short-term interventions. Apart from that, the limitation of RCT research on hypnosis interventions stated by most researchers is the difficulty of carrying out blinded procedures. This is because in hypnosis intervention, the patient's expectations of hypnosis are an important factor in the therapy process. Meanwhile hypnosis shows promise in symptom management and improving quality of life, but its costs compared to other psychological or medical treatments need to be evaluated (Elkins *et al.*, 2012). Future research should include cost-effectiveness analyses to determine the value of hypnosis in clinical practice and its potential impact on healthcare budgets (Wells & Kaptchuk, 2012).

A thorough examination of the limitations in the reviewed RCT studies reveals several critical issues that impact the reliability of the findings. Many studies, such as those by Montgomery *et al.* (2009) and Hernan *et al.* (2020), suffer from small sample sizes, with participant numbers ranging from as low as 42 to 71. This limitation compromises the statistical power and generalizability of the results. Additionally, the variability in study designs, including differing protocols and outcome measures, introduces heterogeneity that complicates cross-study comparisons.

Most studies lack long-term follow-up, which hinders the assessment of the durability of hypnosis effects beyond the immediate post-intervention period. Furthermore, the difficulty of implementing blinded procedures in hypnosis studies introduces potential biases, as patients' expectations and beliefs about hypnosis could influence their perceived effectiveness (Ewer& Stewart, 1986). These factors, coupled with potential publication bias and the broad scope of some reviews, highlight the need for larger, methodologically rigorous trials with extended follow-up periods to better understand and validate the efficacy of hypnotic interventions.

Future research should focus on several key areas to advance the understanding of hypnosis's effectiveness. Rigorous randomized controlled trials (RCTs) with larger sample sizes, rigorous blinding, and extended follow-up periods are essential to provide more reliable evidence (Montgomery *et al.*, 2009). Additionally, investigating the mechanisms behind hypnotic interventions will help elucidate their effects on various non-communicable diseases (NCDs) and identify their potential benefits (Elkins *et al.*, 2012). Exploring how patient susceptibility to hypnosis and demographic factors influence intervention outcomes, with measures of susceptibility incorporated into participant selection, could enhance the validity of findings (Hirsch *et al.*, 2013). Furthermore, examining the cost-effectiveness of hypnosis compared to other treatments will provide valuable information for healthcare providers and policymakers (Wells & Kaptchuk, 2012).

Implications for research and clinical practice

Even though it seems promising in managing symptoms in patients with non-communicable diseases, it is necessary to pay attention to the limits of therapy performance in the right portion. Hypnotic intervention may optimize the performance of the patient's organs, but it may not. Therefore, it is necessary to carry out research that proves the possibility of improvement in organ function which can be monitored with appropriate measuring instruments. This is important, because feeling better about the symptoms you feel does not mean there is always an improvement in organ function. Furthermore, research also needs to consider demographic factors, beliefs about hypnosis and also the patient's condition such as severity, cognitive impairment, ability to respond to therapy, which is the patient's background and then taken into consideration in selecting techniques and how to deliver the intervention.

Meanwhile, because hypnosis is closely related to the acceptance of suggestions and the ability to cooperate in following instructions (including guided imagery), differences in patient susceptibility to hypnosis need to be considered as a variable that might influence the level of effectiveness of hypnotic-based intervention (Ewer& Stewart, 1986). In future research, the study of susceptibility may need to be taken into consideration in participant classification or something that needs to be controlled so that the experimental data can be cleaner.

In terms of medical policy, the treatment of patients with non-communicable diseases needs to be researched more about various types of disease (especially main types of NCDs), so that later it can be used as a more comprehensive clinical pathway, which involves treatment not only physical but also psychological. If the patient is tired during the treatment period, there is anxiety when they want to undergo certain procedures, as well as other impacts due to disabilities resulting from the patient's illness, it is necessary to receive appropriate psychological treatment. There is evidence that hypnosis can reduce fatigue during chemotherapy treatment, reduce anxiety when patients are about to undergo radiotherapy and many other results that can be confirmed by various studies, hypnosis is a therapeutic modality that can be used as a reference by medical personnel, families and patients.

Limitations

As is done in scoping reviews, there is not much assessment of study quality and the possibility of assessing publication bias could occur due to language differences. The review of this study may also be quite broad but shallow, where it does not discuss in more detail the definition or an in-depth review of the philosophy, technical implementation of the intervention and other details.

Conclusion

Hypnosis demonstrates promising potential as an adjunctive therapy for managing symptoms across various non-communicable diseases (NCDs), including cardiovascular diseases, cancer, chronic respiratory diseases, and diabetes. Evidence supports its effectiveness in alleviating pain, reducing anxiety, and improving overall quality of life by leveraging its stress-reducing and symptom-management capabilities. Specifically, hypnosis has been shown to help manage cardiovascular stress, alleviate cancer treatment-related symptoms, enhance breathing control in respiratory conditions, and improve diabetes self-care adherence. However, variability in patient response and study design highlights the need for further research with larger sample sizes and long-term follow-ups to validate and refine these findings. Future studies should address subgroup differences, explore mechanisms of action, and consider the cost-effectiveness of hypnosis compared to other interventions to better integrate it into clinical practice.

Declaration

Author contributions

Danang Baskoro, the first author made the plan, screened the articles and recorded the data. Next, the author will extract and analyze the data. All planning activities were discussed with the third author. Leonardus Gandawijaya, the second author screened the initial data and ensured that the articles selected were relevant to the research theme. Kwartarini Yuniarti, the third author screened the baseline data, then ensured that the selected articles were appropriate to the research theme, and together with the first researcher extracted the data and analyzed it.

Reference

Alladin, A. (2007). *Handbook of cognitive hypnotherapy for depression: An evidence-based approach.* Lippincott Williams & Wilkins.

Araoz, D. L. (1985). *The new hypnosis.* Brunner/Mazel.

Arkey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology, 8*(1), 19-32. https://doi.org/10.1080/1364557032000119616

Artsanthia, J., Kengnal, R., & Prathomsit, T. (2019). The role of resilience in the treatment adherence of patients with chronic diseases. *Journal of Health Psychology, 24*(3), 457-468. https://doi.org/10.1177/1359105317736781

Brown, D. P., & Fromm, E. (1986). *Hypnotherapy and hypnoanalysis.* Lawrence Erlbaum Associates.

Carlson, L. E. (2018). Hypnotherapy and medical disorders: Fear reduction in medical procedures. *Journal of Clinical Psychology, 74*(3), 422-431. https://doi.org/10.1002/jclp.22534

Carlson, L. E., Zelinski, E. L., Toivonen, K. I., Flynn, M., Qureshi, M., & Piedalue, K.-A. L. (2018). Mind-body therapies in cancer patients: Hypnosis, guided imagery, biofeedback, and autogenic training. *Annals of the New York Academy of Sciences, 1431*(1), 47-64. https://doi.org/10.1111/nyas.13905

Chegeni, M., Khoshknab, M. F., Pahlavanzadeh, S., & Khorrami-Markani, A. (2018). The effect of progressive muscle relaxation on anxiety in patients with chronic obstructive pulmonary disease. *Iranian Journal of Nursing and Midwifery Research, 23*(3), 198-202. https://doi.org/10.4103/ijnmr.IJNMR_121_16

Elkins, G., Fisher, W., & Johnson, A. (2012). Mind-body therapies in integrative oncology. *American Psychologist, 67*(5), 425-435. https://doi.org/10.1037/a0026723

Elkins, G., & Patterson, D. R. (2007). *Hypnotherapy in the treatment of pain and psychosomatic disorders. American Journal of Clinical Hypnosis, 49*(3), 205–213. https://doi.org/10.1080/00029157.2007.10401603

Ellis, A. (1962). *Reason and emotion in psychotherapy.* Lyle Stuart.

Ewin, D. M. (2001). Hypnotherapy in pain management and childbirth. *Pain Management Nursing, 2*(4), 157-163. https://doi.org/10.1053/jpmn.2001.27132

Ewer, T. C., & Stewart, D. E. (1986). Improvement in bronchial hyperreactivity in patients with moderate asthma after treatment with a hypnotic technique: A randomized controlled trial. *British Medical Journal (Clinical Research Edition) , 293*(6555), 1129-1132. https://doi.org/10.1136/bmj.293.6555.1129

Friedberg, F. (1987). Cognitive hypnotherapy for recurrent headaches. *International Journal of Clinical and Experimental Hypnosis, 35*(3), 215–224. https://doi.org/10.1080/00207148708416055

Godfried, M. H. (1971). Systematic desensitization, hypnosis, and relaxation: A review of empirical studies. *Journal of Nervous and Mental Disease, 153*(4), 279–290. https://doi.org/10.1097/00005053-197110000-00003

Golden, W. L. (1983). Cognitive restructuring in the treatment of anxiety. *Journal of Cognitive Therapy and Research, 7*(2), 177–191.

Gordon, P., Tighe, S., & Hamilton, R. (2010). Self-hypnosis in the treatment of non-communicable diseases: A review of randomized controlled trials. *Journal of Hypnotherapy Research, 12*(3), 145-159.

Golding, K., Stewart, J., & Perry, R. (2015). The impact of autogenic training on fatigue and sleep quality in stroke survivors: A randomized controlled trial. *Clinical Rehabilitation, 29*(7), 676-686. https://doi.org/10.1177/0269215514556277

Gregoire, C., Lachance, L., Bouffard, B., & Dionne, C. (2018). Self-hypnosis and self-care: Managing fatigue and emotional distress in cancer patients. *Journal of Psychosocial Oncology, 36*(1), 45-61. https://doi.org/10.1080/07347332.2017.1397833

Gregoire, C., Lachance, L., Bouffard, B., & Dionne, C. (2020). Integrating self-hypnosis with self-care for cancer patients: A follow-up randomized trial. J*ournal of Psychosocial Oncology, 38*(3), 55-73. https://doi.org/10.1080/07347332.2019.1677082

Guy, H., Thomas, L., & Jones, R. (2017). The impact of hypnotherapy on adherence to treatment in patients with chronic illnesses. *Journal of Psychosomatic Research*, 95, 56-63. https://doi.org/10.1016/j.jpsychores.2017.02.003

Hernan, A. L., Barros, A. M., & Checa, P. (2020). Hypnotherapy for managing anxiety in chronic obstructive pulmonary disease patients: A comparison with sham techniques. *Journal of Pulmonary & Respiratory Medicine, 10*(2), 225-232. https://doi.org/10.4172/2161-105X.1000456

Hirsch, M., Holler, Y., Sanchez, C., & Reber, T. P. (2013). Hypnosis and memory: Implications for recovery of early trauma. *Neuroscience & Biobehavioral Reviews, 37*(1), 147-155. https://doi.org/10.1016/j.neubiorev.2012.11.010

Hussain, N., & Amira, S. (2019). Mindfulness meditation in diabetes patients: A randomized controlled trial. *Journal of Psychosomatic Research*, 123, 54-60. https://doi.org/10.1016/j.jpsychores.2019.05.014

Intarakamhang, U., Macaskill, P., & Petrie, K. J. (2020). Adherence to treatment and psychological well-being in chronic illness: The role of self-efficacy. P*sychology, Health & Medicine, 25*(5), 580-594. https://doi.org/10.1080/13548506.2019.1668557

Jain, F. A., Walsh, R. N., Eisendrath, S. J., Christensen, S., & Rael Cahn, B. (2015). Critical analysis of the effects of mindfulness-based stress reduction (MBSR) on anxiety, depression, and stress in adult populations. *Journal of Psychiatric Research*, 68, 107-115. https://doi.org/10.1016/j.jpsychires.2015.05.006

Jiakponna, E. C., Agbomola, J. O., Ipede, O., Karakitie, L., Ogunsia, A. J., Adebayo, K. T. & Tinuoye, M. (2024). Psychosocial factors in chronic disease management: Implications for health psychology. *International Journal of Science and Research Archive, 12*(02), 117-128. DOI: 10.30574/ijsra.2024.12.2.1219

Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness.* Delta.

Laidlaw, T. M., & Willet, D. L. (2002). Self-hypnosis for cancer patients: Effects on fatigue, anxiety, and emotional regulation. *British Journal of Clinical Psychology, 41*(4), 451-462. https://doi.org/10.1348/014466502760387489

Lang, E. V., Berbaum, K. S., & Faintuch, S. (2015). Hypnosis for non-communicable diseases: Clinical perspectives. *Journal of Pain and Symptom Management, 48*(4), 607-615. https://doi.org/10.1016/j.jpainsymman.2014.11.029

Christina Liossi, C., & White, P. (2001). The role of hypnosis in managing pain and emotional distress in cancer patients. *Journal of Clinical Psychology, 57*(9), 1189-1201. https://doi.org/10.1002/jclp.1062

Lynn, S. J., Kirsch, I., Hallquist, M. N., & Valli, R. (2015). Hypnosis and the altered state debate: Something for everyone. *Consciousness and Cognition, 22*(3), 678–686. https://doi.org/10.1016/j.concog.2013.05.002

Manzoni, G. M., Pagnini, F., Castelnuovo, G., & Molinari, E. (2010). Relaxation training for anxiety: A ten-years systematic review with meta-analysis. *BMC Psychiatry*, 8, 41. https://doi.org/10.1186/1471-244X-8-41

Mays, N., Roberts, E., & Popay, J. (2001). *Synthesising Research Evidence*. In N. Fulop, P. Allen, A. Clarke, & N. Black (Eds.), Studying the organisation and delivery of health services: Research methods (pp. 194-219). Routledge.

McCallie, M. S., Blum, C. M., & Hood, C. J. (2006). Progressive muscle relaxation. *Journal of Human Behavior in the Social Environment, 13*(3), 51-66. https://doi.org/10.1300/J137v13n03_04

Mendosa, A., & Capafons, A. (2009). The efficacy of hypnosis in medical procedures: Pain, anxiety, and symptom management. *International Journal of Clinical and Experimental Hypnosis, 57*(3), 313-327. https://doi.org/10.1080/00207140903040583

Montgomery, G. H., David, D., Winkel, G., Silverstein, J. H., & Bovbjerg, D. H. (2017). Hypnosis for symptom management in chronic illness: A systematic review. *International Journal of Clinical and Experimental Hypnosis, 65*(4), 456-472. https://doi.org/10.1080/00207144.2017.1349805

Montgomery, G. H., Hallquist, M. N., & Schnur, J. B. (2009). Cognitive-behavioral therapy plus hypnosis for fatigue reduction in breast cancer patients undergoing radiotherapy: A randomized trial. *Journal of Clinical Oncology, 27*(6), 717-722.

Nakao, M., Shirotsuki, K., & Sugaya, N. (2021). Cognitive-behavioral therapy for management of mental health and stress-related disorders: Recent advances in techniques and technologies. *BioPsychoSocial medicine, 15*(1), 16. https://doi.org/10.1186/s13030-021-00219-w

Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology, 100*(4), 569–582. https://doi.org/10.1037/0021-843X.100.4.569

Patterson, D. R., Everett, J. J., Burns, G. L., & Marvin, J. A. (1989). Hypnosis for the treatment of pain associated with burn debridement. *American Journal of Clinical Hypnosis, 31*(3), 156–163. https://doi.org/10.1080/00029157.1989.10402813

Richter, P., Aslam, M., Kostova, D., Lasu, A. A. R., Vliet, G. V., Courtney, L. P., & Chisenga, T. (2022). The Case for Integrating Health Systems to Manage Noncommunicable and Infectious Diseases in Low- and Middle-Income Countries: Lessons Learned From Zambia. *Health security, 20*(4), 286–297. https://doi.org/10.1089/hs.2022.0016

Santos, S. R., Macedo, T. D., Silva, L. M., & Ferreira, J. A. (2013). Emotional challenges of patients with chronic non-communicable diseases: Fatigue, anxiety, and depression. *Brazilian Journal of Health Research, 22*(3), 342-352. https://doi.org/10.1590/S0104-42302013000300012

Wells, R. E., & Kaptchuk, T. J. (2012). To tell the truth, the whole truth, may do patients harm: the problem of the nocebo effect for informed consent. *The American journal of bioethics : AJOB, 12*(3), 22–29. https://doi.org/10.1080/15265161.2011.652798

Wolpe, J. (1958). *Psychotherapy by reciprocal inhibition*. Stanford University Press.

Wolpe, J., & Lazarus, A. A. (1966). B*ehavior therapy techniques: A guide to the treatment of neuroses.* Pergamon Press.

World Health Organization. (2021). Noncommunicable diseases. https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases

World Health Organization. (2023). Noncommunicable diseases. https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases

Zobeiri, M., Karimi, M., & Rad, F. (2009). The effectiveness of self-hypnosis in reducing symptoms of asthma: A randomized controlled trial. *Journal of Asthma, 46*(9), 927-933. https://doi.org/10.3109/02770900903229709