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Hypnotherapy and insomnia: A narrative review of the literature

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ABSTRACT

Introduction: Hypnotherapy is increasingly used in general medicine in France to manage health problems such as insomnia. There is some evidence to support the efficacy of hypnosis in treating insomnia but this evidence is based on methodologies of various strengths. This review aims to explore the methodological elements employed in hypnotherapy research to manage insomnia.
Method: We performed a narrative review of the literature using systematic review methods focusing on treating insomnia with hypnosis. PubMed, Psycinfo, BASE and Cochrane databases and Google scholar were searched.
Results: Overall, 25 studies were included consisting of 10 case studies, 11 randomised, controlled trials and 4 pre and post intervention studies. The study designs, intervention, control and comparators were heterogeneous, as were the hypnosis definitions and techniques. Also, detailed descriptions of the hypnosis techniques were lacking. Most studies used non-quantifiable measurement criteria and sample numbers were too small to show significance or be representative. No double-blind study was found.
Conclusion: Our results indicate that the current research concerning the efficacy of hypnosis to relieve insomnia is lacking in key methodological elements. The evaluation research process requires robust methodology. We propose applying the IDEAL framework, which recommends research steps to evaluate non-pharmacological and other complex therapies to evaluate the efficacy of hypnosis to manage insomnia.

1. Introduction

Chronic insomnia is a frequent complaint in Western countries, with reported prevalence ranging from 5.8% to 19% in Europe. In France in 2018, 16.9% of women and 9.1% of men were reported to have chronic insomnia and 13.1% were aged between 18 and 75.[1] Chronic insomnia is associated with long-term health risks including mood disorders, absenteeism, obesity and diabetes, cardiovascular disease, and road traffic accidents.[2,3]

Although the French health authority (HAS) states that acute insomnia can be treated with benzodiazepines and Z-drugs, they should be restricted to short-term use.[4] Yet the French are the second highest benzodiazepine consumers in Europe.[5] The potential risks relating to benzodiazepine use include psychiatric disturbances, behavioural disorders, altered consciousness, altered driving abilities, and increased fall risk.[5,6] The therapeutic effect decreases within 2–4 weeks, as tolerance to the molecule develops, and subsequent psychic and physical dependency ensues.[4]

Cognitive Behavioural Therapy (CBT) is recommended as a first line, non-pharmaceutical therapy for chronic insomnia.[7] However, CBT is not well known and infrequently used in France. Hypnosis is a non-pharmaceutical therapy similar to CBT but is faster to administer than CBT and fits well into general practice. The American Psychological Association (APA) defines hypnosis as "A state of consciousness involving focused attention and reduced peripheral awareness characterised by an enhanced capacity for response to suggestion".[8] Hypnotherapy is a psychotherapeutic use of hypnosis. Patients have reported positive opinions of hypnotherapy,[9] and general practitioners report interest in using the technique.[10]

The rationale behind using hypnosis to manage insomnia has been supported in sleep research, which showed deep sleep waves increase among healthy subjects in hypnotic states.[11,12] Furthermore, a meta-analysis in 2015 and a systematic literature review in 2018 of randomised trials on hypnosis to manage insomnia, reported positive results in more than half the studies analysed.[13,14] However, the authors questioned the validity of the results as a large majority of the included

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studies lacked methodological quality. These observations and study design publications underline the difficulty in designing a methodology suited to assessing the efficacy of hypnosis.[15,16]

To date, there is no literature review of all data published on hypnosis in the treatment of insomnia.

This review aims to identify and analyse published studies evaluating hypnosis in the treatment of insomnia to provide a basis for future clinical trials in hypnotherapy for insomnia.

2. Materials and methods

This narrative review of the literature was conducted using systematic review methods based on the methodology published in the Swiss Medical Journal in 2019[17] and SANRA criteria to ensure quality.[18]

2.1. Search strategy

Original research articles were searched in PubMed, BASE, Psycinfo and Cochrane libraries. The search equation was built with items including hypnosis, hypnotherapy, insomnia, sleep initiation and maintenance disorders (defined as the impaired ability to initiate or maintain sleep as a primary disorder or in association with another medical or psychiatric condition) and previous published research on the subject. The search included all publication dates up to and including 02.02.2020. The following MeSH terms were applied: ("hypnosis"[MeSH]) AND ("sleep initiation and maintenance disorders"[MeSH]); ("hypnosis") AND ("insomnia"); ((DE "Hypnosis") OR (DE "Hypnotherapy")) AND (DE "Insomnia"); [Sleep initiation and maintenance disorders] [hypnosis] #1 AND #2.

We also hand-searched articles on Google Scholar and articles found in the references of articles retrieved from the database searches.

2.2. Study identification and selection

Original research articles, in English or French, were included if they evaluated hypnosis to relieve insomnia, with insomnia the primary endpoint in adult patients over the age of 18 years. Studies were identified and selected by a single researcher. To prevent bias associated

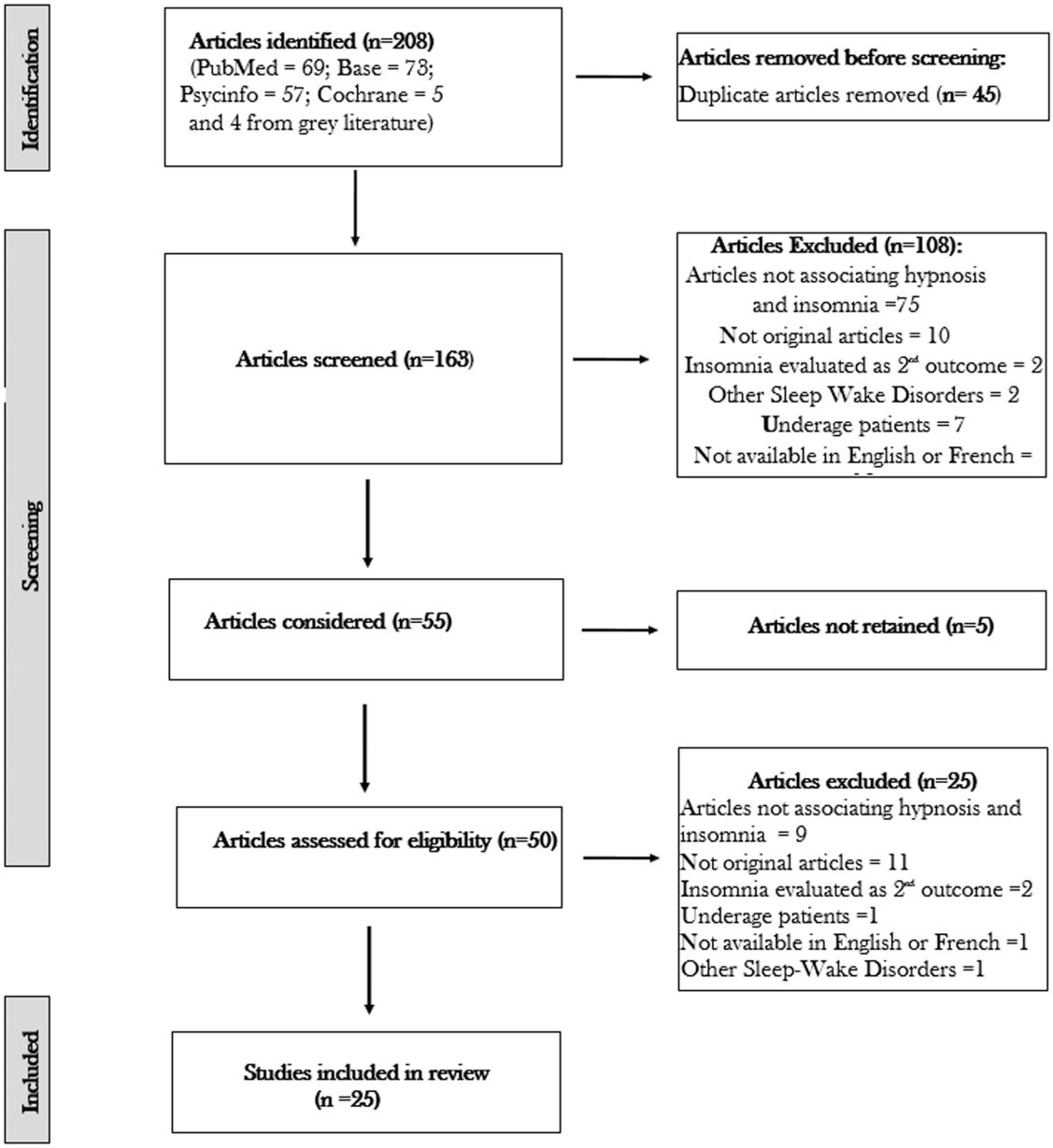

Fig. 1. Flow diagram.

with organic type sleep disorders, articles relating to restless leg syndrome, periodic limb movements, sleep apnoea, obstructive or central apnoea, parasomnia, or narcolepsy were excluded.

Duplicates were also excluded. Articles were selected from titles and abstracts.

2.3. Analysis of results

We performed a descriptive analysis of each paper and recorded; journal, publication date and country, population and setting, study type, design and objective, primary and secondary endpoints and endpoint measures. We also evaluated the authors' definition of hypnosis, deployment of the intervention, hypnosis techniques used and reasons for the choice, and source of the technique used.

3. Results

3.1. Eligibility and inclusion

In total, 208 articles were found; 204 using the search equations and

Table 1
Included study overview.

Author – year	Journal	Country	Method	Study objective
Fry[32] **1963**	Medical World	UK	Case series	*Evaluation of hypnosis in the treatment of insomnia.*
Panayotopoulos et al.[29] **1965**	Société Suisse de Psychiatrie	Switzerland	Case series	*Application of a hypnosis technique as a sleep rehabilitation technique in the treatment of insomnia.*
Todd et al.[23] **1970**	Journal of Behaviour Therapeutic and Experimental Psychiatric	UK	Case report	*Hypnosis facilitated application and increased the effectiveness of therapeutic procedures.*
Singh et al.[41] **1999**	Australian Journal of Clinical and Experimental Hypnosis	Malaysia	Case report	*The effectiveness of hypnosis in a case of chronic insomnia and anxiety can be enhanced by using the patient's religious belief.*
Borkovec et al.[19] **1973**	Journal of Abnormal Psychology	United States	Randomised-controlled Trial (RCT)	*To assess the effectiveness of progressive and hypnotic relaxation procedures in reducing sleep disturbances.* *To assess the effects of the technique on reducing physiological arousal during treatment and the relationship of arousal to outcome*
Graham et al.[20] **1975**	The American Journal of Clinical Hypnosis	United States	RCT	*To compare the effectiveness of hypnosis and relaxation training in the treatment of insomnia.*
Barabasz[34] **1976**	The American Journal of Clinical Hypnosis	New Zealand	RCT	*To determine whether or not suggestion by passive hypnosis significantly influences recovery rates in the treatment of sleep disturbance by cerebral electrotherapy with mildly depressed patients.*
Anderson et al.[35] **1979**	Journal of the Royal Society of Medicine	UK	RCT	*Comparison of the treatment of insomnia with placebo, mogadon and hypnosis.*
Baeur et al.[24] **1980**	International Journal of Clinical and Experimental Hypnosis	United States	Case series	*Illustration of effectiveness of a hypnosis technique in treating insomnia.*
Stanton[25] **1989**	International Journal of Psychosomatics	Australia	RCT	*To compare the effectiveness of hypnotic relaxation technique compared to stimulus control and placebo conditions as a means of reducing sleep onset latency.*
Cochrane[30] **1989**	American Journal of Clinical Hypnosis	Canada	Case report	*To evaluate the effectiveness of a method of combining direct and indirect suggestions.*
Stanton[43] **1999**	Sleep and Hypnosis	Australia	Case report	*Description of hypnotic relaxation technique in treating insomnia.*
Abramowitz et al.[38] **2008**	International Journal of Clinical and Experimental Hypnosis	Israel	RCT	*To evaluate the benefits of add-on hypnotherapy in patients with chronic PTSD and insomnia.*
Farrell et al.[28] **2010**	American Psychological Association	United States	RCT	*To investigate the feasibility and preliminary efficacy of self-hypnosis recordings available on the web to improve sleep, fatigue, mood, and quality of life in cancer survivors.*
Kelly[22] **2011**	Thesis, Prescott Valley University, Arizona	United States	Quasi experimental study, pre-post intervention	*To evaluate the efficacy of hypnosis protocol developed for the treatment of comorbid chronic pain and insomnia in 26 nursing home residents aged 60 years and older.*
Sulaiman[31] **2013**	International Journal of Psychological Studies	Oman	Case study	*Effectiveness of implementing a -hypnosis program as a skill for enhancing quality of life for individuals suffering from insomnia.*
Papadakis[42] **2013**	Australian Journal of Clinical & Experimental Hypnosis	Australia	Case reports	*Description of a hypnosis technique based on countdown to alleviate insomnia.*
Holdevici[33] **2014**	Social and Behavioural Sciences	Romania	Pre post intervention	*To investigate the effects of hypnotherapeutic and relaxation interventions among patients presenting anxious and depressive symptoms and insomnia.*
Elkins et al.[27] **2014**	International journal of clinical and experimental hypnosis	United States	Case study	*Description of the use of hypnotic relaxation therapy in the treatment of patients with prostate cancer patient and hot flushes.*
Cheng et al.[39] **2017**	Open journal of Social Sciences	China	RCT	*Investigation of the effects of hypnotherapy intervention applied in the case of patients who present insomnia accompanied by rumination.*
Mendoza et al.[26] **2017**	Psycho-Oncology	United States	RCT	*Evaluation of the efficacy of an intervention combining the* Valencia Model of Waking Hypnosis *(VMWH-CBT) in managing cancer-related pain, fatigue and sleep problems in individuals with active cancer or post-treatment survivors.*
Schlarb et al.[21] **2017**	Neuropsychiatric Disease and Treatment	Germany	Quasi-experimental study, pre-post intervention	*To evaluate the acceptance, feasibility and first effects of SWIS*
Schlarb et al.[37] **2018**	Neuropsychiatric Disease and Treatment	Germany	Pre post intervention Pilot study	*To examine the effectiveness of CBT-I and HT-I program for insomnia patients with or without depression for depressive symptoms and various sleep parameters*
Lam et al.[36] **2018**	Complementary Therapies in Medicine	China	RCT	*To determine the efficacy and safety of hypnotherapy for insomnia.*
Kastubi et al.[40] **2018**	Humanistic Network for Science and Technology	Indonesia	RCT	*To analyse the influence of Benson relaxation and hypnosis to improve the fulfilment of sleep needs and control of blood pressure in the elderly.*

Abbreviations: RCT: Randomised Controlled Trial, *VMWH-CBT: Valencia Model of Waking Hypnosis with Cognitive-Behavioural Therapy, HT: -I hypnotherapy for insomnia CBT-I: combined cognitive-behavioural therapy for insomnia.*

4 from the grey literature. In total, 55 articles were selected of which 25 were included in the final analysis. Of these, 21 were obtained from the databases and 4 from the grey literature. The full text of 5 articles was not retrieved (Fig. 1). All findings for each included study are listed in Appendix 1.

3.2. Included study overview

Ten case studies were selected including two on a single case, five single case reports and three case series. Four non-randomised, pre and post intervention studies and 11 randomised controlled trials were included. The studies were published in over 13 countries between 1963 and 2018 with nearly half the studies (12/25) being published before the year 2000. Most studies (7/25) were published in the USA, Australia (3/25) and the UK (3/25). The general study characteristics are detailed in Table 1.

3.3. Study characteristics

3.3.1. Study populations

The study participants included students,[19–21] elderly,[22] and healthy[23–25] people, or patients with cancer,[26–28] anxiety[29–32] or depression[33,34]. Some studies excluded people with depression.[35,36] Certain studies compared techniques in different genders[33] or populations such as people with insomnia and depression and insomnia alone.[37] Some studies lacked population representativeness, thus limiting generalisation; for example, including patients with high socio-economic status,[22,25] or small numbers of men.[26] Additionally, independent of study design, numerous authors recognised that their small population size compromised significance or representativeness of the results.[21,27,28,31,33,35–38,40] Only one study,[36] defined the sample size required to prove its hypothesis.

3.3.2. Primary endpoint measurement

Among the measurement tools used, one pre and post intervention study used an actigraph to record sleep activity.[21] Another used electromyography to correlate physiological changes with a sleep diary.[19] The other studies assessed endpoints from verbal, phone or written reports using validated questionnaires, or, for a large proportion, a sleep diary.

3.3.3. Author definition of hypnosis

In the studies analysed, three defined hypnosis as being a state between consciousness and unconsciousness: "highway to the subconscious", "unconscious in the first line of attention, leaving the hyperactive conscious in a state of suspension",[33,42] or “induction and maintenance of a heightened internal awareness state”.[39] Three studies defined hypnosis as a form of relaxation[31,40] or use of relaxation in addition to suggestion.[36] One study differentiated hypnosis from relaxation as using direct and indirect suggestion.[22] Two studies defined passive hypnosis: “no dramatic tests of depth were employed nor was the term hypnosis used”[34] or Waking hypnosis: “the patients are able to use self-hypnosis with their eyes open, while engaged in other activities”.[26] However, a majority of the studies did not define hypnosis.[19,23,24,26–30,32,35,37,38,41,43] One study addressed “the lack of consensus”.[36]

3.3.4. Study design

Among the four pre and post intervention studies, three clinical studies combined hypnosis with relaxation[33] or CBT.[21,37] In two of the 11 randomised trials, hypnosis was combined with relaxation[20] or CBT.[26] No study was double-blind.

One of the earlier studies in 1970 recognised the need to include a control group[23] and various control strategies were attempted thereafter that included non-pharmaceutical therapies such as relaxation,[19,20,40] physical exercise,[39] stimulus control,[25] therapeutic education,[26] neutral mental imagery,[19,25] or electroconvulsive therapy (ECT).[34] Only one study used neutral hypnosis in the control group.[36] Two studies used the pharmaceutical therapies Zolpidem[38] and Nitrazepam[35] and one study employed no active therapy (waiting room).[28]

3.3.5. Intervention: hypnotherapy

3.3.5.1. Sessions. Most authors conducted individual hypnosis sessions, but two studies conducted group sessions.[25,33] In general, the sessions lasted from ten minutes to one and a half hours and ranged in number from 2 to 6. One study used up to 100 sessions.[29] The mean intervention duration was 4 weeks. However, some studies indicated that it took around two months for the adults to learn the self-regulation strategies such as hypnosis. Consequently, the mean duration of examined studies in this review may have been too short.

3.3.5.2. Hypnosis techniques. The hypnosis techniques evaluated in the different studies have been classified according to the 2015 INSERM publication and are listed in Table 2.[8]

Certain studies evaluated only one technique such as, age regression, waking hypnosis or a suggestion to go to sleep. In most studies the therapists combined a variety of techniques. Three studies didn’t specify which techniques were used.[34,37,40]

We found that some studies considered patient interests and preferences. For example, in one study religious suggestions and metaphors were applied.[41] Another study highlighted the importance of adapting the hypnosis technique and suggestions to the patient’s history, their communication style, or their patient’s symptoms.[38] One study added suggestions concerning beliefs about sleep and self-efficacy and combined behavioural therapies with self-hypnosis.[21] Another study hypothesised that anxiety could cause insomnia and suggested tackling the patient’s problems to improve their sleep.[32] In contrast, other authors differentiated insomnia treatment from treatment of concurrent conditions. They used a hypnosis technique only mobilising direct suggestion linked to sleep.[29]

3.3.5.3. Sources and justification of the techniques used. The techniques used in each study are detailed in Table 3.

Five studies justified their choice of technique from its reported efficacy in a previous publication.[26,27,30,38,43] Four studies justified part of their technique from a previous publication.[24,25,28,37] Sixteen studies did not justify the technique used,[19–23,29,31–36,39–42] although most referred to studies published on hypnosis, relaxation or CBT using different techniques.[19–23,31,33–36,39,40,42]

3.3.5.4. The specific effects of hypnosis. In general, most studies reported a positive effect of hypnosis on insomnia. However, some authors still questioned whether this positive effect was linked to a specific or non-specific effect, or whether there was a placebo effect[19,24,38] or whether other effects were involved in the result.[24,26,30] However, some authors reported the presence of signals typically found in states of trance as opposed to relaxation or sleep. These signals included salivation, numb fingers,[34] ideomotor responses, lack of facial expression,[30] hand and eye paralysis, loss of needle prick reflex,[41] and arm catalepsy.[24] Four studies used scales measuring patient susceptibility to hypnosis.[20,22,27,41] Other studies suggested using objective criteria,[19,20] assessing variations in results according to insomnia type and severity,[19,25] or evaluating hypnosis alone.[22,23,26,38] The most recent study in this review compared neutral hypnosis (generic suggestions) in a control group and disease-specific suggestion hypnosis.[36] The author reported numerous methodological limitations including small sample size, low power, required sample size not reached, and large numbers lost to follow-up.

4. Discussion

This narrative literature review explored qualitative aspects of

Table 2
Classification of the techniques used in the included studies.

Technique used	Suggestion				Focalisation technique		Visualisation		Behavioural technique	Age regression, emotion	Dissociation technique	Waking hypnosis
	Relaxation	*Coolness*	*Warmth, heaviness*	*Sleep*	*Countdown*	*Eye fixation levitation*	*Serene, pleasant place*	*Object*	-	–	–	
Cochrane				✓							✓	
Singh	✓								✓			
Elkins	✓	✓	✓									
Sulaiman	✓*				✓*		✓*					
Todd	✓			✓								
Baeur	✓			✓	✓	✓						
Stanton	✓						✓	✓			✓	
Papadakis										✓		
Fry	✓			✓		✓						
Panayotopoulos				✓								
Holdevici	✓						✓					
Shlarb 2018	Not detailed											
Sharb 2017	✓*											
Kelly 2011	✓			✓							✓	
Borkovec	✓											
Kenneth, Graham				✓								
Barabasz	Not detailed											
Anderson			✓	✓*			✓					
Stanton 1999	✓						✓	✓			✓	
Abramowitz										✓	✓	
Farrell		✓*	✓*									
Mendoza	✓*		✓*						✓			✓
Cheng	✓			✓*			✓		✓			
Kastubi	Not detailed											
Lam							✓	✓	✓			

*Self-hypnosis.

Table 3
Techniques used in each study.

Study reference	Technique used
[21,24–29,42,43]	Study authors' hypnosis technique
[21,25,26,43]	Authors of these studies had published their techniques in previous studies
[28]	Author developed their self-hypnosis technique from a technique published by another author.
[24]	Induction method used was published in a previously published randomised study.[19]
[36]	Chosen technique was used in the neutral hypnosis group of a previously published randomised study.[19]
[19,22,30–32, 36–38,41]	Techniques of authors whose articles are not included in this review.
[20,23,33–35,39,40]	Technique source not reported.

clinical research design. In the 25 studies evaluating hypnosis to manage insomnia, we found key methodological aspects were lacking, in particular, population characteristics, study design, primary endpoints, interventions, and the hypnosis techniques used.

This review reveals these studies included heterogeneous study populations varying in age groups, health conditions, and inclusion and exclusion criteria. Sample numbers were too small to show significance or be representative. Given these observations, future research should ensure sufficient power and sample size.

Most studies analysed used non-quantifiable measurement criteria, despite the need for an objective criterion being noted early as 1970.[19,20,41] However, objective measures such as polysomnography or electroencephalogram can be difficult and expensive to access. It would be interesting to assess the effect of hypnosis on sleep waves among participants with insomnia rather than healthy participants, similar to the work performed by Cordi.[11,12]

Compared to pharmaceutical therapies, two studies found that better sleep was achieved in the hypnosis group.[35,38] Also, replacing hypnotics with hypnosis combined with psychotherapy[31] or discontinuing medication was possible with hypnosis.[24,32,35] Thus, future studies could explore using hypnotherapy to facilitate benzodiazepine discontinuation in people with insomnia. Studies could measure benzodiazepine dose reduction to assess hypnosis efficacy.

Unfortunately, hypnosis was defined differently in most of the studies analysed. Some authors defined hypnosis as a therapy using different techniques while other authors stated it was similar to relaxation. The INSERM report defines the hypnotic state as "a modified state of consciousness, neither a state of vigilance, nor a state of sleep"[10]. Future research should be based on a clear definition of hypnosis to compare interventions.

In addition, the review found a diverse range of hypnosis techniques were used to treat insomnia with most hypnosis protocols combining several techniques. Some hypnosis protocols used suggestions of relaxation[19,21–25,27,31–33,41,43] warmth or heaviness[26–28,35] or sleep,[20,22–24,29,30,32,35,39] techniques of visualising a pleasant place,[25,31,33,35,36,39,43] focalisation techniques,[24,31,32] or behavioural techniques[26,36,39,41] or dissociative techniques[22,25,30,43]. Others used an open-eye alert technique,[26] or even age regressions.[38,42] Some authors studied their own technique while others used those from previous studies (1960–1990). There were applications of behavioural therapies (systematic desensitisation), stimulus control, Wolpe's correction of false ideas (1982), the Feather and Rhoad directed technique (1972),[41] and even techniques similar to relaxation.[19,23] To date there is no consensus on a recommended approach to use in teaching hypnosis for treatment of insomnia.

Furthermore, several techniques were not adequately described in the studies, for example "direct suggestion of relaxation" for hypnosis relaxation,[19] "locations that patients found to be peasant and peaceful" for the visualisation technique, "form of different trances for each session",[37] or "deep state of hypnosis which in turn will enable you to relax and go to sleep".[20] This lack of precision makes reproducing the protocols using these techniques difficult for future studies.

In addition, depending on the authors and their definition of

hypnotherapy, the same technique was used for hypnosis by some, and as other psychological therapy by others. For example, the LAM study compared two types of hypnosis using "generic hypnotic suggestion" as a control group.[36] This involves using neutral image viewing techniques as a distraction technique. This technique was used in previous studies in the non-hypnosis group as "self-relaxation"[19] or in the so-called placebo group.[25] However, the LAM study clearly specifies that the "generic hypnotic suggestion" group begins with hypnotic induction before carrying out neutral imaging techniques with the same induction being used in the other hypnosis group. Although the specific effect of hypnosis has been demonstrated in the literature,[44,45] future studies using common techniques with other therapies (relaxation or CBT) must therefore clearly specify the specific components of each therapy or technique used.

In medical research, innovative techniques are usually compared to a gold standard. However, to date there is no gold standard hypnosis treatment for insomnia. As a result, the control groups were heterogeneous in the randomised studies included in this review. Only one study compared two hypnosis techniques.[36] In the other studies, the control groups ranged from staying in the waiting room to other therapies such as CBT or relaxation.

When the results showed improved sleep parameters in the interventional and control arms,[19,36] the authors wondered about components common to the two arms. These included either a non-specific effect of different types of therapy such as "therapist contact, expectancy for improvement" or a specific common effect such as "focus on the pleasant internal feeling that would result" and decreased "excessive cognitive activity" of people with insomnia.[19,36] The methodological limitations described in these studies do not clearly answer the research questions.

No double-blind study was found. This is probably because double-blind control in human research is complex to implement in psychological therapies, exercise, breastfeeding, smoking, surgery, and massage.

In the literature, we found that some researchers used *neutral* hypnosis to evaluate hypnosis techniques.[36,46–48] A more recent study evaluated the feasibility of *sham hypnosis* and demonstrated the benefit of using *white noise* in the control group.[49] This comparison of two single-blind hypnosis techniques made the methodology more robust.

These findings reveal the need for robust methodology to evaluate the efficacy of hypnosis to treat insomnia. The IDEAL framework suggests steps for future studies to evaluate non-pharmacological and complex therapies. It encompasses five elements: "Innovation, Development, Exploration, Assessment, Long-term follow up". This framework has been employed to evaluate therapies such as surgical or physical therapies.[50–52] Like hypnosis, these therapies involve many possible techniques, of which several components require physician and patient interaction. This makes double-blind studies impossible. When studying these non-pharmacological, complex therapies, the IDEAL framework recommends first publishing a case study to describe the technique used and then a non-randomised retrospective or prospective studies to ensure feasibility, tolerance or acceptability. The outcomes of this research process contribute to the design of larger randomised trials. The IDEAL framework would be appropriate research process to evaluate therapeutic hypnosis.

Our review was limited by the difficulty obtaining full texts for all articles and references due to their old publication date. Among the 208 articles identified, only 25 were included. This small number suggests our results should be interpreted with caution. The excluded articles often concerned other non-pharmaceutical therapies such as CBT, guided imagery, or relaxation. The included articles were only those defining the therapy used by the term "hypnosis". We are aware that certain other techniques such as guided imagery or relaxation can also induce a hypnotic state, but these techniques were not clearly listed, the indexing of these articles in the databases may be biased. Also, it is possible some studies may not have been included in the MeSH indexation and therefore not identified with our search equation. A broader search equation may have elucidation more results. In the classification of hypnosis techniques, some techniques are not cited in the INSERM classification, such as "emotions" or behavioural techniques. This multiplicity of techniques may have introduced a bias in our interpretations.

5. Conclusion

This review highlights the methodological failings of therapeutic hypnosis research, from case studies to randomised trials. Thus, further robust methodology is required for further therapeutic research. We propose future study designs to evaluate the efficacy of hypnosis to manage insomnia apply the IDEAL framework, which outlines specific research steps to evaluate non-pharmacological and other complex therapies.

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CRediT authorship contribution statement

SLM and **JP** conceptualised this study. **JP** and **EM** supervised the manuscript. All authors managed the overall design of the study and read and approved the manuscript.

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Declaration of interest

All authors have no conflicts of interest.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.ctim.2022.102805.

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