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Literature review

Effectiveness of hypnosis in adults with posttraumatic stress disorder (PTSD)

Efficacité de l'hypnose chez les adultes souffrant d'un trouble de stress post-traumatique (TSPT) : une revue systématique

Juliette Thellier-Francois[a,b,1,*], Delphine Binda[b,c,1], Magali Nicolier[b,c], Emmanuel Haffen[a,b,f], Marie-Céline Maillot[c,d], Jean-Baptiste Pretalli[c], Elisabeth Martin[e], Djamila Bennabi[b,c,f]

[a] *UMR Inserm 1322 LINC, Université Marie-et-Louis-Pasteur, 25000 Besançon, France*
[b] *Service de Psychiatrie de l'adulte, Centre Hospitalier Universitaire de Besançon, 25000 Besançon, France*
[c] *Centre d'Investigation Clinique, Domaine Santé Mentale et Neurosciences, CIC 1431 Inserm, Centre Hospitalier Universitaire de Besançon, 25030 Besançon cedex, France*
[d] *Service des Urgences adultes SAU-SMUR-CRAA15, Centre Hospitalier Universitaire de Besançon, 25000 Besançon, France*
[e] *Service de Médecine légale et victimologie, Centre Hospitalier Universitaire de Besançon, 25000 Besançon, France*
[f] *Centre Expert Dépression Résistante FondaMental, Centre Hospitalier Universitaire de Besançon, 25030 Besançon cedex, France*

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ABSTRACT

Introduction and objectives: Posttraumatic stress disorder is a common diagnosis in the French population. Current treatments are based on first-line trauma psychotherapies (CBT, exposure therapy, EMDR, and narrative therapy), accompanied by medication, particularly antidepressants. The role of hypnosis in the treatment of posttraumatic stress has been little studied and not yet defined in the literature, despite partially common dissociative processes between hypnosis and posttraumatic stress symptoms.
Method: In our PRISMA systematic review, randomized or uncontrolled clinical trials were included from five databases (PubMed, Web of Science, Google Scholar, PsycInfo, PubPsy).
Results: The 12 articles selected are heterogeneous in terms of population characteristics and study design. The excessive heterogeneity of the studies required the following individual description of the results and hypnosis protocols for each study.
Discussion: A majority of the articles reported complete or partial effectiveness of hypnosis on posttraumatic symptoms and their progression, as well as an improvement in associated depressive and anxiety symptoms. The heterogeneity of methods raised questions about the criteria for assessing psychological trauma and its impact, hypnosis protocols, and the place of hypnosis among internationally recognized trauma therapies.

Mots clés :
Trouble de stress post-traumatique
Hypnose
Traitement

RÉSUMÉ

Introduction et objectifs : Le trouble de stress post-traumatique est un diagnostic fréquent en population française. Les prises en charge actuelles sont basées sur les psychothérapies du trauma en première ligne (TCC, thérapie d'exposition, EMDR et thérapie narrative), accompagnée de traitement médicamenteux, notamment antidépresseurs. La place de l'hypnose dans la prise en charge du stress post-traumatique est peu étudiée et non définie dans la littérature, malgré des processus dissociatifs partiellement communs entre hypnose et symptômes de stress post-traumatique.
Méthode : Dans notre revue systématique PRISMA, les essais cliniques contrôlés randomisés ou non contrôlés ont été inclus à partir de cinq bases de données (PubMed, *Web of Science*, Google Scholar, PsycInfo, PubPsy).
Résultats : Les 12 articles retenus sont hétérogènes en termes de caractéristiques de population et de design d'études. La trop grande hétérogénéité des études implique la description individuelle suivante des résultats et protocoles d'hypnose de chaque étude.

* Corresponding author at: UMR Inserm 1322 LINC, Université Marie-et-Louis-Pasteur, 25000 Besançon, France.
E-mail address: juliette.thellier@edu.univ-fcomte.fr (J. Thellier-Francois).
[1] 1st co-authors.

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Discussion : Une majorité d'articles rapporte une efficacité complète ou partielle de l'hypnose sur les symptômes post-traumatique et leur évolution, ainsi qu'une amélioration des symptômes dépressifs et anxieux associés. L'hétérogénéité des méthodes ouvre la question des critères d'évaluation du psychotraumatisme et de son retentissement, des protocoles d'hypnose et de la place de l'hypnose parmi les thérapies du trauma d'ores et déjà reconnus internationalement.

1. Introduction

Psycho-traumatic syndromes appear following a traumatic event: an event which carries a threat to life and/or physical integrity experienced as a victim or a witness, experienced with distress and/or dissociative feelings. According to the HAS (French National Authority for Health), the lifetime prevalence of psycho-traumatic syndromes is 4.6% in the general population in France, and posttraumatic stress disorder (PTSD) affects 1–2% of the population [1]. It is therefore a public health problem and a frequent pathology. Four cardinal symptoms define PTSD diagnosis: repetition syndrome, avoidance behavior, hyperarousal and dysphoric symptoms [2]. Most PTSD symptoms are accompanied by dissociative processes. The quality of sleep in PTSD patients is frequently impaired, as is their social, family and professional functioning.

Current PTSD treatment integrates psychotherapeutic and drug approaches [3,4], and PTSD is treated with psychotherapy as a first-line treatment. Indeed, psychotherapeutic approaches reach the highest level of evidence – namely for trauma-based cognitive behavioral therapy (CBT) [5], eye movement desensitization and reprocessing (EMDR), prolonged exposure therapy (PE) and narrative exposure therapy (NET). However, there are two problems with these approaches in practice: availability of trained practitioners and maintaining patient adherence [6]. Regarding pharmacological treatments, they are second-line treatments (often antidepressants) used in combination with psychotherapies. They are used for anxiolysis, to treat comorbidities and to make the patient accessible to psychotherapy. It should be noted that there is a new field of research concerned with chemically-enhanced or chemically-mediated psychotherapy. This includes reconsolidation propranolol therapy and self-compassion therapies using psychedelics [7,8].

Among the possible approaches, hypnosis appears to be the least researched in spite of its potential based on the dissociation observed in patients suffering from PTSD together with their higher hypnotizability [9]. Hypnosis also appears to modify the connectivity of the prefrontal cortex and insula [10], a brain area involved in emotional regulation and fear signals.

Our PRISMA systematic review first aimed to assess symptomatic and overall clinical and paraclinical effects of hypnosis on PTSD occurrence and clinical outcome.

2. Method

This systematic review was performed, from April 2024 to May 2025, with reference to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. We conducted a systematic search of 5 databases: PubMed, Web of Science, Google Scholar, PsycInfo, PubPsy. Each of the five databases were covered individually with the following keywords: (adult) AND (PTSD OR posttraumatic stress disorder OR post-traumatic stress disorder OR post-traumatic stress disorder) AND (hypnosis) NOT (pediatric OR adjustment disorder) NOT (animals NOT humans) NOT (Mice OR Models, Animal).

2.1. Study eligibility

The inclusion criteria were randomized controlled trial (RCT) and uncontrolled trial, adult population, PTSD as evolution or initial diagnosis, hypnosis protocols and in English. Exclusion criteria were defined: case study or review, children or animal population, other diagnosis, treatment without hypnosis. Other diagnoses found in articles were both psychiatric disorders and somatic disorders or interventions procedures.

Identified publications were assessed by two reviewers (DB and JTF) who independently applied the predefined inclusion/exclusion criteria. All discordant assessments were discussed with a third reviewer (MN). Data were grouped by both reviewers in an Excel sue.

2.2. Data synthesis

The statistical tool was not usable due to the few trials number. Every type of data was collected individually, compared to the same data in other trials, summarized in tables and descriptive texts. Biases were discussed at the end of review. Pooling these outcomes was not possible due to very different methods across trials.

3. Results

3.1. Study selection

A total of 457 articles were extracted. After removing duplicates, 379 articles were screened and 15 articles were selected for the full-text review. The full-text reading excluded 2 articles. At the end, 12 articles were selected. The step-by-step study selection process is presented in Fig. 1 (flowchart).

3.2. Study characteristics

The studies were heterogeneous in participants' characteristics, study design and outcomes. These data are summarized in Table 1 (population characteristics) and Table 2 (studies design).

3.2.1. Population

With regard to population characteristics, most of the studies included participants under the age of 40 (8 trials) and participants of both sexes (7 trials). Variables included the types of trauma (war, interpersonal violence, health problems, natural disasters) and 3 trials included several trauma types. Most trials did not study the mean time between trauma, or first symptoms of PTSD, and inclusion in trials (7 trials). Likewise, most trials did not describe participants' add-on treatments (7 trials). With regard to comorbidities, the following were frequent exclusion criteria in these studies: psychosis, alcohol or substance abuse (6 trials), intellectual disability, brain injury, and active suicidal ideation (4 trials). Three trials did not specify the excluded comorbidities.

3.2.2. Study design

With regard to study design, almost all trials were RCTs (10 trials), the 2 others were uncontrolled trials. Most trials studied samples of fewer than 50 participants (8 trials). Psychometric instruments were used in 4 trials to diagnose acute stress disorder (ASD) or PTSD, and 6 trials diagnosed ASD or PTSD with a clinical interview. PTSD severity diagnosis was assessed in one trial only. Control group interventions were psychotherapy or supportive counselling in 4 trials, no intervention in 3 trials, psychotropic drugs in 2 trials, and healthy participants in one trial. Almost every trial studied PTSD symptoms (except one studying only rehabilitation): some trials studied cardinal PTSD symptoms, others focused on sleep impairment or dissociative symptoms. Six trials also assessed depression symptoms, 3 anxiety symptoms and 4 somatic data associated with PTSD. One trial assessed personality characteristics and

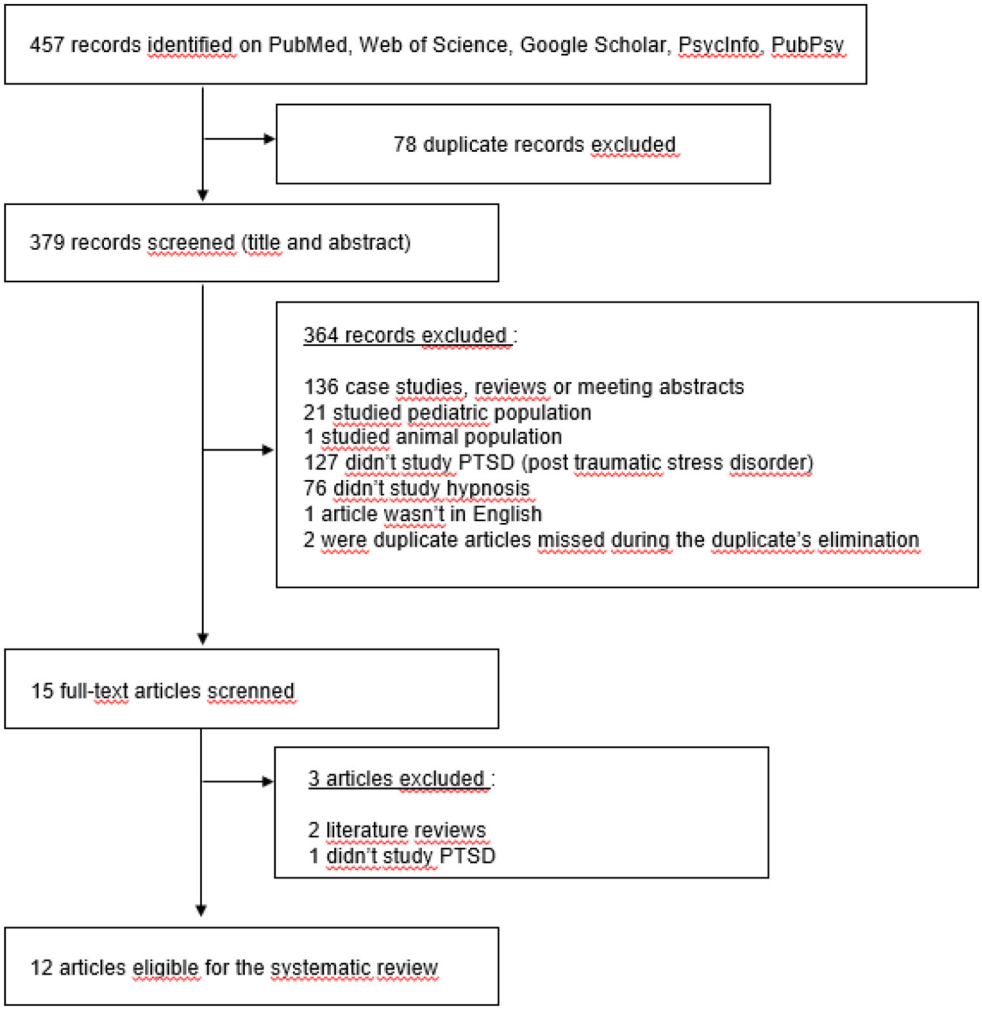

Fig. 1. Systematic review flowchart.

general psychiatric symptoms. These outcomes were mainly evaluated using a psychometric scale (9 trials). Somatic outcomes were provided by paraclinical investigations (3 trials), except for pain, which was assessed using a scale. Most trials collected data at post-treatment (8 trials), 3 did not undertake follow-up, and most evaluated these data only during the first-year post-treatment (except 2 trials).

3.3. Results of individual studies

Since the methodologies of the various trials were very heterogeneous, we were not able to pool the outcomes. They are described individually below.

Dobkin de Rios, M. et al. (1987) conducted an uncontrolled study on 27 participants presenting with PTSD after a burning accident. PTSD diagnosis was based on DSM-III criteria. All patients benefited from symptom-directed hypnotherapy. No standardized assessment was carried out. The criterion was success of rehabilitation. All 27 participants responded to hypnotic induction and 10 participants returned to work [11].

The work of Brom, D. et al. (1989) is a randomized controlled trial including 112 participants in 4 groups: psychodynamic therapy, trauma-directed hypnotherapy, trauma desensitization, and the waiting list group. PTSD was diagnosed according to DSM-III criteria, not more than 5 years since the causative event (road traffic accident, violent crime, loss of loved one). Participants were assessed at pre-treatment, post-treatment and 3 months after treatment using a psychometric scale for the following: anxiety, PTSD (impact of event scale-revised: IES-R), personality, and general symptoms. Significant decrease in intrusive thoughts and avoidance was found in the 3 treatment groups ($P < 0.05$) but not in the control group. Trauma desensitization and hypnotherapy had a stronger influence on the intrusive thought symptoms. General symptoms also significantly improved after hypnotherapy, while there was no significant improvement in the control group [12].

Bryant, R.A. et al. (2005) performed a RCT with 3 groups (87 participants): CBT, CBT preceded by hypnotic induction (CBT-hyp), and supportive counselling (SC). Acute stress disorder following trauma (non sexual assault or motor vehicle accident) was diagnosed using DSM-IV criteria. Assessment using scales (IES and CAPS-2 for PTSD, BDI-II for depression and BAI for anxiety) took place before the treatment, directly after and 6 months later. Results pointed to a reduction in PTSD symptoms with both CBT and CBT-hyp at follow-up compared to SC. The only difference between the 2 active treatments at post-treatment was fewer re-experiencing symptoms in the CBT-hyp group (faster reduction but no longer apparent at follow-up). Anxiety symptoms (Beck anxiety inventory: BAI) were reduced in the CBT and CBT-hyp groups ($P < 0.05$) only at post-treatment compared to SC. Fewer participants in the CBT and CBT-hyp groups met criteria for PTSD than those in SC at post-treatment and 6-month follow-up, although end state functioning (IES < 12) was similar across the 3 groups [13]. Bryant et al. (2006) is a 3-year follow-up of the previous cohort in which treatment completers (77%) were assessed for PTSD symptoms (CAPS-2) and depressive symptoms (Beck depression inventory: BDI-II). Fewer participants in the CBT and CBT-hyp groups met criteria for PTSD than SC participants ($P < 0.005$), and fewer PTSD symptoms were observed in CBT

Table 1
Studies population characteristics.

Population characteristics	Studies, *n* (%)
Type of trauma	
War (veterans)	2 (16.67%)
Interpersonal violence	3 (25%)
Health problem	2 (16.67%)
Natural disaster	1 (8.33%)
Different trauma types in the same study	3 (25%)
Unknown	1 (8.33%)
Median age	
≤ 40 years	8 (66.67%)
> 40 years	3 (25%)
Unknown	1 (8.33%)
Sex ratio	
Only women	2 (16.67%)
Only men	3 (25%)
Both	7 (58.33%)
Mean time since trauma or first symptoms of PTSD	
< 5 years	3 (25%)
5–10 years	0 (0%)
> 10 years	2 (16.67%)
Unknown	7 (58.33%)
Comorbidities excluded	
Active suicidal ideations	4 (33.33%)
Psychotic symptoms	6 (50%)
Bipolar disease	1 (8.33%)
Alcohol or substance abuse or dependence	6 (50%)
Mental retardation	4 (33.33%)
Severe anxiety	1 (8.33%)
Peritraumatic living conditions	2 (16.67%)
Brain injury	4 (33.33%)
Any significant psychiatric disorders	2 (16.67%)
Unknown	3 (25%)
Participant's other ongoing treatments	
Stable psychotropic drugs	2 (16.67%)
Other psychotherapy	1 (8.33%)
Stable psychotropic drugs + other psychotherapy	1 (8.33%)
Specific somatic treatment	1 (8.33%)
No concomitant treatment allowed	0 (0%)
Unknown	7 (58.33%)

Table 2
Studies design.

Study characteristics	Studies, *n* (%)
Type of study	
RCT	10 (83.33%)
Uncontrolled trial	2 (16.67%)
Sample size	
< 50	8 (66.67%)
50–100	2 (16.67%)
> 100	2 (16.67%)
ASD or PTSD diagnosis	
Clinical interview	6 (50%)
Psychometric instruments	4 (33.33%)
PCL-C	1 (8.33%)
CAPS	3 (25%)
Posttraumatic symptoms without PTSD diagnosis (assessment with IES)	1 (8.33%)
Unknown	1 (8.33%)
Severity diagnosis	1 (8.33%)
No assessment of PTSD symptoms severity	11 (91.67%)
Control group	
Psychotropic treatments	2 (16.67%)
Antidepressant	1 (8.33%)
Hypnotic medication	1 (8.33%)
Psychotherapy	4 (33.33%)
Trauma desensitization or psychodynamic therapy	1 (8.33%)
CBT or Supportive counselling	2 (16.67%)
Other psychotherapy (Ochberg Counting Method)	1 (8.33%)
No intervention (waiting-list patients)	3 (25%)
Compared to healthy participants	1 (8.33%)
No control	2 (16.67%)
Hypnosis protocol	
Number of sessions	
< 5	8 (66.67%)
6–15	3 (25%)
> 15	1 (8.33%)
Duration of session	
< 1 hour	1 (8.33%)
1 hour	2 (16.67%)
More than 1 hour	7 (58.33%)
Unknown	2 (16.67%)
Psychiatric symptoms or somatic outcomes	
PTSD symptoms	11 (91.67%)
Included dissociation symptoms	1 (8.33%)
Included sleep impairment	3 (25%)
Subjective symptoms	2 (16.67%)
Objective sleep quality with actigraphy	1 (8.33%)
ASD symptoms	0 (0%)
Depression	6 (50%)
Anxiety	3 (25%)
Characteristics of personality	1 (8.33%)
General psychiatric symptoms	1 (8.33%)
Success rehabilitation[a]	1 (8.33%)
Somatic outcomes	4 (33.33%)
Psychiatric symptoms outcome assessment	
No standardized assessment	1 (8.33%)
Clinical assessment	1 (8.33%)
Psychometric assessment (at least one scale)	9 (75%)
ASD, PTSD, Dissociation Scale and Sleep impairment Scale	9 (75%)
Depression Scale	6 (50%)
Anxiety Scale	3 (25%)
Personality scale	1 (8.33%)
General symptoms	1 (8.33%)
Pain assessment	1 (8.33%)
Paraclinical exploration	3 (25%)
Blood concentration cortisol	1 (8.33%)

and CBT-hyp participants, particularly re-experiencing ($P < 0.05$) and hyperarousal symptoms ($P < 0.01$). A greater reduction in depressive symptoms was also noted ($P < 0.05$) with CBT and CBT-hyp treatments [14].

Mitani, S. et al. (2006) studied a cohort of 10 fire service workers who had experienced traumatic events associated with their occupation. Posttraumatic symptoms were measured (using an IES scale and a cutoff of 18), not establishing a formal diagnosis of PTSD. This group with posttraumatic symptoms was compared to a group of 12 healthy fire service workers. Both groups underwent hypnosis (autogenic training [AT]). IES score and resting heart rate variability (HRV) were assessed before, just after and 4 months after the start of treatment. In both arms, sympathetic nervous system activity was significantly lower, and the parasympathetic nervous system activity was significantly higher between pre- and post-AT (no difference between the arms). In the posttraumatic symptoms group, a significant decrease in IES-R-J total scores and the intrusion subscale was found, but not in hyperarousal or avoidance [15].

Shakibaei, F. et al. (2008) conducted a randomized controlled trial with 2 arms: hypnotherapy targeting both trauma and symptoms in addition to standard care of burn ($n = 21$) versus control with standard care of burn and unaware of the other group receiving hypnotherapy ($n = 22$). The cohort included participants who had experienced a burning accident. The method used to diagnose PTSD is not described. Pain

Table 2 (*Continued*)

Study characteristics	Studies, *n* (%)
Actigraphy data	1 (8.33%)
24h-Holter ECG data	1 (8.33%)
Time to assess psychiatric symptoms or somatic data	
During intervention	2 (16.67%)
After intervention	8 (66.67%)
Follow-up	
No follow-up	3 (25%)
During the first month post-treatment	1 (8.33%)
1-month	3 (25%)
post-treatment ≤ assessment < 3-month post-treatment	
3-month post-treatment ≤ assessment < 1-year post-treatment	6 (50%)
At the 1-year post-treatment	1 (8.33%)
Several years post-intervention	1 (8.33%)
Unknown	1 (16.67%)

[a] Defined in the article as 60 days continuous return to work.

(on a numeric rating scale) and re-experiencing the trauma (number of vivid, troubling recalls of the burning event) were assessed at baseline and before the 3rd and 5th (last) sessions. There was a significant reduction in trauma re-experience scores and a significantly lower pain rating in the hypnotherapy group, but not the control group, at the 5th session [16].

Abramowitz, E.G. et al. (2008) performed a randomized controlled trial: sleep-targeted hypnotherapy (HT group) versus zolpidem (ZT group) 10 mg nightly for 14 nights. Participants ($n = 38$) were combat veterans with combat-related trauma, treated for at least 2 months with antidepressant treatment and supportive psychotherapy, and moderately hypnotizable. PTSD was diagnosed according to DSM-IV criteria, and pre-treatment, post-treatment and 1-month post-treatment assessments included scales (PTSD with IES and posttraumatic diagnosis scale PDS, depression with BDI) and a daily morning questionnaire (visual analog scale assessing sleep). In the hypnotherapy group, PTSD symptoms were significantly lower compared to the zolpidem group, namely there was a decrease in intrusive thoughts and avoidance reactions in the HT group. Outcomes were similar for the depression scale. Hypnosis significantly improved total sleep time, quality of sleep, number of awakenings and the morning effect (ability to concentrate and morning sleepiness) [17].

Abramowitz, E.G. et al. (2010) performed an uncontrolled study on 36 participants with PTSD (combat-related trauma) diagnosed according to DSM-IV, all with selective serotonin reuptake inhibitors treatment and some with benzodiazepines and/or antipsychotics. All participants received trauma-directed hypnosis focused on olfactory triggers of flashbacks (Hypnotherapeutic Olfactory Conditioning [HOC]). Assessments at baseline, 6 weeks (post-treatment), 6 months and one year used scales (IES-R for post-trauma, BDI for depression, DES for dissociation). A clinically significant reduction was found on the IES-R, BDI and DES scales, which was maintained at 6 months. At 12 months, this reduction continued on the IES-R scale and remained stable on the BDI and DES scales. A reduction in medication use was noted, and no impact was found for the age at time of trauma or the period between the trauma and HOC treatment [18].

Christensen, C. et al. (2013) conducted a controlled study: trauma-directed hypnotherapy (ego state therapy [EST]) versus active control (Veteran's Administration approved video providing general information about PTSD and the Ochberg counting method). PTSD diagnosis was based on DSM-IV criteria and a CAPS scale. The type of trauma was not determined. Initial, post-treatment and 1-month and 3-month follow-up assessment used DTS, BDI-II and BAI scales. EST was found to have a significant effect on scores across these 3 scales after treatment, and at the 1- and 3-month follow-ups compared to the control group [19].

Galovski, T.E. et al. (2016) performed a randomized controlled trial: sleep-directed hypnosis versus symptom monitoring before beginning standard cognitive processing therapy (CPT) while continuing existing medication (stable for at least one month). Participants had PTSD (diagnosed using a CAPS scale) as a result of an interpersonal assault. The assessments conducted initially, after the sleep intervention, after CPT (post-treatment) and at the 3-month follow-up used psychometric scales: CAPS, BDI-II and sleep scales (PSQI and ISI). From initial assessment to post-treatment assessment, the hypnosis arm showed significantly greater improvement than the control arm in terms of sleep and depression, but not PTSD. A significant improvement in trauma-related sleep impairment, sleep latency, global sleep and insomnia was observed in the hypnosis arm relative to the control arm [20]. Arditte Hall, K.A. et al. is an auxiliary study of Galovski et al. with the same study design (45 participants out of the 108 in the initial cohort). Assessments were based on actigraphy analysis at pre- and post-treatment (end of CPT). Actigraphy assessment showed no significant effect of the hyp-CPT intervention or sleep and symptom monitoring plus cognitive processing therapy (ssmCPT) on sleep onset latency, wakefulness after sleep onset or total sleep time, but did show marginally less time to fall asleep for hyp-CPT participants compared to ssmCPT participants [21].

Lesmana, C.B.J. et al. (2022) performed a randomized controlled study of trauma-directed hypnotherapy (15 patients) versus fluoxetine (14 patients). PTSD was diagnosed using a PCL scale and childhood trauma was targeted using a CTQ scale. Assessment before the intervention and one month after the intervention used PCL-C and plasma cortisol levels. CTQ and CURSS (hypnotizability) were used only before treatment. Hypnosis was statistically significantly better than fluoxetine treatment at reducing PTSD symptoms and overall clinical symptoms, while both treatments had similar effects on cortisol reduction [22].

3.4. Interventions

Hypnosis protocols were heterogeneous in terms of hypnosis approach, steps and target. Some trials used only hypnotic induction before other intervention, some used a classic sequence of induction – regression and suggestion, some others used hypnosis in a specific therapy and some did not specify steps of the session. Hypnosis was performed either in person or using audiotapes. Moreover, 3 trials used autohypnotic tools (namely relaxation strategies) in addition to or during the hypnotic sessions. Most trials provided less than 5 sessions and most trials provided hypnosis sessions lasting more than 1 hour.

The hypnosis procedures are described in detail below.

3.4.1. Trauma-directed hypnosis interventions

Brom, D. et al. [12] aimed to bring the patient in contact with the reality of the traumatic event and to bring about a decrease in the conditioned response. However their protocol is not described. Patients received a mean of 14.4 sessions administered by 2 trained and experienced therapists in the specific method they conducted.

Abramowitz, E.G., et al. [18] have developed an hypnosis intervention targeting olfactive scents triggering flashbacks, panic attacks or other unpleasant reactions. This approach performed by treating psychiatrists consists in 6 weekly 1.5-hour sessions involving the replacement of the olfactive trigger by a pleasing odor associated with a safe place and emotional helpful resources, together with progressive reframing of the traumatic memory.

For Christensen, C. et al. [19], hypnosis intervention was based-on ego-state therapy and consisted in a single 5- to 6-hour session lead by 2 experienced therapists following a 5-phase procedure based on ego states contacting, mapping and further resolving internal conflicts through abreaction, and reconstruction so that the affect is altered.

Lesmana, C.B.J., et al. [22] focused their intervention on a single one-hour hypnosis session including an induction phase, regression with

unpleasant feelings expression and traumatic experiences reframing into having a positive meaning and being part of the past, followed by suggestions for forgiveness and apology before going back to usual state of consciousness. Hypnosis was provided by a therapist trained according to Western concepts but also the spiritual concepts of Balinese culture and Hinduism. Participants were also instructed to meditate for 10–15 min twice a day.

3.4.2. Symptoms-targeted hypnosis intervention

For Dobkin de Rios, M et al. [11], intervention for burn patients consisted in playing several times a day personalised audiotapes recorded by a medical anthropologist and including an hypnotic induction followed by a phase of work, focusing in a first step on pain control and sleep management, in a second step on regaining strength in hands as well as increasing the range of motion and in a third step on preparing them on return to work.

For Mitani, S. et al. [15], intervention consisted in autogenic training, including a first mental exercise focusing on heaviness of limbs and a second mental exercise focusing on warmth of limbs: after a 60-min individual training, subjects were instructed to practice by themselves twice or three times a week for 2 months.

For Abramowitz, E.G. et al. [17], intervention consisted in two 1.5-hour hypnosis sessions per week for 2 weeks focused on age-regression, returning to earlier periods in which normal restorative sleep was present and enhancing and associating details with the "here and now" to deal with present day symptoms of sleep disturbances, together with posthypnotic suggestions both symptom-oriented and for strengthening ego. Therapist was a specialist in psychiatry, certified in hypnotherapy.

Both Galovski, T.E. et al. [20] and Arditte Hall KA et al. [21] provided 3 weekly sessions of sleep-directed hypnosis designed to target both sleep-onset and mid-sleep awakening (not nightmares) while strengthening the ability to fall back to sleep, coupled with autohypnosis daily sessions before bedtime using an audiotape (relaxation strategies and suggestions). Therapists were trained and supervised in the administration of hypnosis and CPT.

3.4.3. Hypnosis interventions targeting both trauma and symptoms

Shakibaei, F. et al. [16]: This hypnosis intervention consisted of 5 sessions over the course of one week, including specific post-hypnotic suggestions for pain reduction, recalling and repeating the burn accident in detail, and suggestions to improve sleep quality. Hypnosis was administered by 2 hypnotherapists well-trained in the field of pain.

Bryant et al. [13,14] used hypnosis to condition the patient in preparation for CBT. Intervention was limited to a 15-min hypnotic induction recorded on an audiotape, followed by 2-min suggestions favoring full engagement in CBT exposure exercises and experiencing affective and sensory detail.

4. Discussion

Hypnosis effects on symptomatic (especially on sleep disorders and dissociation) and overall clinical and paraclinical results are encouraging [23]. Indeed results show a significant reduction of intrusion, avoidance [12,17] and trauma re-experience [16] – cardinal and disabling symptoms of PTSD. Furthermore, an uncontrolled – and low statistical power study highlighted reduction in medication use after hypnosis protocol and cares [18].

4.1. General interpretation of the results

The results concerning study population and study design clearly point to a key conclusion: the various trials used very different methodological criteria, both in terms of the population studied, control methods, add-on treatments, and hypnosis protocol. Most of them had several limitations or biases (Table 3), which are described in the following subsection.

Since the study methodologies differ to such an extent, any pooled trial outcomes cannot be considered significant, comparable data. However, to summarize, we propose the following outcomes interpretation, sometimes using pooled data. It must be noted that none of the studies stated their main criteria for assessing the primary objective. Therefore, based on PTSD diagnostic criteria, sleep impairment and dissociative symptoms will be considered symptoms of PTSD in the interpretations below. Seven trials showed hypnosis efficacy across all PTSD symptoms, 3 trials showed hypnosis efficacy in some PTSD symptoms only, and one trial showed no efficacy of hypnosis compared to control. In the 3 trials with partial hypnosis efficacy, the most improved symptom was intrusive thoughts (2 trials), in comparison with avoidance or hyperarousal (0 trials). In the third trial, only the time to fall asleep changed after the hypnosis intervention. Such preferential improvement of intrusive thought PTSD symptoms was also found in trials with improvement of all PTSD symptoms. Analysis of hypnosis efficacy according to the type of control intervention yields interesting results: the uncontrolled trial, the 2 pharmacologically-controlled trials and the waiting-list-controlled trial pointed to hypnosis efficacy across all symptoms. The controls in the 3 trials with partial or no hypnosis efficacy were CBT or monitoring symptoms + add-on CBT in both arms. These results may point to a smaller difference in efficacy between hypnosis and control if the control is CBT. Concerning the treatment target of hypnosis, overall symptom improvement was found in the 4 trials targeting trauma, and in 2 out of 3 trials targeting trauma + symptoms, in contrast to the trials targeting symptoms only (only 1 trial out of 4 showed overall symptom improvement). This seems to highlight the importance of trauma-targeted hypnosis intervention. The lack of data meant that it was not possible to draw significant conclusions about the stability of symptom improvement as a result of hypnosis. Pooled data pointed to 100% stability before the third month, 60% stability between the third month and the 1-year follow-up, and 100% stability from the 1-year follow-up. These outcomes did not differ according to the trial publication dates. It was impossible to posit that add-on treatment or a delay in the hypnosis intervention made a difference to the efficacy of hypnosis on PTSD symptoms because of missing data. Trauma types were too varied to postulate a link between trauma type and symptom improvement.

In a focus on sleep impairment, only 3 trials (including an auxiliary trial) studied it. Declarative assessments (PSQI, ISI and visual analog scale) were in favor of hypnosis efficacy (both in Zolpidem and CBT control). Actigraphy showed a very marginal effect of hypnosis intervention on the time to fall asleep (CBT control). However the assessment was performed at the end of CBT and not immediately after hypnosis intervention when declarative assessments have led to the most significant differences between hypnosis group and control.

About depression and anxiety assessment, data were almost always correlated between PTSD symptoms evolution and depression symptoms (5 trials out of 6) or anxiety symptoms (3 trials out of 3) evolution. The only difference was a trial with improvement on BDI-2 and not on CAPS-2.

Concerning the somatic data, assessment and data were too different to be compared. 1 trial out 4 showed a significant hypnosis efficacy compared to control (pain). In one trial, a single actigraphy criterion was marginally improved by hypnosis intervention. In 2 trials, no difference was found between hypnosis and control, but both improved the assessed data (plasma cortisol concentration or resting heart rate variability).

4.2. Limitations of the evidence included and the review processes used

This review has several limitations. Firstly, the study publication dates spanned a very long period: from 1987 to 2022 and from the use of the DSM-III to the use of the DSM-V PTSD diagnosis criteria. This means that the cardinal symptoms of PTSD have changed between the different studies, and this puts the homogeneity of the population with PTSD symptoms into question. Secondly, homogeneity of populations

and study design is a limitation, and several data are missing (add-on treatments and place of hypnosis, follow-up, intervention delay and time between trauma and intervention). Thirdly, most trials had low or medium statistical power due to the small sample size, heterogeneity of the population within each trial, lack of hypnosis protocol standardization, and no or short follow-up. Finally, our review is composed of only 12 articles, so this limits the statistical power.

4.3. Implications of the results for practice, policy and future research

In light of these outcomes and this literature, some lines of thought emerge.

The first question relates to the assessment of PTSD symptoms: how and which PTSD symptoms should be assessed? The most common is assessment of PTSD cardinal symptoms grouped into an overall PTSD score such as CAPS [24], IES [12,13,15] or PCL [22]. Such an overall score may not be the most representative assessment of PTSD evolution, as the study outcomes showed that some symptoms improved (intrusive thoughts), while others did not (hyperarousal). In addition, studies have shown that "cardinal and other posttraumatic symptoms do not necessarily occur together but may fluctuate qualitatively and quantitatively between periods of remission and relapse" [25]. Analyzing each cardinal symptom separately may be more sensitive. On the other hand, can PTSD be measured by its overall impact? No trial evaluated mental pain or overall quality of life. These are two non-specific criteria that may nonetheless be more representative of the patient's daily life. Similarly, depression and anxiety symptoms seem to be correlated with the development of PTSD: could these symptoms be posttraumatic symptoms, with a different clinical expression from PTSD symptoms? Currently, specialists have postulated that PTSD is not the only posttraumatic diagnosis and that depression, for example, could be a form of posttraumatic disorder, rather than a comorbidity [25]. This highlights the fact that assessment of patients' mental and somatic symptoms as a whole can be informative about the development of posttraumatic disorders.

The second question relates to methodological design. To our knowledge, no trials or reviews examined hypnosis efficacy according to trauma type or population characteristics. With regard to the timing of the intervention, even for internationally recognized trauma-centered therapies, there is no clarity on the importance of timing: some articles refer to the "Golden Hours" (the limited time window to administer an intervention aimed at preventing the disease), during which the trauma-focused therapies could already be used [3]. A review studied propranolol in the prevention of PTSD, suggesting that propranolol may have certain benefits for alleviating PTSD symptoms, but the evidence is inadequate to establish it as a reliable and applicable treatment for PTSD [26]. Finally, one trial studied prevention of PTSD thanks to hypnosis and CBT in patients with an ASD diagnosis [24]. The results pointed to significantly fewer patients with PTSD criteria in the case of CBT and hyp-CBT. One case report suggests that early therapeutic intervention with hypnosis could possibly be helpful in preventing PTSD in patients [27]. To our knowledge, there are no other studies on the role of hypnosis in preventing the development of PTSD.

Third, the hypnosis protocol and its place among other internationally recognized PTSD treatments is vague. In terms of the procedure, there is no established guidance on practices or on what is considered hypnosis. Some limits are cited in the literature: the hypnosis protocol must be considered "hypnosis" in scientific publications with the protocol being uniform, the effect must not be linked to a single mechanism (e.g., hypnotizability), and there must be no exclusion of patients based on the criterion of average hypnotizability [28,29]. A recent review proposes a hypnosis protocol based on the targeted symptoms or on the add-on treatment. In this review, hypnotic techniques are chosen according to the cardinal symptoms targeted. Some case studies also reported hypnosis efficacy on nightmares, but did not specify the hypnotic techniques [30]. Hypnotic techniques can also be adjusted according to add-on psychotherapy: to elicit a state of calm and safety (mindfulness) or to facilitate altering cognitions (CBT) or used alongside both in-vivo and imaginal exposure (prolonged exposure therapy). Concerning the role of hypnosis, several reviews pointed out the benefits of hypnosis as an add-on to CBT. One review studied hypnosis as an add-on to EMDR [31]. Most studies therefore support the use of hypnosis as a priming strategy or as an add-on to trauma-focused psychotherapy. However, one review suggests that hypnosis could be used as a monotherapy, with a 3-step protocol based on other trauma-focused psychotherapy: hypnotic strategies for stabilization, hypnosis for trauma processing, integrating trauma resolution with adaptive gains.

Previous study outcomes pointed to an improvement of PTSD with hypnosis, and this was confirmed by a meta-analysis based on 6 trials, showing a significant decrease in PTSD symptoms after hypnosis intervention [32]. Such an intervention can move PTSD patients into a state of calm, help them recover control over their emotional reactivity, and facilitate altering maladaptive beliefs [23,33]. Psychopathological explanations for hypnosis efficacy have been proposed, including activating the parasympathetic nervous system and changing the connectivity of brain areas. Regarding the side effects of hypnosis, these are mostly rare and non-specific (nausea, headache). As in other trauma-focused psychotherapies, abreaction is possible during trauma processing and requires patient stabilization prior to trauma exposure. Another risk is the patient's resistance to hypnosis, which is improved by the therapeutic alliance and prior explanation of the hypnosis process [23]. To summarize, data regarding the safety of hypnosis are reassuring. No serious adverse effects attributable to hypnosis have been reported [34]. The evidence for the aforementioned outcomes for PTSD is reinforced by the effectiveness of hypnosis in other psychiatric disorders. Anxiety, depression, bulimia-type eating disorders and sleep disorders are promisingly improved with hypnosis + psychotherapy [23]. Reviews conducted on psychotic disorders and smoking cessation with a hypnosis protocol do not allow for any conclusions to be drawn [34]. Hypnosis represents a promising therapeutic approach, and therefore may enhance and complete psychotherapeutic interventions for PTSD through more comprehensive and integrative work on dissociation and memory processing. Additionally, it could be a helpful contribution associated with treatment of trauma, in the context of lack of available professionals and patient dropout rate (Table 4).

5. Conclusion

These results suggest an improvement in PTSD with hypnosis interventions. Add-on strategies and population characteristics need to be investigated in subsequent trials. The limits of considering hypnosis protocol as a rigorous and reproductible strategy are beginning to be defined and should be further standardized in the future. Moreover, the method's choice and criteria for assessing PTSD symptoms is no longer so obvious and raises the question of other posttraumatic clinical forms. Thus, further studies are needed to confirm the effect of hypnosis on physiopathology and clinical symptoms of PTSD.

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Disclosure of interest

The authors declare that they have no competing interest.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.encep.2025.12.002.

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