

# Hypnosis is a Surgical Pain Intervention: A Systematic Review

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*Surgery is a medical procedure that can cause perioperative pain. Pain in the perioperative phase that received by the patient can cause various complications. Hypnosis is a part of complementary and alternative therapies that are able to cope with pain. The purpose of the review is to perform a systematic review of the literature. Hypnosis is a part of complementary and alternative therapies that are able to cope with pain in surgery. A comprehensive article search through EBSCO, PROQUEST, and Scopus, the original article was sought in the period of publication between 1999 and 2019. The original articles reported on the effectiveness of hypnosis with surgical patient inclusion criteria. A total of 1994 studies have been identified in the literature search. However, only 27 studies were eligible for analysis in this study. The instruments used were visual analogue scale and numeric rating scale questionnaire were used to identify the level of pain in the study. The outcome revealed that hypnosis can decrease level of pain in each perioperative phase significantly. Further research needs to be done to add strong evidence about the use of hypnosis for perioperative pain management.*

**Keywords:** hypnosis, pain, surgery

## I. INTRODUCTION

Surgery is an action to overcome health problems that occur in patients, but it can cause psychological stress, severe pain, and suffering [1]. Perioperative pain that is not intervened will cause new problems that are detrimental. Recently, various nonpharmacological therapies have been found to treat pain such as hypnosis. Hypnosis is a technique that can change phenomenological aspects, relieve pain, reduce anxiety and depression, increase comfort, and can be used as analgesics during pre and postsurgery. [2-4]. Hypnosis can be used to treat pain at the perioperative stage in various types of surgery [5], such as cardiac surgery [2], cataract surgery [4], liposuction surgery [3], endocrine surgery [6], breast surgery [7], musculoskeletal surgery [8] and so on.

Hypnosis is a therapy without side effects for patients. The initial stage of hypnosis therapy is most often done by giving an introduction to action by telling the patient about an imaginative experience by asking the patient to imagine something pleasant. The next stage is induction, which is an initial suggestion which is expanded to use imagination and further elaboration of the introduction. Hypnosis are used to support and evaluate suggestion responses. When the patient is hypnotized, the patient will be guided by therapist to respond the suggestions for changes in subjective experiences and changes in perception, sensation,

emotions, thoughts, or behavior. Hypnosis can also be done independently by the patient, this is known self-hypnotized. [9].

The aim of this review was to perform a systematic review of the literature. The researcher identified and looked for the relationship of trends, topics and perceptions related to hypnosis as pain interventions. The main purpose of this review was to incorporate peer review research to meet the needs of patients in coping with surgical pain.

This review used extraction and synthesis methods applied to the literature sought and selected for review, explained in the next section. The results of this review provided classifications in terms of performance, composition, improvisation, and analysis. The discussion process discusses the invention and limitations. The last step explains the implications and recommendations for further research.

## II. METHOD

This review referred to the Item Reporting Options for Systematic Review and Meta Analytic (PRISMA) guidelines. This systematic review was carried out with the following stages; The First, an electronic literature search was conducted according to the research questions and establish inclusion criteria. Second step was the research paper that meets the inclusion criteria selected. The third step was the data from the selected papers extracted and, the fourth stage carried out a qualitative and semi-quantitative analysis. The researcher discussed the searching and data synthesis strategy in the following section.

### *Searching techniques and selection criteria*

The following systematic electronic database searches were published between 1999 and 2019. Searches were carried out through Pro-quest, EBSCO, and Scopus, using the keywords "hypnosis", "sick", "surgery". The search process was limited to English. The clear and detail method can be seen in table 1.

Table 1 Database Search

Search Date	Data source	Years	Number of articles	Total
22-07-2019	PROQUEST	1999-2019	1683	1994
22-07-2019	EBSCO	1999-2019	55	
22-07-2019	Scopus	1999-2019	256	

### *Extraction and Synthesis of Data*

The author, consisting of three individuals, extracted data from each study and every time a difference was found, it was resolved by discussion. Data Extraction and Synthesis can be seen in figure 1.

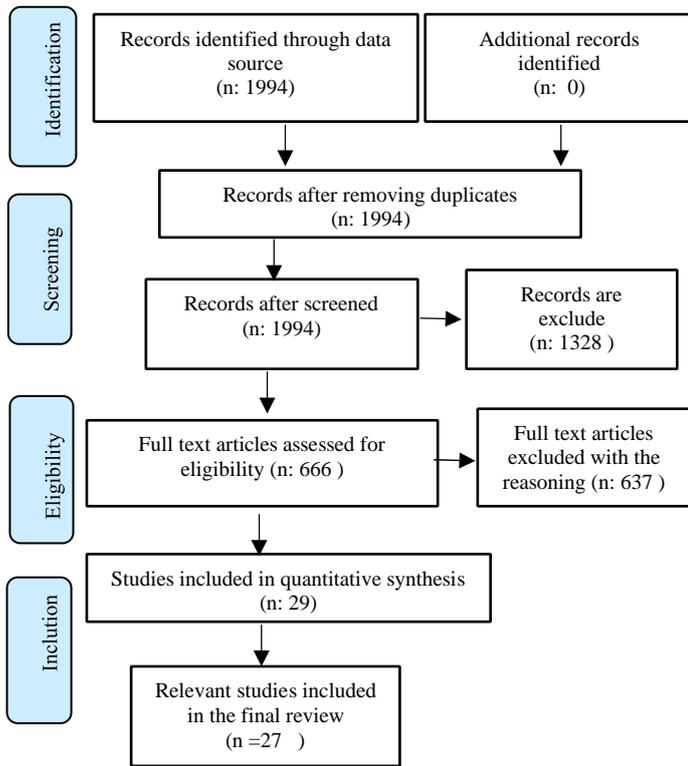


Fig. 1 Flow of diagram of study selection process

### III. RESULTS AND DISCUSSION

The number of search results found was 1994 articles. All data were relevant according to the inclusion criteria, so the results remained in 1994 articles. Figure 1 explains the process of finding the PRISMA method. After observing the inclusion criteria, only 27 articles were met the inclusion criteria which would be further analyzed. The frequency characteristics can be seen in Table 1. During the period 1999-2019, 27 scientific publications on hypnosis were used as interventions to treat surgical pain. Methodology, design, type of intervention, measurement method and sample can be seen in table.2

The most used design in this review was RCT (5 articles), then prospective studies (5 articles), observational studies with 3 articles each, other designs found were true experiments, retrospectives, mixed methods, comprehensive reviews, comprehensive historical studies and control with 1 article each. The assessment instruments used mostly use VAS, while the timing of hypnosis intervention was mostly done before surgery, and it was followed by postoperative, perioperative, preoperative, and postoperative. The duration of hypnosis intervention was between 5 to 89 minutes with

an average of 20 minutes. The results of all article reviewed indicated that hypnosis could significantly be used as an intervention for surgical pain.

The article reviewed shows that there is evidence that hypnosis is a surgical pain intervention. A comprehensive and systematic review of our research study found 27 articles published 1999 - 2019.

Pain and anxiety are the most common side effects of surgery [10]. The use of hypnosis in clinical practice has long been used. There are beneficial effects of hypnosis in patients undergoing major operations which are explained from a variety of relevant literature. [6]. Hypnosis has been practiced by surgeons when operating, patients are observed from the beginning to the end of the procedure. The results of this observations showed that the patients were free from pain during the action. [3]. Hypnosis can affect patient perception and behavior in two ways, namely the use of suggestibility and hypnotic trance. Trance is a state similar to being unconscious, which is different from normal sleep, but is very conscious, focused, and has a high degree of suggestibility, Andrew and Welbury (1996) conducted a study of 20 children who underwent hypnosis and anesthesia, the results reported 16 children have experienced decreased in pain perception [11-13]. The use of hypnosis in eye surgery showed that it was successful in reducing pain. In total, patients who performed eye surgery in the intervention group showed a higher reduction in pain compared to the control group using usual topical anesthesia. Although pain is still sometimes felt and is different from each individual, it is influenced by pain sensitivity. Overall, many patients in the hypnosis group experienced decreased pain and lower anxiety. An additional positive effect is obtained by the patient being increased in cooperation during the surgical procedure. [4].

Hypnosis as analgesia has also been implemented in other operations such as thyroid removal, termination of pregnancy, removal of skin tumor or inguinal repair. The results of the implementation showed that hypnosis produced significant positive effects in reducing stress, pain, drug consumption, physiological parameters, and duration of surgery [7]. In patients undergoing laparoscopic cholecystectomy, hypnosis may be recommended for use in the preoperative period to be an adjunct therapy of usual care in reducing pain and taking sedatives. [1].

**Table 2. Included Studies**

No	Author, Years	Sample, Age	Design, Assessment tool	Type surgery	Interventions	Method and Time for Measurement
1	[11]	n: 24, age 18-30 yr	Case control study, Visual Analogue Scale (VAS)	Extraction of mandibular, maxillary molars surgery	Preoperative	Intensity of pain assessment at 5, 12, 24, and 48 hours postoperative intervals
2	[12]	n: 13 studies	A comprehensive methodological review, PsycINFO and PubMed [3]databases	Lumbar puncture, Tonsillectomy, Nuss procedure	During the procedure	Through six groups according to the nature and condition of the treatment being compared.
3	[2]	n: 44, mean age 54&55 yr	RCT, Visual analog scale (VAS)	CABG surgery	Preoperative	Patients were divided into interventional and control group. Pain were evaluated on 0 th, 1st, 2nd, 4th, 6th, 8th, 10th, 12th, and 24th hours after surgery
4	[10]	n:300, mean age 58&59,5	Observational nonrandomized study, none	Breast surgery	Postoperative	150 patients underwent breast surgery while on general anesthesia, and 150 patients underwent the same surgical procedures while on hypnosis sedation, not explained measurement time
5	[3]	none	Observational	Liposuction surgery	Preoperative	The surgeon used self-hypnosis. The dialogue was transferred to an audio cassette tape approximately 20 minutes in length and listened to for five evenings prior to surgery, not explained measurement time.
6	[4]	n: 111, aged 50–85 yr	True experimental, Visual analog scale (VAS)	Cataract surgery	Intraoperative	After describing the hypnosis procedure, the hypnotherapist initiated a 10 to 15 minute short hypnosis using a technique described by Erickson, after the hypnosis session, the patient's anxiety for the forth coming surgery was evaluated
7	[14]	n: 40, none	Prospective randomized study, Visual analog scale (VAS)	Cervical endocrine surgery	Postoperative	The two groups are compared, not explained measurement time

No	Author, Years	Sample, Age	Design, Assessment tool	Type surgery	Interventions	Method and Time for Measurement
8	[6]	n: 339, mean age 42&63,7 yr	Retrospective study, Visual analog scale (VAS)	Endocrine surgery	Intraoperative and postoperative	Patients were divided into interventional and control group Postoperative pain and patient satisfaction were assessed using a 10 cm visual analogue scale
9	[15]	n: 22, mean age 25,6 yr	Prospective observational investigation, Visual analog scale (VAS)	Open septorhinoplasty	Preoperative	Patients were divided into interventional and control group. The first two were administered 3 days and 1 day prior to surgery, respectively, and the last session was administered in the hospital the day of surgery. Hypnosis induction was given by the same anesthiologist. The first two hypnosis sessions were 40 min duration, and the last one was 20 min
10	[13]	n: 86, age 18-65 yr	A prospective single-blinded study, Visual analog scale (VAS)	Transesophageal echocardiography (TEE)	Preintervention	A first hypnotic induction was carried out the day before the procedure, the second hypnosis induction was done in a separate room 15 minutes before the intervention
11	[7]	n: 1, age 58 yr	A case report, none	Breast cancer surgery	Perioperative	During the consultation, the patient underwent her first hypnosis and all details of the proceedings (induction, breathing focalization, notion of "safe place"... ) were given, The hypnotist used permissive suggestions to the patient to produce relaxation and peace and for alterations in perception, sensation, and emotion throughout the procedure. The surgery and hypnosis lasted 52 and 89 minutes, respectively
12	[8]	n: 12, age 21-49 yr	A randomized control pilot study, none	Bone fracture	Postoperative	All the subject received for 6 weeks
13	[16]	n: unclear	Historical& contemporar	Major surgeries	Perioperative	Hypnosis was given by hypnotist 530 minutes

No	Author, Years	Sample, Age	Design, Assessment tool	Type surgery	Interventions	Method and Time for Measurement
			perspectives, none			
14	[9]	n: 64, mean age 61,8&63,5 yr	Prospective study, Visual analog scale (VAS)	TRUS-guided prostate needle biopsy	Preoperative	Patients were divided into interventional and control group. Assessment of pain after 10 min intervention. After surgery, both hypnosis intervention and control groups were given the measures again.
15	[1]	n: 120, mean age 43,10 &3,15 yr	True experimental, Visual analog scale (VAS)	Laparoscopic cholecystectomy	Postoperative	The pain assessment on 2, 6, 12, and 24 hours postsurgery.
16	[17]	n: 20, age 30-79 yr	A mixed method, none	Breast cancer surgery	Preoperative	The hypnosis intervention consisted of a 15 minute, not explained measurement time
17	[5]	n: 91, age 18-25 yr	A randomized blind control study, Visual analogue scale, containing a numeric rating scale	Molar extraction	Intraoperative	The patient was called by phone on the first postoperative day and asked to report where they rated their postoperative pain on the VAS.
18	[18]	n: 350, age $\geq$ 18 yr	Randomized Clinical Trial, none	First-trimester surgical abortion	Preoperative	Patients were divided into interventional and control group. The interventional group received a 20 minute hypnotic intervention before the surgical abortion and throughout the procedure. Suggestions are repeated using the same words as during the 20 minute
19	[19]	n: 350, age $\geq$ 18 yr	Randomized Clinical Trial, none	Surgical abortion	Preoperative and Intraoperative	Patients were divided into interventional and control group. In the Intervention group 20 min before and throughout the surgical procedure. The Control group, each woman was accompanied by a relative or friend for 20 min before the surgical procedure and by a nurse.

No	Author, Years	Sample, Age	Design, Assessment tool	Type surgery	Interventions	Method and Time for Measurement
20	[20]	n: 1, age 4 yr	Case report, Visual analogue scale (VAS)	Oral and maxillofacial	Intraoperative and postoperative	An hypnosis session was held to control anxiety, fear, and pain during and after the procedure. Hypnosis was induced prior to the
						surgical procedure. The deepening of the hypnotic trance occurred for 5 min, with commands for a imagine visual image, wellness tips, peace, and tranquility. Then, a suggestion that involved the hypnotic anesthesia and hemostasis was made. After the surgical procedure and 1 week later, we used the visual analog scale (VAS) to measure the patient's pain level
21	[21]	n: 200, mean age 48,5 yr	Unclear, Visual analogue scale	Breast cancer surgical	Postoperative	The hypnosis is done for 15 minutes
22	[22]	n: -	Review, none	Breast cancer surgery	Perioperative	The effect of clinical hypnosis performed during the perioperative period
23	[23]	n: -	Review, none	The sole anaesthetic for surgical	Perioperative	The effect hypnosis performed during the perioperative
24	[24]	n: 103, median age 60 & 54 yr	An observational and prospective study,	Inguinal hernia repair	Preoperative	The hypnosis is done when patient is setting in operating room on the operating table.
25	[25]	n: unclear	Review	Radical breast mastectomy, pelvic exenteration, colorectal and prostate surgery, as well as other genital surgeries	Postoperative	As a consequence, counsellors and hypnotherapists can assist clients towards life enhancing healthy emotional states that can reduce pain, as well as increase confidence, self-esteem and selfworth.

<b>No</b>	<b>Author, Years</b>	<b>Sample, Age</b>	<b>Design, Assessment tool</b>	<b>Type surgery</b>	<b>Interventions</b>	<b>Method and Time for Measurement</b>
26	[26]	n: 75, age 35-70 yr	A randomized experimental design, Visual analogue scale (VAS)	Breast biopsy	Preoperative and postoperative	Patients were divided into intervention and control group The intervention group listened to a 17 minute recorded script with hypnotic suggestions. The control group received standard care, remaining in the waiting room for 17 minutes.
27	[27]	n: -	Review	Various surgery	unclear	Did not explained measurement time

#### IV. CONCLUSION AND RECOMMENDATION

The implementation of hypnosis in surgery has long been used. Hypnosis can eliminate negative feelings, emotional distress, pain, anxiety, and consumption of analgesic drugs. Moreover, it can increase independence, cooperation, and self-confidence.. Hypnosis can be used in the perioperative period.

#### V. RECOMMENDATION

Nurses, doctors, and anesthetists as perioperative staff must have the knowledge and ability to apply hypnosis. Based on the results of this review, hypnosis has the greatest benefit in the preoperative stage. Therefore, future research needs to look at the effects of hypnosis in the intraoperative and postoperative periods. Much research is still needed to provide strong evidence of the use of hypnosis in the perioperative stage.

#### VI. LIMITATION

This review is limited only in the year of 1999-2019 and English language, so it may give language and publications bias.

#### VII. FINANCIAL SPONSOR

The author received no financial sponsor for the review, authorship and publication of this article.

#### VIII. CONFLICT OF INTEREST

No conflict of interest

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