

## Effectiveness of hypnosis in the treatment of pain and enhancing mental performance in Iran: A systematic review and meta-analysis

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### ABSTRACT

**Background and aims:** Nowadays, hypnosis has opened its position in the medical community. Based on controlled trials, hypnosis has been superior compared to other interventional procedures to reduce acute pain. This investigation aims to determine the effectiveness of hypnosis in the treatment of pain and enhancing mental performance in Iran, using the meta-analysis method.

**Methods:** The search has been conducted in international database such as: ISI, Scopus, Pubmed, Google Scholar, and Iranian databases such as: Medlib, SID, Magiran, and Iran Medex. The data have been analyzed using meta-analysis method (random effects model). Heterogeneity between articles was assessing using I<sup>2</sup> index and “Dersimonia and Lardi” statistics. In all studies, hypnotic effect size was expressed as a dichotomous (yes or no) variable. Relative Risk (RR) was used to show effect size.

**Results:** Among the 45 articles, 6 of them had eligibility to inter to meta-analysis. Sample size of 6 articles was 546. The effectiveness of hypnosis in the case group has been 20% more than the control group RR=1.20 (Confidence interval 95%: 0.97 to 1.46), But, there was no significant difference between test and control groups.

**Conclusion:** There was not statistical significance evidence in effectiveness of hypnosis in pain and reduction of psychological tensions, but 20% of effectiveness can be important from medical view of point. So, this method can be used as a routine procedure in the treatment of pain and enhancing mental performance.

**Keywords:** Hypnosis; Pain; Mental performance. Meta-analysis, Systematic review.

Review article

### INTRODUCTION

Nowadays, hypnosis has opened its position in the medical community and many associations at different levels are researching and experiencing this phenomenon in the fields of psychology and medicine.<sup>1</sup> Generally, hypnosis has two applications

under which the rest of its sub-application are categorized. The first application is the treatment of mental health issues such as phobias or pathological fears, fears induced anxieties, and psychosomatic diseases such as migraines, gastric ulcer, nocturnal

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enuresis, and tics. The second application self-training and spiritual promotion.<sup>2</sup> In recent years, the discussion about hypnosis, as a new phenomenon, has become increasingly popular among students and academic circles and even more stilted among the public. Everyone express their own opinions and comments regarding this matter, most of which contain false, unscientific, and distorted points.<sup>3</sup> Unlike many conventional human thoughts, phenomena of hypnotism has nothing to do with the human spirit and only depicts a motion from outside to into the mind.<sup>4</sup> Notwithstanding the long history of this phenomenon in Iran and in the world and also many existing works in this area, it can clearly be seen that the current standing is far away from its real position and is associated with many superstitions. Therefore, it can be seen that hypnosis nowadays, as a complementary therapy in combination with conventional medical and pharmaceutical therapies or even as an alternative to drugs. It can be contributed to the treatment of a wide range of physical and mental illnesses in the various branches of clinical internal medicine, psychology, pediatrics, different surgeries specialty obstetrics and gynecology, orthopedics, oral and dental, and sports and also have a positive impact on the improvement of quality of life. Also, treatment with hypnosis is very successful in acute and chronic pains.<sup>5</sup>

Taylor et al., Myers et al. showed that cognitive-behavioral strategies, such as hypnosis can have an impact on the performance of athletes.<sup>6,7</sup> According to Agurest et al. 295 types of painless delivery were managed with different methods of hypnosis. 94% of the childbirth operations that were done with the hypnosis painless method, were conducted successfully.<sup>8</sup> Hypnosis also have other advantages over the topical anesthesia method.<sup>9</sup>

Hypnosis is the focus of the advanced conditions where the person focuses on a particular stimulus and regarding other stimulus such as environmental or bodily stimulus shows no attention.<sup>10</sup> Psychologists gradually put aside the old assumption that hypnotism changes human beings into strange creatures, passive and are dominated and they replaced it with the belief that for creating new behavior and natural reactions hypnotism should be employed. They are convinced that gradually with the help of hypnotism, human behavior can be studied scientifically and in a controlled state.<sup>11</sup>

The hypnotism changes that can create in the physiology of our body system are vast and comprehensive changes. These include changes in the action of the voluntary muscles, in the involuntary organs and glands, the five senses. Also, it includes changes in the immune system, cardiovascular apparatus, respiratory system and in different parts of the brain such as blood flow to the brain region cortex, cortical and brain waves which in normal individuals and athletes are observed, the generated changes are effective in their sport performance.<sup>4</sup>

Hypnos cognitive behavioral therapy is a combined Hypnotherapy with methods and concepts of cognitive and behavioral therapy.<sup>12</sup>

Hypnotism based treatment provides double-strength in the treatment of cognitive behavioral therapy methods .The suspension of critical thinking in the hypnotic mode causes the patient to be more suggestible so that he or she can accept the convincing cognitive behavioral therapy.<sup>13</sup> Hypnotherapy had a therapeutic effect on IBS symptoms, but few studies have reported its long-term effects.<sup>14</sup> Hypnotism is an auxiliary method for chronic headaches, especially tension headaches.<sup>15</sup> The most important benefit of hypnotism is that it has a sense of healing

and creates a degree of relaxation in patients which can cause tinnitus be tolerable.<sup>16</sup>

Several studies were done about efficacy of hypnotherapy in alleviating PTSD, hypnotherapy for insomnia, the efficacy of hypnotherapy in the treatment of irritable bowel syndrome, effect of antidepressants and psychological therapies, including hypnotherapy, in irritable bowel syndrome, and hypnotherapy for disability-related pain using systematic review and meta-analysis. There was not any study about hypnotherapy using meta-regression and systematic review.<sup>17-21</sup>

Different researches have been conducted in Iran in order to assess the effectiveness of hypnosis on treating the pain and enhancing mental functions. Yet, no comprehensive estimation of the effectiveness of hypnosis on healing the pain and enhancing mental functions in the Iranian society and special sub categories has been done. The goal for this study is to assess the effectiveness of hypnosis on healing the pain and enhancing mental functions in Iran through systematic revision and meta-analysis methods. This study was designed first by the systematic revision of the previous researches and then meta-analysis the final data and combining both of their results.

## METHODS

The search was done in Iranian database such as: SID, Medlib, Iran Medex, Magiran and international database such as: ISI, Scopus, Pubmed, google scholar and google. Considering the title of the research and in order to find the conducted studies on “the effectiveness of hypnosis on healing the pain and enhancing mental functions,” key words such as hypnosis, pain, hypnotherapy and mental function were used to find related articles. These key words were first looked for separately, then

in order to be better the quality and further enhance the universality of the research, the keywords were combined through searching functions and possible combination were also looked for more collectivity. All the published articles on “the effectiveness of hypnosis on healing the pain and enhancing mental functions in Iran,” in the period between 2002 and 2013 were searched.

After finishing searching for the articles, a list of all the titles and abstracts of the available articles that were mentioned in the data stations was prepared. The main factor for finding the eligible article to enter the study was: the article should report “the effectiveness of hypnosis on healing the pain and enhancing mental functions” in Iran. In the research, a total number of 45 articles related to “the effectiveness of hypnosis on healing the pain and enhancing mental functions” were found that had done in Iran.

After looking through the articles and eliminating 10 of the articles that were repeated, the abstracts of the remaining 35 articles were checked. After the examination of the abstracts, 20 articles were announced irrelevant and 9 other were eliminated due to lack of access to their full texts. The criterion through which articles were eliminated was the repetitiveness of the articles, inaccessibility of the full texts of the articles and the irrelevance of the articles with regard to the subject. The factors with which the articles were examined to be chosen for analyzing the published articles about “the effectiveness of hypnosis on healing the pain and enhancing mental functions” in different cities of Iran was determined and eventually 6 articles were chosen. To gather and finally deduct information from the final articles, a check list was designed that consisted of: type of study, location of the study, method of sampling, the amount of the samples, average age of the samples, the responders' gender and

the effectiveness of hypnotism on healing the pain and enhancing mental functions. The cases that included the above mentioned experimental in the check list and their quality was confirmed, were chosen. In the end, 6 articles were chosen and looked through and analyzed by the researches. In each study, the name of the author, the year that the study was conducted, the number of samples in experiment and control group, average standard deviation of the hypnotism rate in experiment and control group and the result of the test was registered in the content analysis check list and the information related to it was presented in table number 1 (yes= effectiveness, no= ineffectiveness).

The data were interred in the SPSS software after they were imported to STATA Version 11.2 and the meta-analysis was conducted using meta command.

The heterogeneity among of the studies was checked with I2, Dersimonia and, Laird statistic. As the studies were not homogeneous, studies were pooled using random effects model. To find the effects

elimination of each study on the total result, sensitivity analysis was used. Publication bias was checked using Egger test.

Quality assessment with Ottawa or STROBE checklist did not do in these studies because the number of included studies was small.

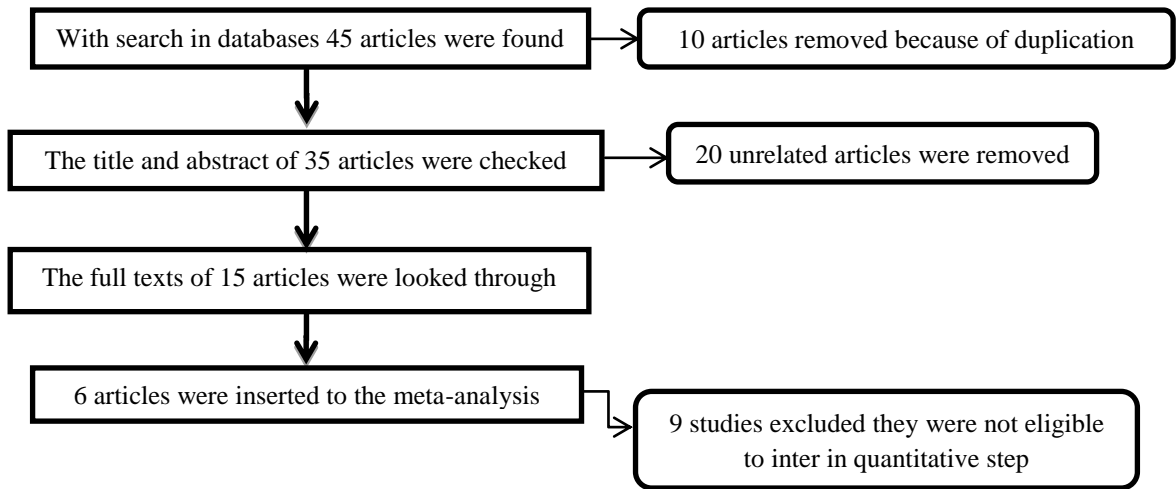
The data of eligible studies in this mate-analysis were dichotomous (yes or no). So, effect size was defined as relative risk (RR). Distribution of relative risk, odds ratio and hazard ration were not normal. Log transformation was used to provide normality assumption for RR to combine the results of the studies in each research the RR logarithm was utilized.<sup>22,23</sup>

## RESULTS

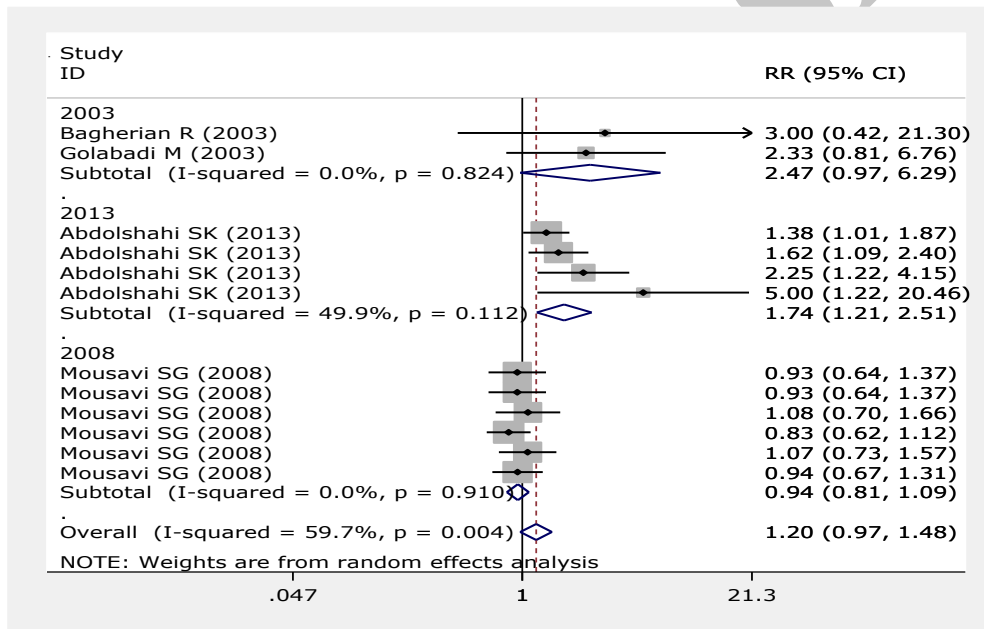
In a systematic revision, 45 articles were found with a look through their titles. 6 cases were chosen and for the final analysis of different aspects in each study (Figure 1). They were entered in the meta-analysis check list (Table 1).

**Table 1:** The meta-analysis check list of hypnotherapy effectiveness in pain dealing and the enhancement of mental functions in Iran

Reference number	Title of article	First author's name	Publication year	Sample size	Control group healing		Experimental group healing	
					Yes	No	Yes	No
<sup>24</sup>	The comparison between the effectiveness of teaching muscular appeasing and therapy with drugs using Amitriptyline for curing tensional headaches	Reza Bagherian Sararudi	2003	6	1	5	3	3
<sup>25</sup>	Analysis of the hypnotism's effectiveness in curing tensional headaches	Sayed Mostafa Alavi	2003	29			16	13
<sup>26</sup>	Is hypnotherapy effective in the number of cases going back to opium drugs and reduction of quitting signs?	Majid Golabadi		11	3	8	7	4
<sup>27</sup>	Clinical analysis of hypnotism's success in creating topical insensibility in curing teeth roots	Maryam Bidar	2009	21			16	5
<sup>28</sup>	The effect of hypnotism in the infusion of topical insensibility to the feeling of pain, bleeding control and unrest during pulling the third Muller tooth	Sayed Kazem Abdolshahi	2013	24	16	8	22	2
				24	13	11	2	3
				24	8	16	18	6
				24	2	22	10	14
<sup>29</sup>	Comparing 4 different treatments in managing severe transformational disorder (recommendation-appeasing-injection-hypnotism) and controlling them after a month	Mousavi	2008	20	15	5	14	6
				20	15	5	14	6
				20	13	7	14	6
				20	18	2	15	5
				20	14	6	15	5
				20	16	4	15	5



**Figure 1:** The follow diagram election of studies



**Figure 2:** Comparison of hypnotism with control group

The relative risk (RR) from each study is represented by a black square and the 95% CIs by the line through the square. Summary RRs (center of open diamond) and 95% CIs (width of open diamond using a random-effects model).

The method of the study in all cases was case-control, and the sampling method in all studies was to procure a list of the eligible cases. In the study of Sayed Mostafa Alavi and Maryam Bidar because of lack of control group, we could not compute RR. In three studies, there was no significant difference between the control and the experimental

group. In the study was done by Mousavi in 2008, he showed hypnotherapy was not effective.

In Baqerian et al. study entitled the effectiveness of teaching muscular appealing and drug therapy using Amitriptyline in treatment of tensional headache, 3 persons from the experimental group and 1 from the

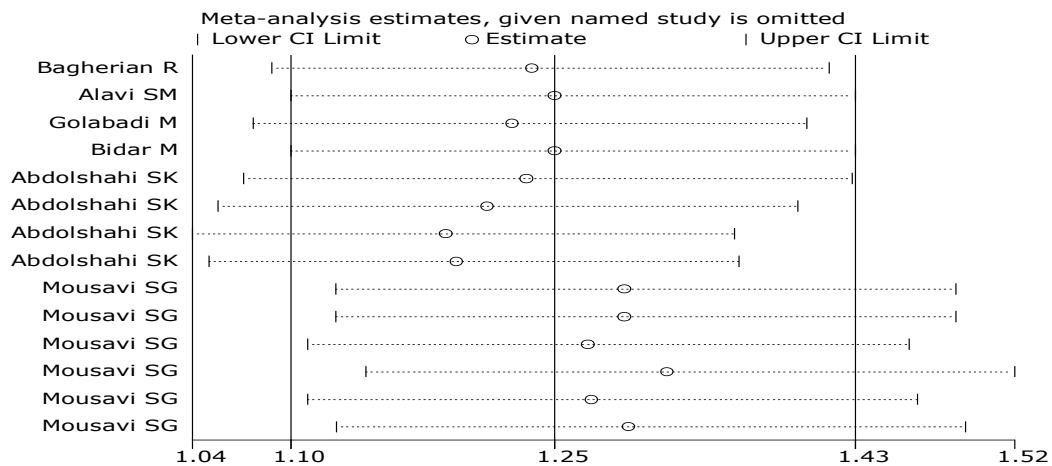
control group were improved and their relative risk RR was estimated as RR=3 which indicates that people who were subjected to hypnosis had three times better improvement than the control group who were subjected to drug therapy, but as 95% CI of RR crossed line one and therefore, the total effect is not significant (Figure 2).

In the study conducted by Gol-Abadi, entitled: The effects of hypnotherapy on the amount of cases who go back to opium drugs and the reduction of quitting signs, improvement in the experimental group was seen in 7 cases and in 3 cases from the control group and the relative risk was estimated in the amount of RR=2.33. It means that people who were subject to hypnosis had 2.33 times less going back to drugs and less reduction of quitting drugs signs than the control group, but as the line (95% CI of RR) has crossed line one, in total, the amount of the effect was not significant (Figure 2).<sup>24</sup> In Abdol-Shahi study, entitled: The effect of hypnosis in the infusion of topical insensibility to the feeling of pain, bleeding control and unrest during pulling the third Muller tooth, hypnosis had a significant effect on factors 2, 3 and 4. In general, people who were subject to

hypnosis had 1.47 times more improvement than the control group RR=1.74, and was significant in the total effect  $P < 0.001$ . Also, in the study conducted by Mousavi entitled: Comparing four different treatments in managing severe transformational disorder, 4 factors of recommendation, appeasing, venous injection and hypnosis were analyzed. The RR was in the amount of RR=0.94 and the combination of all the studies showed that hypnosis was 20% more effective than the control group.<sup>31</sup>

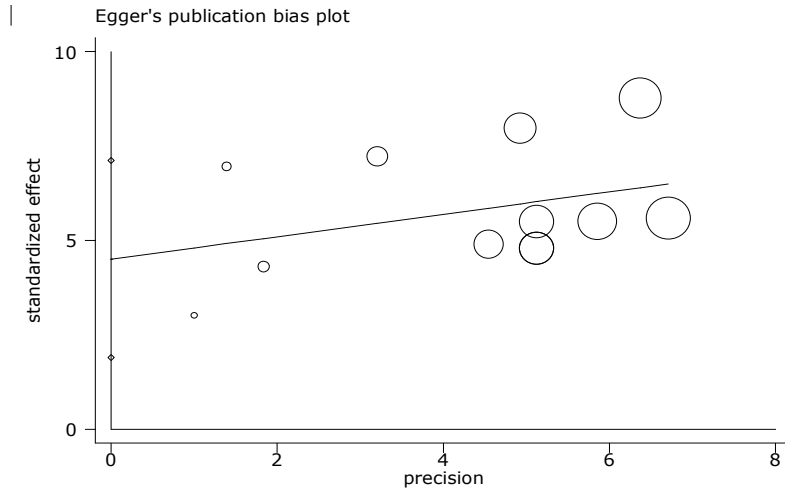
With combining the results of the 6 studies using the random effects model, it was shown that the effectiveness of the hypnosis in the hypotrophy group was 20% more than the control group RR= 1.20 (95% CI: 0.97-1.47).

According to the results of the sensitivity analysis, it is shown in diagram 2, in general, with the elimination of the Abdol-Shahi study (The effects of hypnosis on bleeding control), hypnosis had less effect and with the elimination of the Mousavi study (Comparing the proposed method in managing the severe alternate derangement) hypnosis had more effects (Figure 3). Egger test shows that the effects of publication bias was not significant ( $P > 0.05$ ) (Figure 4).



**Figure 3:** Sensitivity analyze figure of hypnotherapy

The assessment circles with study elimination indicate the relative risk (RR) and the lines show the 95% CI for RR.



**Figure 4:** Publication bias figure using the Egger test.  
*The circles show sample size (bigger circle shows bigger sample size and verses).*

## DISCUSSION

In 6 studies were done in Iran with the total sample of 546 people and with the average of 91 person per study, which were conducted during 2002 to 2013, the effectiveness of hypnotism in the experiment group was 20% more than the control group. To determine the studies that could change the results of meta-analysis, sensitivity analysis was used. In this diagram each time, it was omitted one of the studies and was analyzed again with the absence of that study. Then, the result of the analysis, before and after the elimination of the study is compared to indicate how much the existence or the absence of each study can affect the final result. The sensitivity analyze showed that there is not any study that change the results of meta-analysis fundamentally.

Probably hypnotism with the induction a local anesthetic, de-stress the muscles, creates inner peace and reduces patient stress.<sup>30</sup> Others also have reported that effect of hypnotherapy on the degree of anxiety was successful.<sup>31</sup> In psychotherapy, the aim is helping the patient to control their anxiety, stress, relax and focus and increasing the efficiency of the individual. In this regard of

therapeutic hypnosis can be used. Controlled studies have shown that the effectiveness of this method is equally or more than other psychological interventions to control a variety of chronic pain.<sup>32</sup>

Heydari concluded that hypnotism, not only creates a deep relaxation in the subject, but also at the level of his awareness and perception and feeling changes are also happen.<sup>4</sup> As well as Krech considered hypnotism an adjuvant therapy in his study analysis of cognitive behavioral therapy that was carried out in 17 reviewed studies, and the results of his study showed that the group who had received cognitive behavioral therapy had at least 70% more improvement compared to the persons who were not receiving hypnotism treatment.<sup>33</sup> In a research conducted by August et al which was published in 2009, 295 cases of painless child birth operations were done and 94% of them were done through the painless hypnosis method successfully.<sup>8</sup> Also, hypnotism in order to create a topical insensitivity for treating teeth root was done successfully in 76.2% of the cases.<sup>27</sup> Among the limits imposed on this article which were caused more by its state of revision are: lack of access to the full texts of some researches,

the defectiveness of information deduced from the abstracts of some studies, etc.

Limitations of this study were lack of standard report of studies results, few studies and publication about hypnotherapy in Iran, and execution studies without control group in analysis.

## CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

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