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Comparison of Two Techniques in the Treatment of Magnetic Resonance Specific Phobia

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Abstract: ***Objective***: Specific phobia is characterized by an irrational fear and avoidance behavior in response to particular stimuli. Magnetic Resonance (MR) phobia is considered one of the subtypes of specific phobia, manifested by intense anxiety and fear during MR scans, often triggered by claustrophobia or the loud sounds emitted by the machine. Hypno-Meditative Reprocessing Therapy and Hypnotic Jacobson Relaxation Techniques are two hypnotherapeutic methods with significant potential for treating MR phobia. The purpose of this study is to compare the effectiveness of Hypno-Meditative Reprocessing Therapy and Hypnotic Jacobson Relaxation Techniques in alleviating the fears of patients with MR phobia. ***Material and Method:*** The study population consists of patients aged 18-65 residing in Istanbul, diagnosed with MR phobia at educational and research hospitals affiliated with the Ministry of Health. Participants were randomly divided into two groups: the Hypno-Meditative Reprocessing Therapy Group and the Jacobson Relaxation Technique Group. ***Results:*** The Subjective Units of Disturbance Scale was employed to measure subjective anxiety levels related to the phobia. Significant differences were observed in the average scores between pre-test and post-test evaluations in both experimental groups. The efficacy of both treatment methods in reducing MR phobia was demonstrated. ***Conclusion:*** Our study revealed that Hypno-Meditative Reprocessing Therapy was more effective in reducing Subjective Units of Disturbance scores compared to the Jacobson Relaxation Technique.

Keywords: Hypno-Meditative Reprocessing Therapy, Magnetic Resonance Specific Phobia, Jacobson Relaxation Technique.

Research Paper

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1. INTRODUCTION

Magnetic Resonance Imaging (MRI) plays a critical role in the diagnosis and treatment processes of patients; however, for individuals with claustrophobia, this procedure can be a significant source of stress [1]. Specifically, patients suffering from claustrophobia face considerable challenges during MRI [2, 3]. In the literature, MRI phobia is categorized as a type of specific phobia. This condition can lead to substantial delays in the diagnostic process, adversely affecting access to healthcare services and reducing the effectiveness of treatment [4].

There is a growing need for novel and effective therapeutic methods to address MRI phobia. Hypnosis is widely employed in medical treatments, either as an independent therapeutic approach or as an adjunctive therapy to complement other treatment modalities. The efficacy of hypnosis in the treatment of anxiety and phobias makes it an appealing option for patients with MRI phobia [5].

Hypno-Meditative Reprocessing Therapy (HMRT), a new form of hypnotic therapy, has recently garnered attention and is being utilized in the treatment of MRI phobia. The primary aim of HMRT is to alleviate anxiety experienced during MRI procedures, thereby rendering the experience more tolerable. Investigating the effectiveness of HMRT in patients with MRI phobia could fill a gap in the current literature and offer a more accessible treatment option [6].

The Jacobson Relaxation Technique (JRT) is a well-established method for relaxation and anxiety reduction. When combined with hypnosis (Hypnotic Jacobson Relaxation Technique, or HJRT), it is hypothesized to have positive effects on patients with MRI phobia [7].

The aim of this study is to investigate the role of HMRT in the treatment of specific MRI phobia. The effectiveness of HMRT in treating MRI phobia was analyzed and compared with HJRT.

2. MATERIALS AND METHODS

Study Population

The study population consisted of patients diagnosed with MRI phobia who presented at a private hospital in Bağcılar, Istanbul, between January 2022 and June 2023. A total of 30 patients aged 18 to 65 were included in the study. Participants were divided into two groups of 15 each. All treatment sessions were conducted at the same hospital, and MRI scans were performed in the same facility.

Exclusion Criteria

Patients were excluded from the study if they presented with:

- Mental retardation,
- Psychotic disorders,
- Hearing or speech impairments,
- Physical disabilities preventing them from undergoing MRI.

Study Design

This research employed a quasi-experimental model. The patients were divided into two groups of 15, and each group was subjected to a different therapeutic approach (HMRT and HJRT). Pre- and post-treatment tests were administered to both groups. The Subjective Units of Distress Scale (SUD) was used to evaluate the participants' anxiety levels before and after the interventions.

Research Hypotheses

- **H0/H1:** There is no significant difference/significant difference in the mean post-test SUD scores of participants based on different variables within each group.
- **H0/H1:** There is no significant difference/significant difference between the groups' mean pre-test and post-test SUD scores.
- **H0/H1:** There is no significant difference/significant difference in Group 1's pre-test and post-test SUD scores.
- **H0/H1:** There is no significant difference/significant difference in Group 2's pre-test and post-test SUD scores.

Data Collection Tools

- Anamnesis form,
- Hypnotic Susceptibility Scale,
- HMRT protocol form,
- SUD Scale.

Initially, the SUD scale was administered to the participants. During the anamnesis phase and in each HMRT session, the SUD scale was utilized. At the end of the sessions, SUD data were re-evaluated. Participants rated their subjective discomfort on a scale ranging from 0 to 10 (0: not at all disturbing, 10: extremely disturbing).

During the anamnesis process, the Hypnotic Susceptibility Scale was also applied to the participants. This scale provided information about the patients' satisfaction with the treatment method and its perceived effectiveness.

Data Collection

Anamnesis was first conducted with the participants, after which Group 1 underwent HMRT, and Group 2 received HJRT. There was no time limitation for the HMRT sessions, as the duration was determined by the participants' ability to tolerate the procedure. Similarly, no time restrictions were imposed on the sessions in Group 2. Prior to both HMRT and HJRT interventions, participants' MRI experiences were assessed using the SUD scale, with scores ranging from 0 to 10. The goal of the sessions was to reduce the participants' SUD levels to 0-1, enabling them to undergo MRI scans.

Statistical Analysis

The data were analyzed using SPSS version 26.0. Due to the small sample size and the absence of a normal distribution, non-parametric tests were utilized for comparisons. The Friedman and Wilcoxon tests were employed for statistical analysis, while the Kruskal-Wallis and Mann-Whitney U tests were used for group comparisons. Spearman's Rho test was applied to determine possible correlations. Spearman's rank correlation coefficient is a statistical tool used to measure the degree and direction of the relationship between two ranked variables.

3. RESULTS

Table 1 presents the demographic characteristics of the participants.

Table 1: Demographic characteristics of the participants

		HMRT		HJRT	
		n	%	n	%
Sex	Male	5	33,3	7	46,7
	Female	10	66,7	8	53,3
Age	25-35 yaş	5	33,33	7	46,67
	36-55 yaş	7	46,67	6	40,00
	56 yaş ve üzeri	3	20,00	2	13,33

The SUD scale was applied to the experimental groups as both a pre-test and a post-test. Table 2 provides the mean and standard deviation values of the pre-test and post-test scores for Group 1 and Group 2 (Figure 1).

Table 2: Distribution of participants' SUD scores

Group	Pre-Test	Post-Test
	Mean±SD	Mean±SD
HMRT	9,73±0,45	2,33±2,82
HJRT	9,66±0,48	1,53±1,26

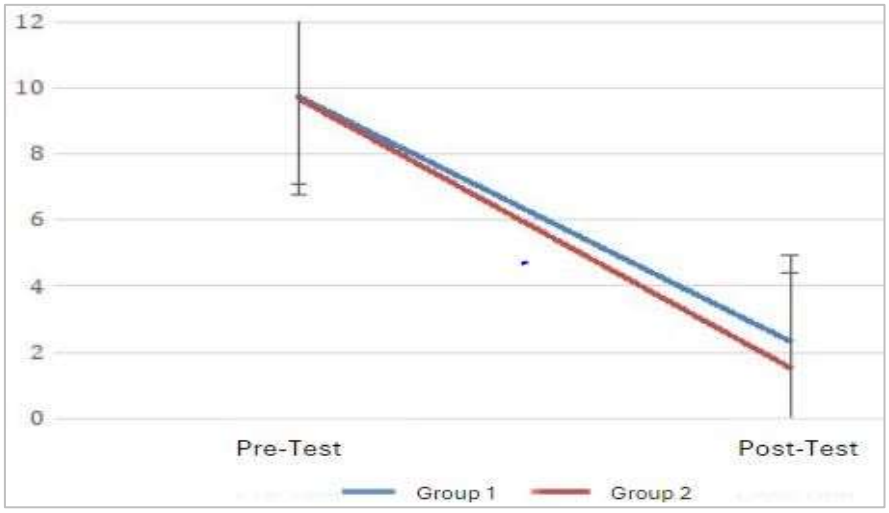

Figure 1: Distribution of participants' SUD scores

The post-test mean SUD scores of the participants were compared based on gender and age. According to the results, no significant differences were found within the groups regarding gender and age in terms of post-test mean SUD scores (Tables 3 and 4).

Table 3: Comparison of participants' post-test mean SUD scores based on gender

Group	Sex	N	Mean±SD	U	p
HMRT	Male	5	3,24±3,54	24,500	0,95
	Female	10	1,91±2,07		
HJRT	Male	7	1,71±1,27	24,000	0,69
	Female	8	1,37±1,12		

Table 4: Comparison of participants' post-test mean SUD scores based on age

Group	Age	Mean±SD	X^2	p
HMRT	25-35	0,62±0,49	3,310	0,19
	36-55	2,57±2,49		
	≥56	4,66±3,39		
HJRT	25-35	1,57±1,05	0,372	0,83
	36-55	1,66±1,49		
	≥56	1,00±1,00		

The values obtained from the SUD scale were compared both between groups and within groups, and significant differences were detected in both cases (Tables 5 and 6).

Table 5: Inter-group comparison of values obtained from the SUD scale

	HMRT	HJRT	p
Pre-Test	9,73±0,45	9,66±0,48	<0,01
Post-Test	2,33±2,82	1,53±1,26	<0,01

Mann-Whitney U Test

Table 6: Intra-group comparison of values obtained from the SUD scale

Group	Pre-Test	Post-Test	X^2	p
HMRT	9,73±0,45	2,33±2,82	46,00	<0,01
HJRT	9,66±0,48	1,53±1,26	69,96	<0,01

Friedman Test

The findings indicate that both techniques applied in Groups 1 and 2 are effective. However, it appears that the HMRT technique is more effective in reducing SUD scores compared to the HJRT technique.

4. DISCUSSION

This study investigated the effectiveness of the HMRT method, a form of hypnotic therapy, in treating patients with MR phobia. The efficacy of HMRT was compared with the HJRT.

Several experts have indicated that incorporating hypnosis into psychotherapeutic applications yields positive outcomes. HMRT was introduced as a complementary approach to Cognitive Behavioral Therapies (CBTs) by integrating hypnosis into the Adaptive Information Processing model proposed by Shapiro [8, 9].

According to Masson's findings, engaging memory through eye movements, a distracting task, or hypnotic suggestion prevents improper encoding of information in memory. During HMRT sessions, all these actions were employed, resulting in statistically significant reductions in participants' SUD scores during processing tasks involving future event anticipation. This scenario suggests that the impact of entering an MR machine, a situation feared in the future, was mitigated following HMRT. Feedback from each session in our study confirmed this viewpoint [10].

Numerous studies have explored hypnosis. While these studies report varying results on the effectiveness of hypnosis, none specifically investigated therapeutic approaches diverging from the original protocol of hypnosis. HMRT, a novel therapeutic method, stands out by combining specific components of hypnosis and grounding itself in the Adaptive Information Processing model, forming an independent therapy [10, 13].

In Beere's study, hypnosis was examined in two distinct cases presented in different manners. It was noted that hypnosis facilitated internal work and assisted in consciously processing traumatic experiences. Both cases yielded successful outcomes only after hypnosis was introduced, despite initially showing no positive results with EMDR. The ineffectiveness of EMDR in these cases was attributed to two factors: the rigidity of the patients' negative beliefs and their underdeveloped internal resources. The capacity to tolerate such emotions is crucial for EMDR, making it contraindicated in these scenarios. However, Beere's research demonstrated that hypnosis could overcome this first barrier by facilitating access to helpful resources and enhancing coping mechanisms. Although hypnosis has potential applications, Beere argued that it is currently used in a limited context [11].

In HMRT, assessments are conducted before therapy sessions to evaluate individuals' coping mechanisms. Based on Beere's findings regarding access to positive resources and the development of coping strategies through hypnosis, HMRT appears to be a suitable approach for managing difficult situations. Bjick proposed an integration of hypnosis that involves substituting the methods as needed within a single session [12].

Connor's (1994) work on ideodynamic hypnosis suggested that the hands can serve as an involuntary and intuitive guide for problem-solving during hypnosis. During this practice, natural 'yes' or 'no' signals revealed through the hands help uncover specific emotions. If a traumatic event arises during ideodynamic hypnosis, the hypnosis session is terminated, and the desensitization process begins [14]. Bjick used EMDR to address impasses in problem-solving and hypnosis when EMDR was ineffective for desensitizing trauma. In contrast, HMRT combines the core elements of both techniques, offering a unified approach. Bjick's method emphasized hypnosis' "spontaneous resolution-guiding" effect, and participants reported experiencing this effect in their daily lives after HMRT therapy [12].

The Wreathing Protocol introduced by Fine uses hypnosis to treat individuals with dissociative identity disorder. This protocol involves inducing hypnosis and identifying alternative identities. The study diverges from classical hypnosis protocols as it is performed exclusively under hypnosis. Fine suggested that hypnosis acts as a stabilizing mechanism to prevent emotional outbursts and fragmentation during the process. In terms of safety, HMRT may have the potential for systematic application in conditions like dissociative identity disorder [15].

Hollander argued that hypnotic therapies require verbal communication between the therapist and the patient. However, the integration of hypnosis focuses on conveying direct experience and imagery rather than verbalization. Therapeutic approaches that minimize dependence on language are well-suited for processing the sensory and emotional components of PTSD, as well as persistent intrusive perceptual images and memories. In this context, the results of HMRT research align with the reprocessing model of PTSD.Similar to the results of our study, Beere (2001) and Bjick (2001) found no

significant gender or age differences in hypnosis-based studies [16].

The findings of our study demonstrate that both HMRT and HJRT significantly reduced MR phobia and subjective discomfort. Despite notable reductions in MR phobia and subjective discomfort, and differences in the number of sessions required, a comparison of the final outcomes of HMRT and HJRT revealed no significant difference in their efficacy for eliminating MR phobia.

Post-test SUD scores in Group 2 were higher than those in Group 1, although both interventions were found effective in reducing MR fear, despite differences in the number of patients achieving a 0-1 SUD score between the groups. Collectively, these findings suggest that HMRT is more effective than HJRT in reducing MR phobia, as more participants in the HMRT group reached a 0-1 SUD score. These results indicate that the HMRT technique may be a more cost-effective, time-efficient, and practical therapy model.

Many studies have reported successful outcomes with hypnosis for treating phobias [17, 19]. Consistent with our findings, studies by Dehghan-Nayeri and Adib-Hajbaghery, Pluess et al., and Manzoni et al. demonstrated that JRT reduced fears [20, 22].

The therapeutic effect of both HMRT and HJRT on various phobias illustrates consistency between our study and the literature. However, no study has yet compared the effectiveness of HMRT and Jacobson relaxation techniques.

A wide range of specific phobias, including MR fear, can delay or prevent diagnostic-quality imaging via MRI. Furthermore, such phobias negatively impact patient experience. Neurological methods are employed to help patients overcome MR fear. Successful outcomes have been observed in cases where patients with MR phobia were hypnotized using a headphone communication device to cope with their fear of MR [23, 24]. This study emphasizes the effect of HMRT in treating MR phobia and suggests that this method could be widely implemented in clinical practice. The rapid recovery facilitated by HMRT offers both time and cost advantages, making it a recommended therapy for MR phobia and similar conditions.

5. CONCLUSION

Hospitals may organize HMRT sessions to help patients overcome their fear of MR and implement these practices on a broader scale, thereby improving patient treatment processes. In our study, no significant differences were observed in the duration of therapy sessions. However, future studies could analyze the relationship between session duration and efficacy in larger groups. These studies could include case studies conducted individually or in small groups, with an analysis of the effect of session duration in both the short and long term.

In future research, physiological evaluation tools, such as those measuring heart rate, blood pressure, and body temperature, could be used to monitor changes in phobic individuals during hypnotic desensitization. These tools would allow the measurement of the intensity and fluctuation of emotional responses in real-time. For example, devices with galvanic skin response measurement features could be used to detect changes in sympathetic nervous system activity and sweat gland activation during anxiety.

HMRT, as a new therapeutic and treatment model, could accelerate the diagnostic and therapeutic processes of patients with MR-specific phobias due to its low cost, ease of patient adaptation, and ability to achieve desired results quickly and efficiently. It could also positively contribute to patients' overall treatment processes.

HMRT could be applied to help patients overcome the fear and anxiety that often delays diagnosis and treatment, including MR-specific phobia, facilitating faster diagnosis. It can make treatment more accessible and cost-effective.

HMRT is a therapy method that is easy to implement for healthcare and mental health professionals, providing a fast and practical way to achieve the desired outcome in patients. Although no statistically significant correlation was found between reductions in SUD scores and hypnotizability, observations during the sessions suggest that patients more prone to hypnosis achieved the desired results with fewer therapy sessions.

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