

## The Effectiveness of Group Schema Therapy on Metacognitive Beliefs and Body Image Concern in Women Seeking Rhinoplasty

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### ABSTRACT

**Objective:** The present study aimed to determine the effectiveness of group schema therapy on metacognitive beliefs and body image concern in women seeking rhinoplasty.

**Methods and Materials:** This study employed a quasi-experimental design with a pretest-posttest and a control group. The statistical population included all women seeking cosmetic nose surgery in Tehran in 2020, from which 44 individuals were selected using purposive sampling. Among them, 22 participants were randomly assigned to the experimental group and 22 to the control group. Initially, a pretest was administered to both groups. Then, the experimental group participated in Young's schema therapy sessions, which consisted of ten sessions focused on cognitive strategies, experiential techniques, the therapeutic relationship, and behavioral pattern-breaking. Following the intervention, a posttest was administered to both groups. The research instruments included the Metacognitions Questionnaire-30 (MCQ-30) and the Fisher Body Image Scale (FBIS).

**Findings:** The data were analyzed using SPSS version 24 and the statistical method of analysis of covariance. The results indicated that schema therapy significantly improved metacognitive beliefs and reduced body image concern in participants in the experimental group compared to the control group.

**Conclusion:** It can be concluded that schema therapy, as an effective psychotherapeutic method utilizing diverse techniques and addressing core emotional needs, can help individuals with maladaptive metacognitive beliefs and body image concerns by reducing dysfunctional symptoms and improving their quality of life.

**Keywords:** Metacognitive Beliefs, Body Image Concern, Schema Therapy, Rhinoplasty

## 1. Introduction

In recent decades, the increased focus on physical appearance and aesthetic ideals has contributed to a rising global interest in cosmetic procedures, particularly rhinoplasty. This phenomenon is not limited to physical transformation but is deeply rooted in psychological constructs such as self-perception, body image, emotional schemas, and metacognitive beliefs. Women who seek rhinoplasty often experience significant preoccupation with appearance and associated cognitive-emotional disturbances, which may signal deeper psychopathological vulnerabilities such as body dysmorphic disorder, negative body image, and maladaptive cognitive schemas (Aliasgari et al., 2024; Khoshini et al., 2022). These challenges call for psychotherapeutic interventions that go beyond surface-level appearance concerns and address core cognitive-emotional dysfunctions.

Schema therapy, as an integrative and transdiagnostic approach, offers a promising framework to target underlying emotional and cognitive patterns that contribute to body dissatisfaction and distorted body image. Drawing upon cognitive, behavioral, experiential, and attachment-based components, schema therapy aims to modify early maladaptive schemas (EMS) that stem from unmet emotional needs and early life adversities (Ke & Barlas, 2020). EMS often interact with metacognitive distortions—individuals' beliefs about their own thoughts—and play a central role in maintaining psychological disorders, including negative body image and body-related anxiety (Mohammadi & Beige, 2017; Zolfaghari et al., 2021). Research has shown that maladaptive schemas are significantly associated with the need for control, hypervigilance, and negative self-assessment—all of which may manifest through dysfunctional metacognitive beliefs in individuals with body image dissatisfaction (Liu et al., 2022; Negi et al., 2022).

Body image concern (BIC) is a multidimensional construct encompassing perceptual, cognitive, affective, and behavioral components of body-related self-evaluation. Empirical evidence has highlighted BIC's pivotal role in the onset and maintenance of several psychological disorders, particularly in women who are highly influenced by societal standards of beauty and media portrayals (Prnjak et al., 2022; Sharpe et al., 2022). Social comparison, internalization of idealized body types, and emotional invalidation are among the mediating factors that exacerbate BIC and motivate individuals toward cosmetic surgery

(Maes & Vandenbosch, 2022; Vandenbosch et al., 2022). In this regard, schema therapy is believed to foster healthier self-evaluations by addressing the core dysfunctional beliefs and unmet emotional needs that drive body dissatisfaction. Studies demonstrate that schema therapy enhances emotional regulation and increases self-acceptance, leading to improvements in body image perception and reduced preoccupation with physical flaws (Alokandeh, 2024; Bahadori et al., 2022).

Moreover, recent research has emphasized the role of metacognitive beliefs—such as beliefs about the uncontrollability of thoughts, the importance of worry, and the need to control cognitive processes—in shaping one's self-view and emotional reactivity (Mohammadi & Beige, 2017; Zaeske et al., 2022). These beliefs are closely related to schema-driven information processing and can amplify negative affective responses to perceived flaws in physical appearance. Women with heightened metacognitive beliefs regarding appearance-related thoughts may be more susceptible to emotional dysregulation, body dissatisfaction, and impulsive decisions like cosmetic surgery (Nourizadeh Mirabadi et al., 2023; Soleimani et al., 2024). Schema therapy, by modifying core beliefs and reducing maladaptive metacognitive patterns, may lead to a decrease in body image concern and psychological distress, particularly in vulnerable populations such as women seeking rhinoplasty.

In Iran, where cultural and social pressures surrounding feminine beauty standards are intensified, cosmetic surgery has become increasingly popular, particularly among women in early adulthood. This demographic is not only vulnerable to appearance-related scrutiny but also highly influenced by peer comparison, social media exposure, and perfectionistic tendencies—all of which contribute to rigid beauty ideals and appearance-related anxiety (Ostadian Khani et al., 2021; Vandenbosch et al., 2022). Several domestic studies have addressed the effectiveness of schema therapy on psychological outcomes such as self-esteem, body satisfaction, and emotional flexibility in Iranian women with body image disturbances. For instance, Karimi Mohajeri et al. (2025) demonstrated that a combination of schema therapy and acceptance and commitment therapy significantly improved body image and subjective well-being in women with breast cancer, highlighting the therapeutic potential of schema-based interventions in body-related psychopathology (Karimi Mohajeri et al., 2025).

Likewise, the application of schema therapy in body dysmorphic disorder and related conditions has yielded promising results, with studies showing reductions in

negative body evaluations and improvements in coping styles, distress tolerance, and psychological flexibility (Aliasgari et al., 2024; Pakandish et al., 2020). Alokandeh (2024) found that schema mode therapy enhanced emotion regulation and reduced body image concerns in adolescent girls, while Soleimani et al. (2024) reported significant reductions in irrational beliefs and body deformity preoccupations following emotional schema therapy in women with appearance dissatisfaction (Alokandeh, 2024; Soleimani et al., 2024). These findings support the use of schema-based interventions in targeting deeper emotional and cognitive mechanisms associated with appearance-related disorders.

Furthermore, metacognitive beliefs are not only relevant to cognitive disorders but are increasingly recognized as a transdiagnostic feature of emotional disturbances and compulsive behaviors. Metacognitive dysfunctions can exacerbate anxiety about one's appearance, perpetuate rumination, and foster avoidance behaviors that impair daily functioning and psychosocial well-being (Liu et al., 2022; Negi et al., 2022). As demonstrated in the work of Khoshini et al. (2022), metacognitive beliefs play a mediating role between early maladaptive schemas, emotional invalidation, and body dysmorphic symptoms (Khoshini et al., 2022). Targeting these beliefs through schema therapy may offer dual benefits—modifying maladaptive schemas and restructuring dysfunctional metacognitions—leading to a more integrated recovery process.

In line with this perspective, Zolfaghari et al. (2021) emphasized the synergistic role of metacognition and schemas in the treatment of interpersonal and emotional dysfunctions, suggesting that schema therapy offers a comprehensive framework for addressing the cognitive-emotional architecture underlying body image issues (Zolfaghari et al., 2021). The present study is situated within this growing body of evidence and aims to examine the effectiveness of group schema therapy on metacognitive beliefs and body image concern in women seeking rhinoplasty, a population that remains under-investigated despite its psychological vulnerability.

## 2. Methods and Materials

### 2.1. Study design and Participant

The present study employed a quasi-experimental design with a pretest-posttest structure and a control group, using random assignment of participants into experimental and control groups. The statistical population of this study

included all women seeking cosmetic surgery in District 1 of Tehran who referred to cosmetic surgery centers for rhinoplasty in spring 2020. After the pretest was administered to both groups, the experimental group received schema therapy intervention sessions. Before the commencement of the treatment, all procedures were explained to the participants, and written informed consent for participation in the research was obtained. After the intervention sessions concluded, a posttest was administered to both groups.

The inclusion criteria for this study included a minimum educational level of a high school diploma and being within the age range of 20 to 35 years. Exclusion criteria included unwillingness to participate, lack of interest in cooperation, and absence from more than two intervention sessions.

From the target population, 44 participants were selected through purposive sampling and were randomly assigned to two groups: 22 in the experimental group and 22 in the control group.

### 2.2. Measures

**Metacognitions Questionnaire-30 (MCQ-30):** The Metacognitions Questionnaire was developed by Wells and Cartwright-Hatton (2004). This scale consists of 30 items scored on a four-point Likert scale ranging from 1 (do not agree) to 4 (strongly agree). Each subscale has a score range between 6 and 24. The questionnaire includes five subscales, all scored directly, with higher scores indicating higher levels of the corresponding subscale. The reliability of this questionnaire, using Cronbach's alpha, has been reported to range from 0.72 to 0.93 across subscales, and the test-retest reliability for the total score between 22 to 118 days was 0.75, with subscale reliabilities ranging from 0.59 to 0.87. In Iran, Cronbach's alpha for internal consistency was reported to be 0.91 for the overall scale and ranged from 0.71 to 0.87 for the subscales (Hadinejad et al., 2022). Wells and Papageorgiou (1998) reported validity coefficients by correlating the MCQ with the State-Trait Anxiety Inventory ( $r = 0.53$ ), the Penn State Worry Questionnaire ( $r = 0.54$ ), and the Obsessive-Compulsive Inventory ( $r = 0.49$ ). In the present study, Cronbach's alpha was used to determine the reliability of the instrument, yielding a value of 0.70 for the total scale, indicating acceptable reliability in the study sample. To determine the validity, the correlation of a representative item with the total score was calculated, yielding a value of 0.76, which was statistically significant at  $p < 0.001$ , indicating satisfactory construct validity.

**Fisher Body Image Scale (FBIS):** The Fisher Body Image Scale was developed by Fisher (1971). It contains 46 items scored on a five-point Likert scale ranging from 1 (very dissatisfied) to 5 (very satisfied). A score of 46 indicates a disorder, while a score above 46 indicates no disorder. The scale was standardized in Iran by Yazdanjou. The test-retest reliability, measured using Pearson correlation, was 0.81 for first-year students, 0.84 for second-year, 0.87 for third-year, and 0.84 overall (Zanjani & Goudarzi, 2009). In the present study, Cronbach's alpha was used to assess reliability, with a value of 0.74 for the total scale, indicating acceptable reliability for the research sample. Validity was established by calculating the correlation of a representative item with the total score, which yielded 0.88, significant at  $p < 0.001$ , confirming satisfactory validity.

### 2.3. Intervention

The intervention protocol in this study followed the schema therapy model proposed by Young et al., which was adopted and validated by Hashemi and colleagues (2016). The program consisted of 10 structured group sessions, each lasting 90 minutes, conducted twice weekly over five weeks. In the first session, a therapeutic alliance was established, and the objectives of schema therapy were explained while participants' problems were conceptualized through schema formulations. The second session involved examining life-based evidence supporting or refuting maladaptive schemas and comparing them with healthy schema alternatives. In the third session, cognitive techniques such as schema validity testing, reinterpreting confirming evidence, and evaluating the pros and cons of metacognitive beliefs and body image

concerns were introduced. The fourth session focused on strengthening the concept of the healthy adult mode, identifying unmet emotional needs, and techniques for expressing blocked emotions. The fifth session introduced healthy communication and guided imagery for imaginary dialogues. In the sixth session, participants learned experiential techniques like imagery rescripting and confronting the most problematic situations. The seventh session covered therapeutic relationships, interactions with significant others, and role-playing. The eighth session emphasized practicing healthy behaviors through role-play and behavior-focused homework assignments. The ninth session involved reviewing the benefits and drawbacks of healthy versus maladaptive behaviors and teaching strategies to overcome behavioral change barriers and implement coping skills. Finally, in the tenth session, all prior session content was reviewed, and learned strategies were reinforced through repetition and practice.

### 2.4. Data Analysis

The collected data were analyzed using descriptive statistics and path analysis. Given the presence of a mediating variable and indirect relationships among the constructs, path analysis was chosen for data analysis using LISREL 8.8 software.

## 3. Findings and Results

Initially, the descriptive statistics results were reported, indicating that the posttest scores in the experimental group changed significantly, whereas no significant changes were observed in the control group.

**Table 1**

*Descriptive Indicators of Participants' Scores on Research Variables in Pretest and Posttest Stages*

Variable	Group	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD
Positive beliefs about worry	Experimental	15.40	1.96	13.22	2.24
	Control	15.09	2.24	14.90	2.13
Dangerous thoughts	Experimental	14.63	1.94	15.36	2.32
	Control	14.45	1.89	15.18	2.26
Need to control thoughts	Experimental	14.77	2.34	12.36	2.57
	Control	15.63	2.12	15.09	4.97
Total metacognitive beliefs score	Experimental	75.31	4.59	66.31	4.91
	Control	74.50	5.74	73.90	4.98
Body image concern	Experimental	114.95	23.75	121.95	23.32
	Control	116.18	23.43	116.45	22.81

Analysis of covariance (ANCOVA) assumes that the variance within each cell of the data table is equal. Unequal

cell sizes do not pose a serious problem unless any given cell is four times smaller than the largest. If such a condition

arises (due to dropout or other reasons), cell variances must be examined to ensure that no variance is ten times greater than the smallest. In this study, prior to data analysis, Levene's test was conducted to examine homogeneity of variances. Levene's test for the total score of metacognitive beliefs and body image concern was not significant. Therefore, the error variances of posttest scores between the experimental and control groups were not significantly different, confirming the assumption of homogeneity of variances. Additionally, Box's M test was used to check the assumption of homogeneity of the covariance matrix. As this

test was not significant in this study ( $F = 0.11$ ,  $p \geq 0.954$ ), this assumption was also met.

To examine the effect of the experimental intervention, multivariate analysis of covariance (MANCOVA) and one-way ANCOVA were conducted on the posttest scores of the groups, controlling for the pretest scores of the dependent variables (metacognitive beliefs and body image concern). Table below presents the results of the multivariate ANCOVA on the posttest scores while controlling for the pretest scores of the dependent variable (metacognitive beliefs subscales).

**Table 2**

*Results of Multivariate Analysis of Covariance for Comparison of Posttest Scores on Metacognitive Belief Subscales Between Experimental and Control Groups*

Test Name	Value	F	df Hypothesis	df Error	p
Pillai's Trace	0.88	51.99	5	33	<0.001
Wilks' Lambda	0.11	51.99	5	33	<0.001
Hotelling's Trace	7.87	51.99	5	33	<0.001
Roy's Largest Root	7.87	51.99	5	33	<0.001

The results indicate a significant difference between the experimental and control groups in at least one of the subscales of the dependent variable (metacognitive beliefs subscales). Table below presents the results of one-way

ANCOVA on the posttest scores while controlling for the pretest scores of the dependent variable (metacognitive belief subscales).

**Table 3**

*Results of One-Way ANCOVA for Comparison of Posttest Scores on Metacognitive Belief Subscales Between Experimental and Control Groups*

Dependent Variable	SS	df	MS	F	p	Effect Size	Power
Positive beliefs about worry	27.24	1	27.24	28.69	<0.001	0.43	1.00
Dangerous thoughts	0.18	1	0.18	0.03	0.850	0.00	0.05
Need to control thoughts	31.60	1	31.60	61.22	<0.001	0.62	1.00

The results show that the one-way ANCOVA for the metacognitive belief subscales is significant for all subscales except for the cognitive self-consciousness subscale. Table

below presents the results of one-way ANCOVA on the posttest score of the dependent variable (body image concern), while controlling for the pretest.

**Table 4**

*Results of One-Way ANCOVA for Comparison of Posttest Scores on Body Image Concern Between Experimental and Control Groups*

Source	SS	df	MS	F	p	Effect Size	Power
Pretest (Body Image Concern)	22139.13	1	22139.13	4255.94	<0.001	0.99	1.00
Group	492.57	1	492.57	94.69	<0.001	0.69	1.00
Error	213.27	41	5.20				
Total	64791.3	44					



The results show that there is a significant difference between the experimental and control groups in terms of the dependent variable body image concern.

#### 4. Discussion and Conclusion

The findings of the present study indicated that group schema therapy had a significant effect on reducing metacognitive beliefs and body image concern in women seeking rhinoplasty. The results of multivariate and univariate analysis of covariance revealed that the experimental group, after undergoing schema therapy sessions, showed significantly lower levels of metacognitive distortions in the subscales of “positive beliefs about worry” and “need to control thoughts” compared to the control group. However, no significant change was found in the “dangerous thoughts” subscale. Furthermore, participants in the experimental group exhibited significantly higher improvements in body image concern post-intervention. These findings suggest that schema therapy, by addressing early maladaptive schemas and reshaping core cognitive-affective patterns, can positively influence both cognitive beliefs about one’s thought processes and subjective body dissatisfaction.

One plausible explanation for the effectiveness of schema therapy in reducing metacognitive beliefs lies in its foundational approach to restructuring deep-seated cognitive frameworks originating from early life experiences. Schema therapy focuses on identifying and modifying early maladaptive schemas (EMS) that operate as self-defeating patterns, often embedded in thoughts related to control, threat, and self-evaluation (Ke & Barlas, 2020). These schemas may give rise to dysfunctional metacognitive beliefs, such as the belief that worrying is necessary to prevent negative outcomes or that certain thoughts must be suppressed or controlled. The findings of the present study are consistent with previous work by (Mohammadi & Beige, 2017), who demonstrated that individuals with psychiatric disorders such as social phobia exhibited significantly higher levels of metacognitive beliefs compared to controls, particularly in dimensions related to thought control and danger. Similarly, (Negi et al., 2022) emphasized the central role of metacognition in emotional maturity and regulation, further supporting the therapeutic benefit of schema modification in improving cognitive monitoring and emotional balance.

Regarding body image concern, the present study’s findings reinforce a growing consensus in the literature that

schema-based interventions are highly effective in reducing body dissatisfaction and appearance-related anxiety. Body image concern, which reflects persistent preoccupation with perceived physical flaws, is deeply influenced by emotional schemas, negative self-representations, and early maladaptive beliefs formed in the context of parental criticism, social rejection, or unrealistic cultural standards (Maes & Vandenbosch, 2022; Markey & Daniels, 2022). These maladaptive patterns often perpetuate shame, low self-worth, and avoidant coping strategies. Schema therapy, through cognitive restructuring, experiential techniques, and behavioral pattern-breaking, creates space for adaptive self-perceptions and emotional healing. The significant post-intervention reduction in body image concern observed in the experimental group aligns with the findings of (Aliasgari et al., 2024), who reported that schema therapy effectively decreased symptoms of body dysmorphic disorder and enhanced appearance satisfaction in young women.

Several studies conducted in Iran further support the current results, highlighting the cultural relevance and applicability of schema therapy in appearance-related psychopathology. For example, (Karimi Mohajeri et al., 2025) demonstrated that integrating schema therapy with acceptance and commitment therapy significantly improved body image concerns and subjective well-being in women with breast cancer, a group similarly affected by changes in appearance and self-identity. (Bahadori et al., 2022) also reported that schema therapy reduced body image dissatisfaction and improved self-esteem among individuals with obesity, suggesting that schema-focused interventions can be generalized across diverse populations with appearance-related concerns. Moreover, (Alokandeh, 2024) found that schema modes therapy enhanced psychological flexibility and emotion regulation, both of which are crucial mechanisms in managing body-related anxiety and reducing compulsive behaviors like cosmetic surgery seeking.

From a theoretical perspective, the reduction in metacognitive beliefs and body image concern may be attributed to schema therapy’s multidimensional structure. It does not merely replace irrational thoughts with rational alternatives, as in traditional cognitive-behavioral therapy, but instead targets the experiential and emotional components that give rise to those cognitions. This broader scope allows for deeper and more sustainable change, particularly in areas such as self-image and emotional reactivity, which are often resistant to surface-level cognitive interventions (Pakandish et al., 2020; Soleimani et al., 2024). As (Zolfaghari et al., 2021) argues, schema and

metacognitive systems are intertwined in the maintenance of psychological disorders and must be addressed jointly for effective treatment. Thus, schema therapy's ability to influence metacognitive beliefs, as observed in the current study, confirms its relevance in treating both cognitive and emotional aspects of body dissatisfaction.

In terms of media and cultural influences, recent studies have shown a direct relationship between exposure to social media platforms and heightened body image concerns, particularly among young women who internalize idealized standards of beauty. For instance, (Vandenbosch et al., 2022) and (Maes & Vandenbosch, 2022) highlight the longitudinal effects of platforms like Instagram and TikTok in shaping distorted self-image and fostering upward appearance comparisons. These findings help contextualize the results of the current study, as women seeking rhinoplasty may be particularly susceptible to media-induced body dissatisfaction. Schema therapy, by modifying internalized cultural schemas and helping clients challenge socially constructed standards of beauty, offers a viable pathway for restoring healthy self-concept in an increasingly image-driven world.

It is also noteworthy that the schema therapy intervention in the present study produced selective changes in specific metacognitive subscales. While significant improvements were observed in positive beliefs about worry and need for thought control, the "dangerous thoughts" dimension did not significantly change. This partial responsiveness may reflect the rigidity of certain cognitive beliefs or the need for longer or more intensive therapeutic exposure. As (Liu et al., 2022) demonstrated in substance-abusing populations, deeply entrenched metacognitive distortions can be particularly resistant to change and may require multi-phase interventions targeting both emotional regulation and cognitive monitoring mechanisms. Similarly, (Zaeske et al., 2022) suggested that individual personality traits moderate the effectiveness of metacognitive interventions, which may explain the variability in therapeutic outcomes within the current sample.

In sum, the results of this study confirm that group schema therapy is an effective intervention for reducing maladaptive metacognitive beliefs and body image concern in women pursuing cosmetic surgery. By targeting both the cognitive and emotional foundations of self-perception and internal dialogue, schema therapy empowers individuals to reconstruct healthier identities, enhance cognitive flexibility, and reduce vulnerability to cultural and interpersonal pressures regarding appearance. These findings contribute

meaningfully to the existing literature and support the continued application of schema-based frameworks in clinical settings focused on body-related psychopathology.

## 5. Limitations and Suggestions

Despite its valuable findings, the present study is not without limitations. First, the sample size was relatively small and limited to women in a specific district of Tehran, which may restrict the generalizability of the results to broader populations or diverse cultural backgrounds. Second, the study relied solely on self-report questionnaires, which may be influenced by social desirability bias or subjective misreporting. Third, the follow-up period was not included; thus, the long-term sustainability of therapeutic gains remains unknown. Finally, the intervention focused exclusively on schema therapy, and the absence of a comparison with other therapeutic modalities may limit conclusions about relative efficacy.

Future research should consider employing larger and more diverse samples, including different genders, age groups, and cultural contexts, to enhance the generalizability of findings. Longitudinal studies with extended follow-up periods would be beneficial to evaluate the durability of treatment effects over time. Additionally, integrating qualitative methodologies such as semi-structured interviews or thematic analysis could provide richer insights into participants' subjective experiences with schema therapy. Finally, comparative studies involving other therapeutic approaches—such as metacognitive therapy, mindfulness-based cognitive therapy, or emotion-focused therapy—could further elucidate the mechanisms and relative effectiveness of schema-focused interventions.

Practitioners working with individuals experiencing body image concern or preparing for cosmetic surgery should consider incorporating schema therapy as a primary intervention. Group-based schema therapy offers a cost-effective, emotionally supportive, and psychologically comprehensive approach for addressing deep-rooted beliefs and emotional needs. Therapists should receive specialized training in identifying schema modes and employing experiential techniques to foster emotional healing. Furthermore, collaboration between cosmetic surgeons and mental health professionals is recommended to ensure holistic care and to prevent unnecessary surgeries driven by psychological distress. Incorporating schema therapy in pre-surgical consultations may enhance psychological readiness,

promote self-acceptance, and reduce the recurrence of body dissatisfaction postoperatively.

### Authors' Contributions

Authors contributed equally to this article.

### Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

### Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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### Declaration of Interest

The authors report no conflict of interest.

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### Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. The present study was approved by the Medical Sciences Ethics Committee on July 18, 2019, under the reference number IR.IAU.TMU.REC.1399.300.

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