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Comparison of Chinese Acupressure with Traditional Iranian Medicine Along with Aerobic Exercise on Weight Loss and Serum Lipid Factors in Obese and Overweight Women

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Abstract

Background: Overweightness and obesity were major health problems in the last century. Chinese acupressure, traditional Iranian medicine, and aerobic exercise are low-risk and low-cost methods for its prevention and treatment.

Objectives: The purpose of this study was a comparison of six weeks of Chinese acupressure with traditional Iranian medicine along with aerobic exercise on body weight and serum lipid factors in obese and overweight women.

Methods: In this applied study, 24 obese and overweight women with a BMI above 25 were randomly divided into two groups of 12: Chinese acupressure and Iranian traditional medicine with aerobic exercise. In the Chinese acupressure group, the ear acupressure method was used using herbal seed and in the traditional Iranian medicine group, the lunch elimination method was used. The aerobic exercise program of the two groups was performed for six weeks, three sessions per week, and each session lasted 60 minutes with moderate intensity. Body weight, waist-to-hip ratio, lipid factors, blood sugar, blood pressure, and nutritional status of the subjects were measured before and after the study and were analyzed using independent and dependent *t*-tests.

Results: The results of the present study showed that in the Chinese acupressure group, along with aerobic exercise, lipid factors improved, and body weight decreased. In the traditional Iranian medicine group, along with aerobic exercise, lipid factors improved, while blood pressure and blood sugar decreased significantly. In the intergroup results, there was a significant difference only in the blood sugar variable.

Conclusions: Both Iranian and Chinese medicine, along with aerobic exercise, had a relatively similar effect on the variables.

Keywords: Chinese Acupressure, Traditional Iranian Medicine, Aerobic Exercise, Body Weight, Waist to Hip Ratio, Blood Pressure, Lipid Factors, Blood Sugar, Obesity and Overweight

1. Background

Obesity and overweight are one of the major problems caused by an unhealthy lifestyle that is considered a health challenge in the health systems of countries today (1). In obese people, with an increase in body fat mass, the risk of cardiovascular disease, type 2 diabetes, stroke, hyperlipidemia, liver problems, cancer, etc., increases (2). Diets, complementary medicine, and exercise are some of the most common and safe treatments for weight loss.

Acupressure is a method derived from acupuncture and a branch of traditional Chinese medicine (TCM) that is used to treat diseases such as obesity. Using the hand, physical pressure is applied to the acupuncture points, and it can activate the energy channels and thus treat the body's disorders (3). The principle of acupuncture is that each part of the body has a corresponding point of reflection in the ear that can be used to diagnose and treat diseases. In fact, if something is not balanced in the body, its reflection is determined in a certain part of the ear. Therefore, if the points that we choose in the ear (points related to energy channels) for treatment are determined correctly, it will affect the body. Also, in 1950, a French physician stated that the shape of the ear was like an inverted fetus, which was, in fact, a confirmation of the theory of acupuncture (4). Studies have shown that acupuncture (acupressure in the outer ear) treatment works well (5). Rerksuppaphol observed the positive effect of ear acupressure on obese women and examined the effect of combining it with electrical acupuncture, which was more effective (6). Cho et al. examined acupuncture on obesity and showed that acupressure is an effective treatment for obesity (7).

In a systematic review and meta-analysis, Huang et al.

suggested that ear acupuncture may be an alternative way to help people with weight control problems, especially at the level of early prevention (4). Cayir et al., in a randomized controlled trial, examined the effect of ear acupuncture and body acupuncture on obese female patients in Turkey. In both groups, changes in weight, body mass index, body fat percentage, waist circumference, and hip circumference were statistically significant. However, ear acupuncture was more effective in reducing body weight than body acupuncture (reduction of 4.2 vs. 2.6 kg) (8). Because ear acupressure is easy, safe, and inexpensive to perform by doctors, nurses, and even the patient himself, its use in combination with other methods to treat obesity is recommended (9, 10).

Traditional Iranian medicine is one of the ancient medicines. From their point of view, there are two main causes of obesity: Increased humidity and phlegm (11). This medicine has three ways to lose weight: (1) improving the obese person's mood through nutrition (reducing moisture and phlegm through food), (2) using herbs, (3) eliminating lunch. Eliminating lunch is one of the recommendations of traditional Iranian medicine. Observing this point causes slimming and reduction of belly fat and is useful for health and is always recommended. Digestion for cold-tempered people (obese people) is done later than for hot-tempered people (lean people), so eating a full breakfast first in the morning and a full dinner first in the evening is the best diet formula. Also, in the early days, if you do not tolerate hunger, obese people can eat nuts (such as hazelnuts, almonds, etc.) (12).

Physical activity is one of the uncomplicated and low-cost methods that is used in weight loss and due to its role in maintaining muscle mass and also has numerous health benefits as an intervention method in the treatment of obese people. In the present study, two effective methods of weight loss, namely traditional Iranian medicine and air acupressure, along with aerobic exercise to reduce weight and fat, were studied. However, the effect of Chinese acupressure along with physical activity on weight loss has been investigated. But no study has been done on traditional Iranian medicine and physical activity on weight loss. Also, no study has compared these two methods.

2. Objectives

The purpose of this study is to investigate which method is more effective in reducing blood lipids and weight loss in obese and overweight women.

3. Methods

3.1. Participants and Study Design

The method of the present research is applied. The design of the present study is a two-group design with a pretest and posttest in both groups. Twenty-four obese and overweight women referred to the Orkideh hall of Abhar city were selected. Participants were randomly divided into two groups of 12: The Chinese acupressure group with aerobic training and the Iranian traditional medicine group with aerobic training. Inclusion criteria included: Women with BMI above 25, no history of disease and disability limiting aerobic exercise, signing the consent form, completing the 24-hour food recall questionnaire form in 3 days, age between 25 and 55 years, no use of Chinese acupressure and traditional Iranian medicine during the last three months, no use of weight loss drugs or other methods to lose weight, no use of lipid-lowering drugs, no pregnancy and lactation, no thyroid disease, lack of regular physical activity during the three months before the study. This study was approved by the ethics committee of the Physical Education Research Institute.

3.2. Procedures

After selecting the eligible subjects, they were asked to complete the 24-hour food recall questionnaire or the three-day food registration questionnaire (2 normal days and one day off) to determine the average daily energy intake of the subjects. Also, body weight, waist-to-hip ratio, blood pressure, lipid factors, and blood sugar were measured by digital scales, tape measure, and blood sampling. These variables were re-evaluated after six weeks of intervention. To evaluate the subjects' lipid and blood sugar factors, 5 cc of their arm vein was taken by the experts of Abhar Danesh Laboratory. Sampling stages began in July 2020. It is noteworthy that due to COVID-19, the researcher could not use more subjects because many people refused to attend sports clubs and laboratories to take blood samples due to fear of COVID-19.

3.3. Intervention

Aerobic exercise program: Subjects in both groups underwent similar aerobic exercise. Aerobic exercise was performed three times a week for six weeks under the supervision of a researcher at the gym. In the first week, the 45-minute workout included a 15-minute warm-up period (walking, jogging, stretching, flexibility), 20 minutes of aerobic exercise, and 10 minutes of cooling. The third week reached 60 minutes, and from the fourth week to the sixth week, the exercise was performed for 75 minutes. The intensity of the exercise also gradually increased

during the exercise program. According to the subjects' BMI, the intensity of training was moderate during the training sessions (between 50 and 85% of the maximum heart rate), and was controlled by the subjects' heart rate. The main stage of the training included running, aerobic movements, and various games with balls and sticks, which were done aerobically. To prevent coronavirus and social distance, the subjects were divided into 4 groups of 6 people.

How to do traditional Iranian medicine and Chinese acupressure: According to the studies on traditional Iranian medicine, the lunch elimination method was chosen. The subjects received a full breakfast and ate their dinner close to sunset; in other words, they had to suffice to eat two meals, and in the early days of the study, if they did not tolerate it, they could eat nuts at lunch, used as a snack (12). The method of performing Chinese acupressure was that first, 6 points related to acupuncture were identified on the outer ear of the subjects (points P6, P5, P4, P3, P2, P1), and herbal seed was pasted on them by the nurse. They should be massaged by themselves three times a day, each point for 10 seconds. This should be done 30 minutes before each meal and should be reattached if the herbal seeds are removed from the ear (4). Figure 1 shows the herbal seed and how it is placed on the ear.

3.4. Statistical Analysis

After ensuring the normal distribution of data by Shapiro-Wilk test and determining the descriptive characteristics of the subjects by descriptive statistics for comparison between the pretest and posttest of each group of paired samples *t*-test. For comparison between groups, an independent *t*-test in SPSS25 software with a significance level 0.5 were used.

4. Results

The results of the Shapiro-Wilk test showed that the data distribution was normal. Table 1 presents the descriptive characteristics of the subjects, and Tables 2 and 3 present the research variables in the two groups of Chinese acupressure and traditional Iranian medicine along with aerobic exercise. In evaluating the variables of the two groups in the pretest stage using independent *t*-test, it was observed that the research variables in the pretest stage were similar between the two groups, and there was no statistically significant difference between them.

Paired samples *t*-test was used to examine the differences within the group from the pretest to the posttest.

The results showed that in the Chinese acupressure group with aerobic exercise, body weight, TG, LDL significantly decreased, and HDL increased significantly, but blood pressure, blood sugar, and waist-to-hip ratio did not change. Also, in the traditional Iranian medicine group with aerobic exercise, variables TG, LDL, blood pressure, and blood sugar decreased significantly, and HDL increased significantly. However, WHR and body weight did not change (Table 2). At the end of the study, an independent *t*-test was used to compare the variables of the two groups to determine which method is more effective in the treatment of obesity, except for blood sugar, which decreased more in traditional Iranian medicine than Chinese acupressure. The other variables were similar between the two groups, and there was no significant difference between them (Table 3).

Table 1. Characteristics of the Subjects in Two Groups of Chinese Acupressure and Traditional Iranian Medicine Along with Aerobic Exercise

Variables	TCM ± AE	TIM + AE
Age	40.12 ± 6.41	39.34 ± 5.98
Height (cm)	160.21 ± 5.27	161.67 ± 5.61
BMI	34.71 ± 4.28	32.46 ± 5.77
Weight (kg)	89.82 ± 8.57	87.47 ± 9.34

Abbreviations: TCM, traditional Chinese medicine; TIM, traditional Iranian medicine; AE, aerobic exercise.

5. Discussion

The aim of this study was to compare six weeks of Chinese acupressure with traditional Iranian medicine along with aerobic exercise on weight loss, waist-to-hip ratio, serum lipid factors, blood sugar, and blood pressure in obese and overweight women.

The results of the present study showed that six weeks of Chinese acupressure combined with aerobic exercise caused a significant reduction in the body weight of overweight and obese people. Consistent with the results of studies by He et al., Cayir et al., and Yang et al. (8, 13, 14). In these studies, acupuncture reduced the weight of obese people. The effect of acupuncture on weight loss was also confirmed in a number of review studies (4, 15, 16). Ear acupuncture has been used in most studies. Ear acupuncture itself has two forms: Ear acupuncture and ear acupressure (17). In the present study, ear acupressure was used. Researchers have attributed the effects of acupuncture on obesity to the fact that acupuncture in specific areas increases the production of endorphins and neurotransmitters such as serotonin, dopamine, and GABA; and because these mediators play a role in the process of relaxation and reduction of appetite, anxiety, and depression, their secretion helps in the treatment of obesity. Researchers believe that one of the reasons for the effectiveness of acupunc-

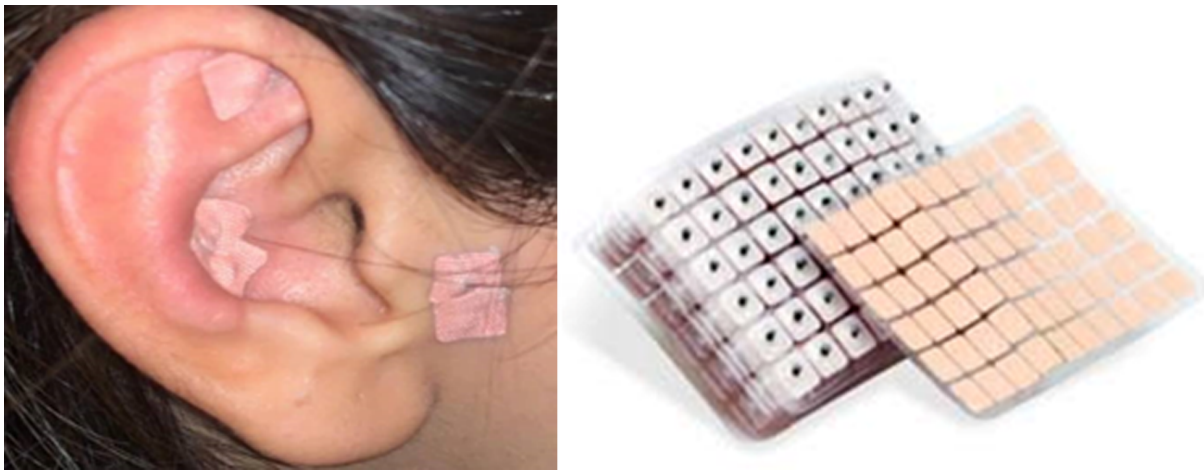

Figure 1. Adhesive herbal seed

Table 2. Paired Samples *t*-test to Evaluate the Pretest and Posttest of the Studied Study Variables

Groups	Pre-exam	Post-test	The Value of *t*	P-Value
Weight (kg)				
TCM ± AE	89.82 ± 8.57	88.07 ± 8.34	2.142	0.04
TIM + AE	88.47 ± 9.34	86.30 ± 9.11	1.957	0.05
WHR [c] (cm)				
TCM ± AE	0.95 ± 0.06	0.92 ± 0.05	2.004	0.13
TIM + AE	0.96 ± 0.05	0.94 ±0.04	1.998	0.17
TG (mg/dL)				
TCM ± AE	124.53 ± 12.47	112.20 ± 13.08	3.418	0.01
TIM + AE	126.91 ± 14.61	116.64 ± 12.74	2.227	0.04
HDL (mg/dL)				
TCM ± AE	44.30 ± 5.37	48.34 ± 5.43	2.566	0.02
TIM + AE	47.62 ± 6.49	50.26 ± 5.85	2.110	0.04
LDL (mg/dL)				
TCM ± AE	131.42 ± 21.35	124.14 ± 22.48	2.689	0.04
TIM + AE	134.62 ± 24.61	122.62 ± 23.52	3.589	0.02
Systolic pressure (mmHg)				
TCM ± AE	141.37 ± 12.70	137.25 ± 13.34	1.234	0.14
TIM + AE	143.49 ± 13.41	132.26 ± 15.49	3.517	0.02
Diastolic pressure (mmHg)				
TCM ± AE	94.54 ± 10.34	90.36 ± 10.68	1.685	0.08
TIM + AE	90.66 ± 11.48	82.24 ± 12.56	2.938	0.03
Blood sugar (mg/dL)				
TCM ± AE	98.64 ± 14.21	91.78 ± 15.69	1.322	0.10
TIM + AE	105.82 ± 15.60	92.37 ± 16.08	3,495	0.03

Abbreviations: TCM, traditional Chinese medicine; TIM, traditional Iranian medicine; AE, aerobic exercise; WHR, waist-to-hip ratio.

Table 3. Posttest Differentiation Results from the Pretest of the Studied Variables Using Independent *t*-test

Variables	Independent	Dependent	Mean Difference	The Significance Level
Weight	TCM	TIM	0.58	0.09
WHR	TCM	TIM	0.01	0.24
TG	TCM	TIM	2.06	0.22
HDL	TCM	TIM	1.40	0.09
LDL	TCM	TIM	4.72	0.15
Systolic pressure	TCM	TIM	-7.11	0.06
Diastolic pressure	TCM	TIM	-4.24	0.08
Blood sugar	TCM	TIM	6.59	0.01

ture on obesity is to reduce anxiety and depression because anxiety and depression cause obesity (15, 18). In the study of Chon and Lee, the secretion of endorphins and serotonin, which reduce pain and loss of appetite, respectively, has been confirmed as a result of acupuncture and acupressure (15). The points that are used inside the ear to treat obesity are the points of hunger (for satiety and fullness) and Shenmen (for relaxation and painlessness), which stimulate these points to feel calm and reduce appetite. Stimulation of acupuncture points also sends signals to the appetite center in the hypothalamus, leading to decreased appetite and satiety (19). On the other hand, in the study of Hsu et al., and Zhang et al., acupuncture increased ghrelin levels and decreased leptin. Ghrelin and leptin are important peptides in obesity whose changes affect body weight (16, 20). The weight loss in the present study could be the effect of both acupressure and aerobic exercise variables. The effect of aerobic exercise on the process of breaking down fat and helping to control weight and maintain muscle mass is clear. Also, the average caloric intake of the subjects in the acupressure group before participating in the study was 3500 calories, which was reduced to 2900 calories at the end of the study. In fact, the subjects received about 600 fewer calories. Since the subjects had no dietary restrictions, it can be concluded that Chinese acupressure has reduced appetite. Weight loss was lower in the present study than in similar studies. Given that the duration of the study and the number of interventions used to affect the amount of weight loss, this difference in weight loss between the present study with other studies is justified. In most studies, a combination of acupuncture and diet or a combination of acupuncture in addition to exercise and diet has been used. Ruan et al., in a systematic study and meta-analysis, stated that acupuncture has less effect on weight management. However, acupuncture plus diet or acupuncture plus diet and exercise have a greater effect (17). Also in the study of Yang et al., the effect of acupuncture plus aerobic exercise plus diet was greater than diet plus aerobic exercise (14). In the present study, six weeks of traditional Iranian medicine with aerobic exercise reduced body weight by about one kilogram and ten grams, but this reduction was not significant. Since eliminating lunch reduces calorie intake, this type of diet is similar to fasting diets and low-calorie diets. Significant weight loss occurs in fasting and low-calorie diets. In the present study, weight loss was low. According to the 24-hour food recall questionnaire, subjects had reduced only 300 calories of energy compared to their initial energy intake, so they did not lose many calories. In fact, although lunch was omitted, according to the instructions of traditional Iranian medicine, in case of hunger, people could consume nuts. When they got used to hunger, they could eliminate nuts. The study period in the present study was short. If it were more, the weight loss would have been significant.

In the acupressure group with aerobic exercise, no significant decrease in WHR was observed, which is inconsistent with the results of He et al., Cayir et al., and Yang et al. (8, 13, 14). In the mentioned studies, the weight loss was high and at least 3 kg. Since the reduction in waist size decreases in proportion to weight loss, the decrease in WHR has been the result of excessive weight loss. In these studies, acupuncture was used in conjunction with diet. While in the present study, no diet was given, and the physical activity of the subjects was moderate three days a week, so the average weight loss in the subjects was less than two kilograms, and due to the fact that this weight loss was not high, it could not affect WHR. In the traditional medicine group (lunch elimination) along with aerobic exercise, the waist-to-hip ratio did not change due to slight weight loss, which could be due to the short length of the study.

In the present study, six weeks of Chinese acupressure combined with aerobic exercise significantly reduced triglycerides, LDL and significantly increased HDL. In the study of Mazaherinezhad et al., six weeks of acupuncture twice a week and 20 minutes per session caused a signifi-

cant decrease in cholesterol, LDL, and triglyceride, and on the other hand, HDL increased significantly (18). In a review study by Mendonca et al., acupuncture was reported to significantly reduce dyslipidemia (21). In the study of Cayir et al., the percentage of body fat decreased with acupuncture (8), which is consistent with the results of the present study. Improvement of lipid factors in the present study can be the result of weight loss and physical activity. With the right weight loss diets, most body fat is reduced rather than muscle mass (22).

In the present study, acupuncture combined with aerobic exercise are two suitable methods for treating obesity. Weight loss as a result of these methods is mostly due to body fat which justifies the reduction of triglycerides and LDL. It is worth mentioning that the subjects' lipid factors were in the normal range, and performing this intervention method caused triglycerides and LDL to decrease further and HDL to increase more, which was a positive result of the present study on the health process. Also, in the traditional Iranian medicine group, along with aerobic exercise, triglyceride and LDL decreased, and HDL increased significantly. In fact, after eliminating lunch, the consumption of high-fat foods was reduced (results of the food recall questionnaire). Hence the reason for the improvement of lipid factors can be justified.

On the other hand, weight loss and physical activity are also effective in improving lipid factors (23, 24). Researchers suggest that the main mechanism for reducing plasma concentrations of triglycerides, total cholesterol, and low-density lipoprotein after exercise is to increase the amount of lipoprotein lipase and decrease the amount of hepatic triglyceride lipase (24). Therefore, the improvement of lipid factors can be the result of consuming less high-fat foods, weight loss and aerobic exercise.

In the Chinese acupressure group with aerobic exercise, both blood pressures decreased but were not significant. Regarding the effect of acupuncture on blood pressure, Chon and Lee stated that acupuncture improves and reduces blood pressure by reducing stress (15). Stress and obesity are high blood pressure factors. Aerobic exercise, weight loss, and diet affect the improvement of blood pressure (23, 25). Because the study time was short, acupressure medicine, along with aerobic exercises, could not exert their effect well.

On the other hand, the subjects' blood pressure was slightly higher than normal before the study (141/94). In the traditional Iranian medicine group, along with aerobic exercise, systolic and diastolic blood pressure decreased significantly but was still higher than normal. In this group, lunch was eliminated, and consumption of high-fat foods was reduced. Also, more vegetables and fruits were used for dinner. Plant foods contain compounds such as nitric oxide and flavonoids that help improve blood pressure in the circulatory system by affecting circulatory function (dilation of blood vessels). Also, high levels of potassium in some fruits, such as apples and bananas, can help lower blood pressure (26). Finally, the reason for lowering blood pressure can be improved nutrition, weight loss, and aerobic exercise.

In the present study, six weeks of Chinese acupressure combined with aerobic exercise did not significantly reduce fasting blood sugar. In the study of Mazaherinezhad et al., six weeks of body acupuncture caused a significant reduction in fasting blood sugar (18). In the study of Yeh et al., glucose metabolism was improved and insulin resistance, which increases blood sugar, was significantly reduced (27). Zhang et al. in their meta-analytic study, stated that acupuncture has improved insulin sensitivity, the results of which are inconsistent with the present study (16). In the present study, blood glucose was 98.64 before the study and 91.78 mg/dL after the study. Subjects in this group had normal blood sugar before the study. In fact, they did not have abnormal blood sugar to check whether the intervention method was effective or not. Also, six weeks of traditional Iranian medicine with aerobic exercise caused a significant reduction in blood sugar in the subjects. Before the study, the subjects' blood glucose was 105.82, and after the study, it was 92.37 mg/dL. The cause of hypoglycemia can be the result of increased insulin sensitivity due to aerobic exercise (28). Patients' nutritional status also improved by eliminating lunch and reducing calories and body weight, which can also be effective.

Comparison of the two groups showed that, except for blood sugar, there was no significant difference between the other variables because the changes in the variables were similar between the two groups.

5.1. Limitations

The limitations of this study are the small sample size, short study time, and non-use of more groups due to the presence of COVID-19. Also, due to cost savings, stronger blood factors associated with obesity were not measured.

5.2. Conclusions

The results of the present study showed that Chinese acupressure and traditional Iranian medicine along with aerobic exercise were effective in improving lipid factors. Chinese acupressure was more effective in weight loss and traditional Iranian medicine was more effective in reducing blood sugar and blood pressure. There was no significant difference in the other variables compared to the two groups except blood sugar. Therefore, obese and overweight people can use Chinese acupressure, traditional Ira-

nian medicine, and aerobic exercise to prevent and treat obesity-related problems.

Footnotes

Authors' Contribution: Study concept and design: Z. E., and Gh. M; Acquisition of data: Gh .M; Analysis and interpretation of data: Gh .M; Drafting of the manuscript: Z. E., and Gh. M; Critical revision of the manuscript for important intellectual content: Z. E; Statistical analysis: Gh. M; Administrative, technical, and material support: Gh. M; Study supervision: Z. E..

Clinical Trial Registration Code: The study was performed under the supervision of a physician and nurse in the Chinese medicine department, so the clinical trial code was not taken.

Conflict of Interests: There was no conflict of interest in this study. The article is taken from a master's thesis. The first author is a researcher and the second author is a supervisor.

Data Reproducibility: The data presented in this study are openly available in one of the repositories or will be available on request from the corresponding author by this journal representative at any time during submission or after publication. Otherwise, all consequences of possible withdrawal or future retraction will be with the corresponding author.

Ethical Approval: The research project has been reviewed in the Research Ethics Committee of Sport Sciences Research Institute and was approved according to compliance with Ethical Standards in Research of the Ministry of Science, Research and Technology, with the code IR.SSRI.REC.1400.912.

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Informed Consent: Consent was signed by the participants.

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