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Body Composition Rate Results after Acupuncture and Diet Applications in Women with Obesity Patients

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Abstract

Obesity is a disease defined by excessive fat storage in the body. It is an energy balance problem; the increase in body fat is caused by an imbalance between energy intake and energy expenditure.

Method/participants: The present study was a cross-sectional study conducted in 2019 in xxx University's GETAT Center). Patients aged between 18–65 years with a BMI > 25 were included in the study.

Exclusion Criteria: Pregnant women, breastfeeding patients , susceptible demographics (acute coronary insufficiency, immunodeficiency, severe psychotic disorder, liver and kidney failure), and those who could not give consent were not included in the study. Weight, BMI, and metabolic age values were measured with a Tanita device; the same diagnostic device was used for all patients. Both body and ear acupuncture were performed.

Results: A t-test was applied to pre- and post-acupuncture measurement values. After acupuncture, the waist circumference of the participants decreased significantly ($p < 0.005$). The BMI of the participants also decreased significantly after acupuncture ($p < 0.005$).

Key words: Obesity, Acupuncture, Diet.

Introduction

Obesity is a disease defined by excessive fat storage in the body. It is an energy balance problem; the increase in body fat is caused by an imbalance between energy intake and energy expenditure (1). A high intake of pleasurable and high-calorie foods as well as decrease in physical activity are thought to play a role in the high obesity rate in industrialized countries (4, 5). The body fat percentage of men of ideal weight should be 12–18%, and it should be 20–30% in women of ideal weight. In contrast, obesity is characterized by 22–25% body fat in men and 32–35% in women (2). In the USA, 25% of women are obese, while 20% of men are obese. In Europe, the rate of obesity is 22% in women and 15% in men. In a study conducted in the USA, the prevalence of obesity was found to increase from 22.9% in 1984–1994 to 30% in 1999–2000 (2). In Turkey, a study conducted by the State Planning Organization in 2000 stated that 52% of adult women were overweight or obese (33% overweight, 19% fat), while 10% of men were overweight or obese. Obesity also predisposes people to many diseases, and the treatment of obesity and related diseases in the United States plays an important role in overall health care costs (3).

Method

The present study was a cross-sectional study conducted in 2019 in xxx University's GETAT Center on women patients with obesity.

Exclusion criteria

Pregnant women, breastfeeding patients , susceptible demographics (acute coronary insufficiency, immunodeficiency, severe psychotic disorder, liver and kidney failure), and those who could not give consent were not included in the study.

First, weight, BMI, and metabolic age values were measured with a Tanita device; the same diagnostic device was used for all patients. The Tanita Body Fat Monitor works with the bioelectrical impedance analysis technique, which analyzes the composition of the body. In this method, a weak and safe electrical current flows through the interstitial fluid between the muscle fibers. When the flow meets the oil layer, it encounters resistance, and the resistive layers are evaluated by the device and measured by weight and height (6). The results of the measurement

include weight, BMI, body fat percentage and weight, body fluid percentage and weight, and these percentage distribution as arms, legs, and body.

Diet

Participants were given a personal diet of approximately 1400 kcal in accordance with their basal metabolic rate. Probiotic contribution (yogurt/kefir) was considered in the diet content;because yogurt and kefir are important probiotics for the intestines.

Acupuncture point determination and application

The acupuncture points were determined in the body according to traditional Chinese medicine, personal cun measurements, and meridian pulse. Cun is the width of the thickest region of the patient's thumb phalanx. Ear acupuncture was based on the Nogier system, in which a pathological signal is given to points with negative tissue resistance through electronic devices (Agiscop DT point detector, Sedatelec, Lyon, France)Both body and ear acupuncture were performed. In patients with all acupuncture, the yuan points of abnormal meridians were used for pulse diagnosis. ST 24, 25, and 36 (ZuSanLi); GV 20, 21, 5, 5, and LR 3 (Taichong); SP 6 and 9, GB 34, UB 62, HT 7, LU 9, and PC 6 (Nei Guan); and SI 3 and EXT-HN 3 (Yin-Tang) points were dewed. Then, 20 minutes of manual and electroacupuncture were applied. For ear acupuncture, hunger, kidney, larynx, stomach, jerome, and shen-men points were taken. Although the total number of acupuncture sessions varied, initially it was performed 1 in 15 days in advance sessions 2 times a week and then 1 week. The acupuncture needles used were sterile, disposable needles. Session needles of size 0.25 x 25 mm and 0.13 x 20 mm (Hua Long, China) and permanent needles were used in the ear. The acupuncture needle was taken in dew sensation of 0.5–1 cun.

For electroacupuncture, the Sedatelec Agistim Duo Electro Acupuncture Nerve and Muscle Stimulator device was used. The device operates on Nogier frequencies (A, B, C, D, E, F, G) and works at 70–80 Hz for sedation and 2–5 Hz for tonification. The pulse current can be adjusted between 12 mA. For this study, electrical stimulation was given in square wave form at a 0–5-mV current strength with positive and negative alternatives at a frequency of 2 Hz for 0.4 ms.

Results

In this study, included 147 female patients. Of these participants, 36 continued to have regular Tanita Body Fat Monitor measurements. The mean age of the participants was 47.4 ± 13.0 (minimum, 27; maximum, 76). The mean systolic blood pressure value was 117.8 ± 10.2 mmHg (minimum, 100; maximum, 140), and the mean diastolic blood pressure value was 74.4 ± 6.1 mmHg (minimum, 60; maximum, 90). The mean initial weight value of the participants was 90.2 ± 12.8 kg (minimum, 64.8; maximum, 122.7). The initial mean value of waist circumference measurements was 101.3 ± 12.6 cm (minimum, 70; maximum, 140). The mean hip circumference value was 111.7 ± 9.1 cm (minimum, 98; maximum, 135). The mean basal metabolic rate (BMR); was 1664.2 ± 296.9 kcal (minimum, 1181; maximum, 2518). Total body water % value of the fluid measured at baseline was 43.6 ± 6.1 (minimum, 25.9; maximum, 54) and At baseline, the mean metabolic age was 58.2 ± 12.5 (minimum, 37; maximum, 88). The mean BMI of the participants was 164.5 ± 9.0 (minimum, 140; maximum, 185), and the mean baseline BMI value was 33.2 ± 4.9 (minimum, 24.4; maximum, 45.2). After acupuncture, the mean BMI value was 32.1 ± 4.6 (minimum, 24.1; maximum, 44). The mean kilogram value was 86.9 ± 12.9 kg (minimum, 64.1; maximum, 121). The mean waist circumference value was 118.6 ± 13.6 cm (minimum, 70.0; maximum, 91.4), and the mean hip circumference value was 107.8 ± 7.0 cm (minimum, 96 maximum 125). The body fluid ratio after acupuncture was 43.3 ± 5.4 (minimum, 35.4; maximum, 54.6; Table 1).

Table 1. demographic data of participants in acupuncture

Variable	**X ± SS (Min.-Max.)**
Age(year)	47.4±13.0(27-76)
Sbp(mmHg)	117.8±10.2(100-140)
Dbp(mmHg)	74.4±6.1(60-90)
Kg1	90.2±12.8(64.8-122.7)
Waist1(cm)	101.3±12.6(70-140)
Hip 1(cm)	111.7±9.1(98-135)
Total body water (%)1	43.6±6.1(25.9-54)
Bmr(cal)	1664.2±269.9(1181-2518)
Metabolic age (year)	58.2±12.5(37-88)
Length(cm)	164.5±9.0(140-185)
BMI 2 (kg/m2)	33.3±4.9(24.4-45.2)
BMI 1 (kg/m2)	32.1±4.6(24.1-44)
Kg2	86.9±12.9(64.1-121)
Waist 2(cm)	118.6±13.6(70-91.4)
Hip 2(cm)	107.8±7.0(96-125)
Total body water (%)2	43.3±5.4(35.4 - 54.6)
Fat ratio (%)	44.8±42.0(20.8-28.4)

Discussion

Every day 30 min 100 Hz warning given to St 36 the point of acupuncture. In the acupuncture group, food intake and body weight decreased, and serum leptin levels increased. Meanwhile, stress hormones epinephrine, norepinephrine, and corticosterone did not increase statistically significantly (7).The appetizing effect of acupuncture application, specifically the effects of ghrelin and NPY hormones, was also investigated in an experimental study. Rats were allowed to eat for one hour a day. In an 18-day experiment, one group received electroacupuncture; ST 36 and SP 6 points were selected, and 2-Hz electroacupuncture was applied for 30 minutes each day. The other immobilized group was the control group. Ghrelin and neuropeptide levels, food intake, and body weight were found to be statistically significantly reduced in the acupuncture group (8). The effects of electroacupuncture on the release of CART peptides that reduce appetite were determined in an experimental study in rats (9). One study showed that ear acupuncture was effective in reducing BMI and decreasing depression scores in obese women (10). A randomized controlled trial showed that abdominal acupuncture significantly reduced BMI, adiponectin, leptin, total cholesterol, and triglyceride levels (11). In another study, the effectiveness of ear acupuncture points was investigated; the ear acupuncture points stomach and hungry were shown to be effective in weight loss compared to placebo points (12). Furthermore, a study examining the effect of electroacupuncture on endogenous opioids, endomorphine, enkephalin, and beta endorphin (BE) found that high frequency (100 Hz) caused an increase in dinorfin concentration (13).

Conclusion and Recommendations

Acupuncture was shown to be effective not only in the obese groups but also in the control groups. Therefore, it could be beneficial in preventing weight gain. Both ear and body acupuncture points were used effectively in obesity patients. Therefore, acupuncture may be recommended as an effective adjunct in the treatment of obesity. Acupuncture can reduce the stress of patients on diets and increase patient compliance. Furthermore, it may provide long-term lifestyle changes. Thus, it can be used as a complementary method without side effects in obesity, which is currently a major public health problem.

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