

# Effect of Acupuncture Therapy in Combination with Nutrition Control on Body-weight Reduction in Postpartum Obesity Subjects

Zhang Huimin, Bai Kejiang, and Jiang Chao

Department of Traditional Chinese Medicine and Nutrition, Beijing, China

Email: {Hannah.zhang, Bai.kejiang}@ufh.com.cn, dctor\_jc@163.com

**Abstract—Objective** To observe the clinical effect of acupuncture therapy in the treatment of postpartum obesity subjects. **Methods** A total of 71 postpartum obesity subjects were allocated to treatment group (n=35) and control group (n=36). Participants of the control group were asked to receive weekly nutrition consultation (body-weight management) for calorie intake control during 4 weeks' treatment, and those of the acupuncture group were treated by manual acupuncture stimulation of Zhongwan (CV12), Zhongji (CV3), Qihai (CV6), shuifen (CV9) AND guanyuan (CV4), BILATERAL tianshu (ST25), Guilai (ST 29), Shousanli (LI 10), Zusanli (ST36), Fenglong (ST40), and Yinlingquan (SP9) in combination with nutrition consultation. The treatment was conducted once every other day, continuously for 4 weeks. The body weight (BW), body mass index (BMI), percent of body fat (PBF) and waist-to-hip ratio (WHR) were determined before and after the treatment. Results After the treatment, the BW, BMI, PBF, and WHR in the acupuncture group, and the BW and WHR in the control group were significantly decreased ( $P<0.01$ ,  $P<0.05$ ), and the therapeutic effect of the acupuncture group was notably superior to that of the control group in reducing BW and WHR ( $P<0.05$ ,  $P<0.01$ ). **Conclusion** Acupuncture therapy combined with nutritional calorie control has positive role in relieving obesity in postpartum obesity participants.

**Index Terms**—acupuncture; postpartum obesity; body-weight management; percentage of body fat; waist-to-hip ratio

## I. INTRODUCTION

Obesity is a worldwide health problem, and postpartum obesity is making trouble for more and more women. The study showed that the average mass of maternal weight retention was 5.4kg in the postpartum 6 months or more. [1], the body weight increased far greater than that of the same period compared with the female infertile women [2]. China's research data also show that 87.29% postpartum female can be diagnosed with obesity after fertility [3]. Modern medicine shows that the causes of postpartum obesity might are the followings, fluid retention caused by aldosterone secretion; too fast metabolism of steroid hormones and growth hormone and tissue development, as well as

excessive fat accumulation due to intaking faster and more than before pregnant [4]. The mechanism of acupuncture weight loss is mainly that acupuncture can regulate the two systems of hypothalamus-pituitary-adrenal medulla and sympathetic-adrenal cortex to accelerate fat decomposition and reduce fat synthesis [5-6]. Therefore, we try to explore the clinical effect of acupuncture therapy in the treatment of postpartum obesity subjects, such as BW, BMI, PBF and WHR.

### A. Information and Methods

#### 1) Source of cases

All cases were from TCM clinics of Beijing United Family Rehabilitation and Chinese-Japanese friendship Hospital, from Feb to Dec 2016, the patients who want to participate in the postpartum weight management project. A total of 72 cases were collected, 1 case temporary interrupt, finally 71 cases completed in the study. All subjects were admitted into the group at 7th week after fertility, they were grouped into the treatment group and control group according to their individual wishes, no randomized and blinded.

#### 2) Diagnostic criteria

Diagnostic criteria for the diagnosis of obesity: according to the World Health Organization and the United States National Health Center, the guideline for Asians is BMI in 18-22.9 is normal, in 23-24.9 is overweight, greater than 25 for obesity [7]. Specific calculation methods of BMI: Body mass index (BMI) = weight (kg)/height<sup>2</sup> (m<sup>2</sup>)

#### 3) Inclusion criteria

The inclusion criteria meet the diagnostic criteria for overweight; or does not meet the diagnostic criteria for overweight, but weight-loss claims, and better compliance. All patients were informed consent for treatment programmes.

#### 4) Exclusion criteria

The patients who do not meet the inclusion criteria of patients; the postpartum appear weak merge in patients with postpartum depression; postnatal fever; people with severe diseases such as heart disease, high blood pressure, liver and kidney patients; there bleeding tendency in patients with hematologic diseases; there are factors that have caused major gynecological diseases; refused to cooperate or suffer from mental illness, not collaborators.

### 5) Group

This study was divided into acupuncture treatment group and control group. Two groups of patients at the same time to eat calorie quantitative control, the total maternal milk in the basal metabolic rate on the basis of increased 700,000 calories, part of the maternal milk in the basal metabolic rate based on the increase of 450,000 calories, the whole formula of maternal milk in the basal metabolic rate based on the increase of 200,000 calories. Acupuncture treatment group patients on the basis of the heat control synchronized acupuncture treatment, acupuncture treatment frequency of 3 times per week, all the subjects during the treatment of daily meal record list, and weekly nutrition consultation to ensure thermal control. All subjects in this study were after the 7th week postpartum review after the group, the group did not conduct random and blind method, all patients in accordance with individual wishes into the group.

### 6) Treatment methods

All patients in the treatment group were treated at the 8th week of postpartum, treated 3 times a week, 45 minutes for each acupuncture treatment and 4 weeks of continuous treatment. Take point: All patients take middle-, middle-pole, gas-Sea, Guanyuan, pivot (bilateral), return (bilateral), water (bilateral), hand three (bilateral), foot three (bilateral), Hong Leong (bilateral), Yin Ling Quan (bilateral) and other acupoints, conventional disinfection, 0.20mmx40mm filiform (Suzhou East Medical Equipment Co., Ltd.), According to the above-mentioned points, the needle body and skin showed a 90-degree angle, according to cortical thickness and muscle fat degree of different about 10-25mm.

### 7) Outcome measures

Primary outcome measures: body weight, BMI, body fat percentage and waist-hip ratio (WHR).

Measurement of body weight and percentage of body fat: patients with an empty stomach on early morning, naked standing in the middle of scales, body balance, reads body weight and body fat percentage. Body weight and body fat percentage are Qing Hua Tong fang body composition Analyzer (model BCA-2A) measurements.

Body mass index (BMI) calculation: weight (kg)/height (m) squared.

Calculation method of Waist to Hip Ratio (WHR): Waist Circumference (WC)/Hip Circumference (HC).

Waist Circumference (WC) measurement: The patient upright, hands droop, feet slightly apart, measuring the navel on the 1cm, along the horizontal direction around a week, the exact range of 0. Within 1cm.

Hip Circumference (HC) Measurements: The patient was upright, with both hands drooping and two feet close. Tape the maximum hip circumference along the hips for a week, the exact range is within 0.1cm.

### 8) Statistical methods

The statistical software was used to analyze the data of the SPSS16.0, the statistical method for the group compared to the paired T-Test, the comparison between groups using Independent sample T test, the data by means of mean plus minus standard difference.

The difference is statistically significant with  $P < 0.05$ .

### B. Outcome

#### 1) Two groups of patients before and after treatment of obesity index

Shown in Table I, Fig. 1-4, 4 weeks after treatment, the weight, BMI, PBF and WHR of the two groups were decreased in different degrees, and the weight and WHR of the patients in the treatment group were significantly different from that before treatment ( $P < 0.01$ ), and the BMI and PBF were significantly different than before treatment ( $P < 0.05$ ); The weight and WHR of the control group were significantly different from that before the treatment ( $P < 0.05$ ). Compared with the two groups after treatment, the weight, BMI, PBF and WHR of the patients in the treatment group were lower than those in the control group, and the weight of the treatment group was significantly lower than that in the control group ( $P < 0.05$ ); The WHR of the treatment group was significantly lower than that in the control group ( $P < 0.01$ ).

Note: After 4 weeks of treatment, the two groups of patients with weight, BMI, PBF, WHR have different degrees of decline, while the treatment group of patients with weight and WHR drop more obvious, there is a significant difference; After 4 weeks of nutrition education, the weight and WHR of the control group were significantly decreased. The weight loss of the patients in the treatment group was more obvious than that in the control group, and there were significant differences. The improvement of waist to hip ratio in the treatment group was significantly higher than that in the control group.

TABLE I. COMPARISON OF TWO GROUPS OF PATIENTS BEFORE AND AFTER TREATMENT OF OBESITY INDEX (PAIRED T TEST)

EACH GROUP COMPARED WITH BEFORE TREATMENT: ★ $P < 0.05$ , ★★ $P < 0.01$ ; COMPARISON BETWEEN TWO TREATMENT GROUPS: ▲ $P < 0.05$ , ▲▲ $P < 0.01$

Each group	Acupuncture group		Control group	
	Before treatment (8W)	After treatment (12W)	Before treatment (8W)	After treatment (12W)
Weight (kg)	73.49±11.53	69.94±6.82**▲	73.18±13.93	71.72±18.43*
BMI	27.01±2.55	25.55±2.14*	27.82±1.95	26.16±2.97
PBF	30.04±4.12	28.50±3.41*	30.22±3.91	29.15±4.18
WHR	0.866±0.02	0.828±0.03**▲▲	0.864±0.02	0.851±0.04*

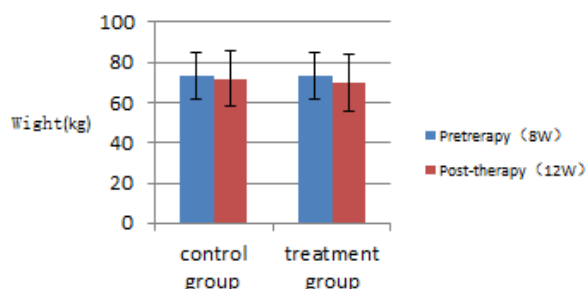


Figure 1. Comparison of body weight changes in two groups (kg)

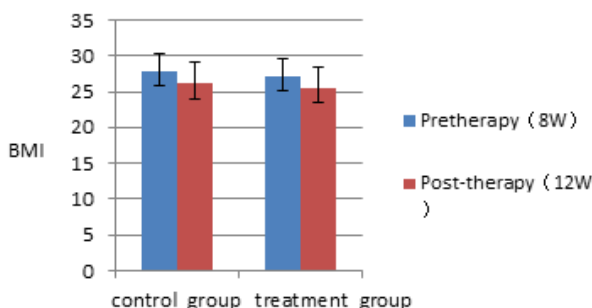


Figure 2. Comparison of BMI changes in two groups of patients

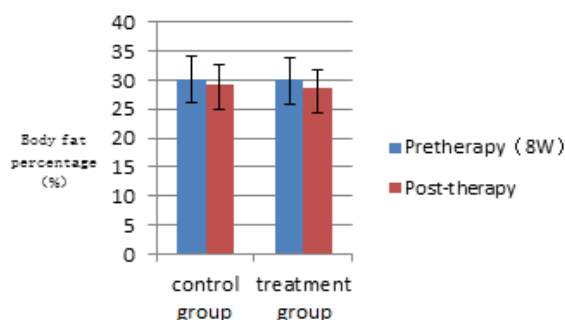


Figure 3. Comparison of body fat percentage changes in two groups

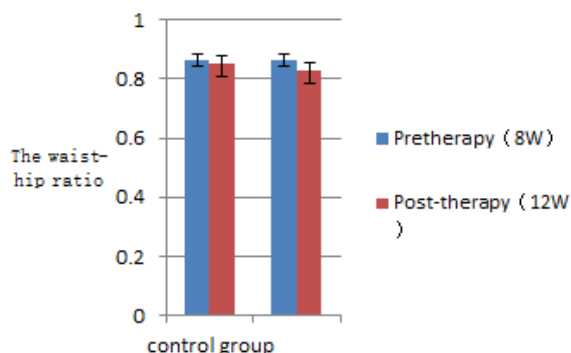


Figure 4. Comparison of waist to hip ratio in two groups

### C. Discussion

Postpartum obesity is caused by pregnancy in the hypothalamus dysfunction, fat metabolism abnormalities, body fat accumulation, resulting in weight gain, body fat situation. Excessive weight gain and retention during pregnancy and postpartum is an important cause of obesity in women [8]. In the country by the traditional concept of influence, lack of pregnancy weight management knowledge, pregnancy weight gain too

much, postpartum "confinement" during the period of maternal intake more high-calorie food, less activity, resulting in maternal from the preparation of pregnancy to postpartum lactation before the end of excessive calorie intake, consumption too little, resulting in obesity. The modern medical mechanism of postpartum obesity is more complex, overall, the treatment direction to improve endocrine, regulate the level of hormone secretion in the body as the main starting point. But the postpartum hormone has not been completely changed from the prenatal and pregnancy secretion levels, combined with the difficulty of maternal more immediately after the postpartum increase in exercise and maintain normal and reasonable schedule, so the endocrine system is difficult to quickly restore the ideal state. There is still no international guidance on the success of postpartum weight management [4]. The increased body weight due to pregnancy, if not restored within 6 months of the postnatal period, will result in a higher BMI level for a longer time [9], obesity-related disease risk factors increased, while the maternal body due to large accumulation of fat, the body of the obvious change, will cause the maternal evaluation of their own too low, leading to inferiority, Causing or aggravating postpartum depression has a serious impact on the physical and mental health of the woman.

Traditional Chinese medicine believes that obesity and diet, work loss, taste disorders, phlegm-dampness and congenital deficiencies related with delay, the "Dan XI Xin Fa" say: "fat people much phlegm", "fat people cold and damp" and so on. Therefore many of characteristics of obesity of spleen and kidney deficiency, inclusion of phlegm-dampness such as excess in superficiality, pathogenesis, mostly this deficiency is. Women during the postpartum obesity physical weakness, blood deficiency, spleen-kidney Yang deficiency; or due to liver depression Qi stagnation, diet, disease, causing more dampness inside the [10]. So treatment Shang to shipped spleen temperature kidney, and spleen kidney complementary for rule is, according to TCM differentiation card on the rule of principles, this research selection in the Wan, and in the very, and days armature, and hand three in, and foot three in, and three Yin make, and water, and gas sea, and Guanyuan, and blood, and Yin Ling Springs, and too Brook, and make letter, points Shi rule, in the Wan, and days armature phlegm dehumidification; in the very, and return, and water dredge waterways and the Xia Coke ; Gas sea, and Guanyuan fill rushed any, temperature raised blood; hand three in, and foot three in culture fill gas, provided blood biochemical of source; Hong Leong, and Yin Ling Springs health spleen help shipped, of wet guide delay; all points tie, water wet fat gel have of, phlegm wet cloud real have row, to makes postpartum obesity body of shipped of and the gasification function recovery normal, reached postpartum weight management of target.

It can be seen from this study that after 4 weeks of treatment, acupuncture has improved the weight, BMI, body fat percentage and waist-hip ratio of patients with postpartum obesity, and the improvement of waist to hip

ratio is more significant. The weight management of patients with postpartum obesity by acupuncture and moxibustion therapy is guided by the meridian theory of TCM, and the treatment method of regulating body fat imbalance under the guidance of holistic concept. In recent years, domestic scholars through a large number of clinical studies [11]-[13] found that acupuncture and moxibustion treatment of obesity has a good effect, and from different angles to reveal the clinical effect and mechanism of acupuncture weight loss, that the principle of acupuncture and moxibustion to lose weight is mainly through the stimulation of meridians and acupoints to adjust the function of two Hypothalamus one adrenal cortex and sympathetic adrenal medulla), and improve the fat cycling rate, increase the basal metabolic rate, promote heat production, and the accumulation of fat consumption, and then adjust, improve, improve the body's own balance, and ultimately play the role of fat loss. In addition, acupuncture on endocrine plays a benign regulatory role, this is to maintain weight loss efficacy, avoid rebound and have the function of plastic body key [5], [6]. At the same time, the author of clinical treatment experience, the treatment of postpartum obesity patients are all aspects of traditional Chinese medicine, not only the simple acupuncture of the mechanical treatment of the movement, the doctor to the patient's healthy lifestyle education and health food habits guidance, etc. in the overall treatment has played a more critical role, and acupuncture on the body's regulation is two-way and comprehensive, the patient after acupuncture treatment will not only improve the sleep and mental state, but also increase the postpartum obese patients confidence in the future of life, which promotes the patient's weight loss process into a virtuous circle, and achieve better results.

Also, from this clinical study found that patients are part of maternal postpartum obesity did not reach the level of obesity, only local fat, normal body weight, BMI, some subjects maternal PBF is higher than 28%, while all subjects of maternal WHR greater than 0.80. Analysis of the cause of postpartum obesity-abdominal obesity, studies have shown that BMI does not completely replace the waist circumference or waist-hip ratio of abdominal obesity screening criteria [14]. Assessment from the third national health and nutrition survey (NHANES III) shows that the relative to BMI overweight is defined as obese people, normal BMI and waist-hip ratio exceeding the higher mortality of abdominal obesity [15]. So, to post-natal obesity patients, improvement of waist to hip ratio is more important for your health. Sun Biao [16] study concluded that larger waist-hip ratio, heart and lung function was worse, and waist-hip ratio increases grip strength, sit ups, body flexibility and balance are affected. The results of this study show that, in its evaluation of the indicators of obesity, acupuncture for patients with postpartum obesity, waist-hip ratio improved most significantly, merited further revealing the acupuncture or electro-acupuncture on postpartum abdominal obesity or local effects of obesity, with an emphasis on the waist-hip ratio change of and relationships with other weight-

related indices, To learn more explore acupuncture and moxibustion for treatment of postpartum obesity effects and related mechanism.

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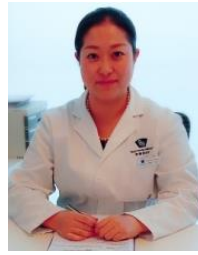
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**Dr. Zhang Huimin**, chair of Traditional Chinese medicine department of Beijing United Family Rehabilitation Hospital, who has nearly 20 years of clinical experience and. Dr. Hannah is one of the first researchers to participate in traditional Chinese medicine treatment combined with modern rehabilitation methods. She is good at the treatment for obesity by acupuncture, published book "healthy weight loss methods" and cumulative 15 papers, including SCI, carried out national seminars on Chinese medicine culture, also be expert on a number of well-known websites and magazines.



**Dr. Bai Kejiang** (Common first author) graduated from Beijing University of Chinese Medicine, where he received his Masters degree in Medicine. He specializes in the clinical management and rehabilitation of stroke and spinal cord injuries, as well as the treatment of some orthopedic diseases, such as cervical-shoulder and lower back pain. He is also well-practiced in integrating traditional and western healthcare methods. Dr. Bai is currently the Director of the Sub-health Specialty Committee of the World Federation of Chinese Medicine Societies.



**Chao Jiang**, China, 10th April 1978 Md. Major in Acupuncture, graduated from Traditional Chinese Medicine University of Heilongjiang, China.

Attending doctor, Beijing, Taikang Yanyuan rehabilitation hospital.

Published articles:

1. Effects of acupuncture serum and Danshen Injection on the differentiation of bone marrow stromal stem cells.
2. Research overview of traditional Chinese medicine on neural stem cells.

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