

Short term acupressure therapy on weight-reduction in adolescence: A randomized controlled trial

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ABSTRACT

Aim: Common treatment options for obesity include a reduced-calorie diet, increased physical activity, behavioral modification, pharmacotherapy, and surgery. Ear acupressure may also be an effective adjunct therapy. **Methods:** This study used a randomized controlled design to test the effectiveness of auricular acupressure for weight reduction in young, Taiwanese adults with a BMI ≥ 23 kg/m². Sixty-eight participants aged 18 to 20 years were recruited from Taiwanese universities at the beginning of the study. After four weeks of auricular therapy, the total sample included 57 young adults. All participants met one time per week for ten minutes. The treatment group received ear acupressure treatment with Semen Vaccariae sticks on auricular acupoints while the control group had adhesive tape placed on ear acupoints, change in BMI from baseline to trial completion. **Results:** BMI in controls increased significantly by +0.0133 kg/m² ($P = 0.000$) while the intervention group BMI decreased significantly by -0.8022 kg/m² ($P \leq 0.0001$). **Conclusions:** Just four weeks of auricular acupressure by Semen Vaccariae sticks may significantly help to decrease BMI among young adults.

Keywords: Aurpressure Therapy; Weight-Reduction; Auricular Acupoint; Randomized Controlled Trial; BMI

1. INTRODUCTION

A 2004 study from the United States Department of

Health and Human Services demonstrated that overweight adolescents have a 70 percent chance of becoming overweight or obese adults [1]. If one or more parents are overweight or obese, the risks of becoming overweight or obese in adulthood increase to 80 percent [2] (Centers for Disease Control and Prevention, 2002). To prevent adult obesity, strategies should target young adults. At least, one study has shown that prevention strategies should logically focus on specific ethnic groups which are at the highest risk of becoming obese by the mid-thirty age range adults [3]. This same study outlines the importance of the development of nursing education in health care and determines that adolescent weight gain could be reduced by ear acupressure.

2. LITERATURE REVIEW

Obesity is a frequent, global health risk and remains a major critical public health problem in industrialized countries [4]. Overweight and obesity are associated with numerous chronic health problems, including hypertension, dyslipidemia, insulin resistance and hyperinsulinemia, the metabolic syndrome, diabetes mellitus, gallbladder disease, osteoarthritis, many types of cancer, and increased mortality rates [3-6]. In addition, the prevalence of social and emotional problems among obese adolescents is high, and these social problems are strongly predictive of both short- and long-term psychological outcomes [7].

Overweight and obese individuals are identified according to the classification adopted by the World Health Organization (WHO). Body mass index (BMI; weight in kilograms/height in meters²) is widely used among adults as a measure of adiposity, with a BMI ≥ 25 kg/m² being indicative of overweight and a BMI ≥ 30 kg/m² indicating obesity [1,8]. However, the WHO consultation on

BMI in Asian populations, which met in Singapore in 2002, focused exclusively on issues related to overweight and obesity in this cohort. WHO suggested Asian populations use the classification of BMI ≥ 23 kg/m² for overweight and BMI ≥ 27.5 kg/m² for obesity [8,9]. In the present study, we use the Asian definition for overweight and obesity as BMI ≥ 23 kg/m² and ≥ 27 kg/m², respectively, to conform to WHO criteria.

In traditional Chinese medicine (TCM), “Qi” is thought to circulate energy throughout the body. Traditional acupuncturists activate the body through the insertion of needles in to specific areas (acupoints) of the body [10-13]. Practitioners of Chinese medicine believe that an “excess” or “deficiency” of Qi can be normalized by the specific stimulation of selected acupoints [10-15].

One of the tenets of TCM practitioners is that acupuncture treatment may modify central nervous system neurotransmitter levels by stimulating acupoints [10-11]. Auricular acupuncture or acupressure therapy has been used as an adjunctive therapeutic modality in complementary medicine fields worldwide [5,12-16]. The points in the human body where acupuncture or acupressure can be applied are the channels through which spirit passes and are, thus, the defined acupuncture sites. In TCM, the veins and arteries of the ear are believed to connect the internal organs of the entire human body [6,17].

Auricular acupuncture therapy is the method most frequently used for the treatment of obesity [18]. A large body of research shows that the most effective acupuncture points for treating obesity are Shenmen, Mouth, Stomach, Endocrine points, and Small intestine. Stimulating Shenmen point can help participants to become calmer and induce a degree of sedation. Stimulating the auricular mouth acupoint can reduce feelings of anger and has been used to treat oral ulcers. The stomach and endocrine auricular points can diminish appetite and eliminate the sensation of hunger (bringing about feelings of satiety and fullness), thus, achieve effective weight loss [4,6,17,19-22]. The small intestine point can treat dyspepsia and may thereby contribute to the ability to decrease weight [14].

3. MATERIALS AND METHODS

3.1. Demographics and Study Design

The goal of this study was to compare the efficacy of ear acupressure by Semen Vaccariae (small stick only) on auricular acupoints for the management of overweight and obesity. This study used a randomized controlled design to test the effects of auricular acupressure interventions for weight reduction in young adults with a BMI ≥ 23 kg/m². The total intervention duration was four weeks. The sample consisted of 68 participants who ranged in age from 18 to 20 years old and who were re-

cruited from universities in North Taiwan. Ethical approval was obtained from the instruction and informed consent was obtained from each participant. All participants were free to withdraw from the study at any time. Potential benefits of the study include a reduction in a participant’s BMI which has potential to improve health status and overall well-being.

3.2. Intervention

The subjects selected were thereafter randomly placed into one of two groups. BMI of each participant was determined. For the purpose of this study, a BMI ≥ 23 kg/m² was used to define overweight and ≥ 27 kg/m² indicated obesity, conforming to WHO criteria. Both groups received health education describing an appropriate reduced calorie diet and lifestyle modification, such as how to increase activity levels. The control group had adhesive tape placed on the ear acupoints. The experimental group received Semen Vaccariae for acupressure on the auricular acupoints. The points for treating obesity on the ear are Shenmen, Mouth, Stomach, Endocrine, and Small intestine. All participants met one time per week for ten minutes for a total of four weeks. BMI was recorded for each participant each week.

4. STATISTICS

B data were analyzed using the SPSS General linear mix-effect model (GLMM) guided variables inferences at individual levels as was appropriate for continuous outcomes. Estimates of the dependent variable, BMI, were evaluated for each group at each weekly meeting and were also assessed for significance. Results were considered to be significant at a $P < 0.05$.

5. RESULTS

After four weeks of auricular therapy, 11 participants had withdrawn from the study for a variety of reasons. Therefore, these 11 subjects are not included in the final analysis. Final analysis includes 28 subjects in the control group and 29 subjects in the treatment group. The study demographics showed that female students made up 91.22 percent of the sample and male students made up 8.77 percent of final results sample. **Table 1** displays

Table 1. Final Demographics by Gender for the Two Group ($N = 57$).

Group	Subjects	Female students Frequency (%)	Male students Frequency (%)
Control group	28	26 (45.61%)	2 (3.50%)
Experimental group	29	26 (45.61%)	3 (5.26%)
Total	57	52 (91.22%)	5 (8.77%)

participant demographics by gender for the two groups.

During the four-week program duration, BMI was measured weekly. After four weeks, BMI of the control group increased significantly by $+0.0457 \text{ kg/m}^2$ ($P = 0.000$). Thus, simply applying adhesive tape to ear acupoints could not decrease BMI after four weeks (Table 2).

After four-week of continuous treatment, the BMI of the treatment group decreased significantly by -0.8022 kg/m^2 ($P \leq 0.0001$). Participants who received continuous ear acupressure treatment with Semen Vaccariae were noted to have decreased BMI from week to week. Semen Vaccariae ear acupressure worked sufficiently for BMI reduction (Table 2).

6. DISCUSSION

The present study results demonstrate that, after 4 weeks of ear acupressure treatment by Semen Vaccariae, participants' BMI decreased significantly by an average of -0.8022 kg/m^2 ($P \leq 0.0001$). This result showed that continuous auricular acupressure can decrease BMI, which has been supported by many research studies. For example, Richards and Marley assessed the efficacy of ear acupuncture treatment on weight loss in a 4-week study. Their results showed an average weight loss of $4.0 \pm 1.4 \text{ kg}$ ($P < 0.05$) in treatment group [17]. Additionally, Soong studied 21 obese patients using various auricular acupressure points for treatment periods ranging from 2 - 6 weeks and reported a mean weight loss of $3.3 \pm 1.9 \text{ kg}$ with a range of 1 - 7.3 kg [14].

7. CONCLUSIONS

Reduction of individual body weight and decreasing the prevalence of obesity are critical health issues [23]. The sample size of our study is similar to that in many previous research studies, which reached similar conclusions. However, participants were not representative of both genders. Thus, one limitation is the female pre-

dominance in our study and any future studies should involve large groups of subjects and specifically recruit male participants to make our findings generalizable.

According to this study, auricular acupressure by Semen Vaccariae can decrease BMI after just four weeks of treatment. However, long-term treatment and follow-up after treatment are necessary for future studies. Additional research is also needed to show whether the effects observed with auricular acupressure treatment could be sustained after completion of the auricular acupressure treatment program.

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Table 2. Mean difference of BMI (kg/m^2) from baseline to the completion of the intervention ($N = 57$).

Week	Control Group	<i>t</i>	Sig.	Experimental Group	<i>t</i>	Sig.
	BMI Mean Difference			BMI Mean Difference		
Baseline-1st Week	+0.0190	-11.702	0.000	-0.2107	$P \leq 0.0001$	$P \leq 0.0001$
Baseline-2nd Week	+0.0031	-8.260	0.000	-0.5187	$P \leq 0.0001$	$P \leq 0.0001$
Baseline-3rd Week	+0.0055	-6.770	0.000	-0.6860	$P \leq 0.0001$	$P \leq 0.0001$
Baseline-4th Week	+0.0133	-7.561	0.000	-0.8022	$P \leq 0.0001$	$P \leq 0.0001$

* $p \leq 0.05$, ** $p \leq 0.0001$.

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