Indonesian Journal of Acupuncture
ISSN 3025-8405

Article

The Effect of Acupuncture Therapy Combined with a High-Fiber Diet on the Reduction of Body Mass Index in Obesity Patients at Lee Chen Thung Primary Clinic, Jakarta

Rizki Dyah Eka Meilani [1], Heni Nur Kusumawati [2], Purwanto [3]

[1-3]Acupuncture Department, Health Polytechnic Ministry of Health Surakarta, Indonesia

SUBMISSION TRACK

Received: February 4, 2026
Final Revision: July 20, 2026
Available Online: October 18, 2026

KEYWORDS

Acupuncture, High Fiber Diet, Obesity, Body Mass Index

CORRESPONDENCE

Phone: +625647402142

E-mail: Rizkyyuzran@gmail.com

ABSTRACT

Obesity is a growing global health problem associated with an increased risk of metabolic and cardiovascular diseases. Complementary non-pharmacological interventions, such as acupuncture and dietary modification, are increasingly used in obesity management. This study aimed to evaluate the effect of acupuncture therapy combined with a high-fiber diet on reducing body mass index (BMI) in obese patients. A quantitative quasi-experimental study with a one-group pretest–posttest design was conducted at Lee Chen Thung Primary Clinic, Jakarta, from September to November 2025. A total of 30 obese patients were selected using purposive sampling. Participants received acupuncture therapy at ST25 (Tianshu), CV12 (Zhongwan), and CV4 (Guanyuan) combined with a high-fiber diet, administered twice weekly. BMI was measured before and after the intervention. Data were analyzed using the Shapiro–Wilk test to assess normality and the Wilcoxon signed-rank test to examine differences in BMI before and after the intervention. The results showed a statistically significant reduction in BMI following the intervention ($Z = -4.783$; $p < 0.05$). These findings indicate that acupuncture therapy combined with a high-fiber diet is effective in reducing BMI and may be considered a complementary approach for obesity management in clinical settingsan effective intervention for central obesity management.

I. INTRODUCTION

Rapid advances in digital technology have contributed to lifestyle changes characterized by increased sedentary behavior, resulting in lower energy expenditure relative to energy intake. In addition, exposure to social media and high-calorie food advertising influences dietary patterns and body image perception, which ultimately contributes to increased body mass index (BMI) and a higher risk of obesity(1).

Obesity is a pathological condition marked by excessive accumulation of adipose tissue and has become a major

Attribution-NonCommercial 4.0 International. Some rights reserved

global health concern due to its strong association with increased mortality. In many regions worldwide, obesity-related mortality exceeds that associated with undernutrition, with cardiovascular disease identified as the leading cause of death, followed by diabetes and chronic kidney disease[2,3]. According to the World Health Organization (WHO), more than one billion individuals globally were classified as obese in 2023, including adults, adolescents, and children. Several countries report particularly high prevalence rates, and global data indicate that adult obesity prevalence has doubled since 1990[4,5].

In Indonesia, the prevalence of adult obesity remains high, particularly in urban areas. Data from Riskesdas 2022 reported that DKI Jakarta had the highest prevalence of adult obesity nationally, with Central Jakarta among the regions with the greatest burden[6]. A preliminary survey conducted at Lee Chen Thung Primary Clinic, Central Jakarta, identified that approximately 20% of patients presented with overweight or obesity, highlighting the clinical relevance of obesity management in this setting.

Obesity management can be approached through pharmacological and non-pharmacological strategies. Acupuncture has emerged as an effective non-pharmacological intervention for reducing BMI by modulating appetite regulation, metabolism, and hormonal balance. Stimulation of specific acupoints has been shown to suppress appetite, enhance fat oxidation, and improve insulin sensitivity, resulting in significant reductions in BMI and waist circumference compared with lifestyle modification alone[7,8].

In addition to acupuncture, dietary modification, particularly a high-fiber diet, plays an important role in obesity management. High-fiber foods prolong gastric emptying, increase satiety, and reduce total energy intake due to their low caloric density, sugar, and fat content. Previous studies have demonstrated that increased fiber intake significantly reduces daily caloric consumption, thereby supporting weight reduction efforts[9].

Lee Chen Thung Primary Clinic was selected as the study site due to its consistently high prevalence of obese patients, availability of standardized acupuncture services, and feasibility of implementing dietary education alongside therapeutic interventions. These factors make the clinic an appropriate and representative setting for evaluating integrative approaches to BMI reduction.

II. METHODS

This study employed a quantitative quasi-experimental design using a one-group pretest–posttest approach. The research was conducted at Lee Chen Thung Primary Clinic, Central Jakarta, from February to December 2025. The study population consisted of obese patients attending the clinic, with a total sample of 30 participants selected using purposive sampling based on predefined inclusion and exclusion criteria.

Eligible participants were male and female adults aged 20–50 years with a body mass index (BMI) of 25.0–29.9 kg/m² who were not receiving pharmacological or traditional weight-loss treatments. Participants underwent acupuncture therapy combined with a high-fiber diet intervention for a total of 12 sessions, administered twice weekly over six weeks.

The acupuncture intervention involved stimulation of standardized acupoints, including ST25 (Tianshu), CV12 (Zhongwan), and CV4 (Guanyuan), using single-use disposable needles retained for approximately 30 minutes per session. In addition to acupuncture, participants received dietary education and guidance to consume a high-fiber diet with a minimum intake of 30–35 g/day throughout the intervention period, monitored using food recall records.

BMI was measured before the intervention (pretest) and after completion of

the intervention (posttest) using standardized measurements of body weight and height. Data analysis included univariate analysis to describe participant characteristics and BMI distribution, followed by bivariate analysis to assess changes in BMI before and after the intervention. Normality of the data was evaluated using the Shapiro–Wilk test due to the sample size being fewer than 50 subjects. As the data were not normally distributed, the Wilcoxon Signed-Rank Test was applied to analyze differences between pretest and posttest BMI values, with statistical significance set at $p < 0.050$.

III. RESULT

The main study was conducted at Lee Chen Thung Primary Clinic, Jakarta, from September to November 2025. The total population consisted of 40 patients, of whom 30 participants met the inclusion criteria and were enrolled in the study. All participants were assigned to a single intervention group receiving acupuncture therapy at ST25 (Tianshu), CV12 (Zhongwan), and CV4 (Guanyuan) in combination with a high-fiber diet. Acupuncture therapy was administered twice weekly. Research data were obtained through measurements of body height and body weight performed before the intervention (pretest) and after the intervention (posttest).

Table 1. Characteristics of Respondents

Characteristics	N	%
Gender		
Female	25	83.3
Male	5	16.7
Age (years)		
20-25	5	16.7
26-31	8	26.7
32-37	1	3.3
38-43	11	36.7
44-50	5	16.7
Occupation		
Lecturer	1	3.3
Self-employed	11	36.7
Ousewife	6	20.0
Private-sector employee	12	40.0
Obesity Category		
Obesity I	30	100
Syndrom Differentiation		
Excess Patern of the Spleen and Stomach	11	36.7
Spleen Deficiency with Dampness Accumulation	11	36.7
Qi Deficiency Syndrome	8	26.7
BMI (Pretest)		
18.5-22.99	0	0
23.00-24.99	0	0
25.00-29.99	30	100
BMI (Posttest)		
18.5-22.99	16	53.33
23.00-24.99	4	46.67
25.00-29.99	0	0

Table 1 shows the characteristics of the 30 study participants. The majority of participants were female (83.3%), while males accounted for 16.7%. Most participants were aged 38–43 years (36.7%), followed by those aged 26–31 years (26.7%). Smaller proportions were observed in the age groups of 20–25 years and 44–50 years (each 16.7%), whereas the lowest proportion was found in the 32–37 years age group (3.3%).

In terms of occupation, most participants were private-sector employees (40.0%), followed by self-employed individuals (36.7%), housewives (20.0%), and lecturers (3.3%). All participants were classified as Obesity Class I (100%) prior to the intervention.

Regarding syndrome differentiation, Excess Pattern of the Spleen and Stomach and Spleen Deficiency with Dampness Accumulation were the most common syndromes, each accounting for 36.7% of participants, while Qi Deficiency Syndrome was identified in 26.7%.

Body mass index (BMI) assessment before the intervention indicated that all participants (100%) were within the BMI range of 25.00 to 29.99 kg/m². Following the intervention, Table 1 demonstrates a marked improvement in BMI classification, with 53.33% of participants achieving a normal BMI range (18.5 to 22.99 kg/m²)

and 46.67% classified as overweight (23.00 to 24.99 kg/m²). No participants remained in the obese BMI category after the intervention.

Table 2. Normality Test

BMI	Statistic	p
Pretest	0.500	<0.001
Posttest	0.870	0.002

Table 2 shows that the significance values of the Body Mass Index (BMI) data before and after the intervention were p<0.001 and 0.002, respectively. Both significance values were lower than the predetermined significance level (α = 0.05), indicating that the BMI data before and after the intervention were not normally distributed.

Table 3. The Result of the Independent T-Test

Group	Mean Rank	Z	p
Acupuncture Therapy Combined with a High-Fiber Diet	15.50	-4.783[b]	<0.001

Table 3 shows the results of the Wilcoxon Signed Rank Test for Body Mass Index (BMI) before and after the intervention. The analysis revealed a Z value of −4.783 with a significance level of p<0.001, which was lower than the significance threshold of α = 0.05. These findings indicate a statistically significant difference in BMI values before and after the intervention, demonstrating that acupuncture therapy combined with a high-fiber diet had a significant effect in reducing BMI among the participants.

IV. DISCUSSION

The findings of this study demonstrate that acupuncture therapy combined with a high-fiber diet produced a significant reduction in body mass index (BMI) among obese patients. All participants experienced a decrease in BMI following the intervention, indicating a consistent therapeutic response across subjects. This result supports the role of non-pharmacological, integrative interventions in obesity management, particularly when targeting both metabolic regulation and dietary behavior[4,10].

The predominance of female participants aligns with previous evidence showing that women have a higher susceptibility to obesity due to hormonal factors, lower basal metabolic rates, and changes associated with reproductive phases and menopause[11,12]. Additionally, the majority of participants were within the productive adult age range, where sedentary lifestyles, occupational stress, and irregular dietary patterns commonly contribute to positive energy balance and increased BMI[13]. These demographic characterristics further emphasize the relevance of lifestyle-oriented interventions in this population.

From a Traditional Chinese Medicine (TCM) perspective, the dominant syndromes identified excess of the spleen and stomach, spleen deficiency with dampness accumulation, and qi deficiency reflect impaired transformation and transportation functions, which are frequently associated with obesity[14]. Stimulation of ST25 (Tianshu), CV12 (Zhongwan), and CV4 (Guanyuan) is theorized to regulate digestive function, enhance metabolic activity, and restore Qi balance, thereby facilitating weight reduction[10,15].

The statistically significant results of the Wilcoxon Signed Rank Test (Z = −4.783; p<0.001) confirm that the intervention had a meaningful effect on BMI reduction. The absence of positive ranks or ties indicates that all participants benefited from the treatment, although the magnitude of change varied individually. Such variability may be influenced by baseline metabolic status, adherence to dietary recommendations, and daily activity levels[16].

The contribution of a high-fiber diet further strengthens the intervention's effectiveness. Dietary fiber is known to increase satiety, delay gastric emptying, reduce caloric absorption, and improve insulin sensitivity, all of which are critical mechanisms in weight control and metabolic health[9,17]. Previous studies have reported that combining acupuncture with dietary modification yields superior outcomes compared to single-modality interventions, which is consistent with the findings of this study [4].

V. CONCLUSION

This study concludes that acupuncture therapy combined with a high-fiber diet is an effective integrative intervention for reducing body mass index (BMI) in obese patients. The observed improvement in BMI classification following the intervention highlights the potential of combining traditional acupuncture techniques with dietary modification as a complementary approach to obesity management. This intervention may serve as a practical and non-pharmacological option within primary healthcare settings, particularly for patients seeking holistic weight management strategies. Future research with controlled designs, larger sample sizes, and longer follow-up periods is recommended to confirm these findings and to evaluate the sustainability of treatment outcomes.

REFERENCES

1. Saraswati SK, Rahmaningrum FD, Pahsya MNZ, Paramitha N, Wulansari A, Ristantya AR, et al. Literature Review : Faktor Risiko Penyebab Obesitas. MEDIA Kesehat Masy Indones. 2021 Feb 1;20(1):70–4.
2. Maryusman T, Fauziyah A, Fatmawati I, Firdausa NI, Imtihanah S. Pengaruh Kombinasi Diet Tinggi Serat dan Senam Aerobik terhadap Penurunan Berat Badan. J Kedokt dan Kesehat. 2018 Mar 12;14(1):56.
3. Miketinas DC, Bray GA, Beyl RA, Ryan DH, Sacks FM, Champagne CM. Fiber Intake Predicts Weight Loss and Dietary Adherence in Adults Consuming Calorie-Restricted Diets: The POUNDS Lost (Preventing Overweight Using Novel Dietary Strategies) Study. J Nutr. 2019 Oct 1;149(10):1742–8.
4. Zhao X, Wang Y, Li X, Hu P, Pan XF, He B, et al. Acupuncture as an Adjunct to Lifestyle Interventions for Weight Loss in Simple Obesity: A Systematic Review and Meta-Analysis. Diabetes, Metab Syndr Obes . 2024;17:4319–37.
5. Awaluddin SM, Lim KK, Shawaluddin NS. Global prevalence of overweight and obesity among healthcare workers: A systematic review. JBI Evidence Synthesis. Lippincott Williams and Wilkins; 2024.
6. Purwanto P. Pengaruh Terapi Akupunktur terhadap Metabolisme Glukosa pada Penderita Overweight dan Obesitas di Kelurahan Mojosongo Surakarta. 2020;13–30.
7. Sweatt K, Garvey WT, Martins C. Strengths and Limitations of BMI in the Diagnosis of Obesity: What is the Path Forward? Vol. 13, Current Obesity Reports. Springer; 2024. p. 584–95.
8. Corrigan FE, Kelli HM, Dhindsa DS, Heinl RE, Al Mheid I, Hammadah M, et al. Changes in truncal obesity and fat distribution predict arterial health. J Clin Lipidol. 2017 Nov 1;11(6):1354-1360.e3.
9. Følling IS, Oldervoll LM, Hilmarsen C, Ersfjord EMI. Exploring use of activity monitors for patients with obesity during weight-loss treatment - a qualitative study. BMC Sports Sci Med Rehabil. 2021 Dec 1;13(1).

10. Lam TF, Lyu Z, Wu X, Wong YP, Cao P, Wong EY, et al. Electro-acupuncture for central obesity: a patient-assessor blinded, randomized sham-controlled clinical trial. BMC Complement Med Ther. 2024 Dec 1;24(1).
11. Hardani MSi A, Ustiawaty J, Juliana Sukmana D. Buku Metode Penelitian Kualitatif & Kuantitatif [Internet]. 2020.
12. Dwinijanti L, Japaries W. Original Artikel Pengaruh Terapi Akupunktur dan Meditasi pada Wanita Kelebihan Berat Badan dan Obesitas: Studi Kasus (The Effects of Acupuncture and Meditation on Slimming Indices in Overweight and Obese Women: Case Series Study). 2021; Available from: http://dohara.or.id/index.php/hsk
13. Simbolon D, Tafrieani W, Gizi J, Kesehatan Kemenkes Bengkulu P, Keperawatan J. Edukasi Gizi dan Perubahan Berat Badan Remaja Overweight dan Obesitas [Internet]. Vol. 9, Jurnal Kesehatan. Online; 2018. Available from: http://ejurnal.-poltekkes-tjk.ac.id/index.php/JK
14. Wang B, Wang C, Li H. The impact of intermittent fasting on body composition and cardiometabolic outcomes in overweight and obese adults : a systematic review and meta-analysis of randomized controlled trials. 2025;
15. Li S, Zhou H, Zhou M, Lou L, Luo L, Ji S. The effects of acupoint catgut embedding therapy on anthropometric parameters and endocrine function in obese women: a systematic review and meta-analysis. Vol. 12, Frontiers in Nutrition. Frontiers Media SA; 2025.
16. Kabisch S, Hajir J, Sukhobaevskaia V, Weickert MO, Pfeiffer AFH. Impact of Dietary Fiber on Inflammation in Humans. Vol. 26, International Journal of Molecular Sciences. Multidisciplinary Digital Publishing Institute (MDPI); 2025.
17. Zhang K, Zhou S, Wang C, Xu H, Zhang L. Acupuncture on Obesity: Clinical Evidence and Possible Neuroendocrine Mechanisms; 2018.