Eduvest – Journal of Universal Studies
Volume 5 Number 11, November, 2025
p- ISSN 2775-3735- e-ISSN 2775-3727

The Effect of Acupuncture Therapy and Murraya paniculata (Jiǔ Lǐ Xiāng) Infusion on Reducing Body Mass Index (BMI) in Patients with Stomach-Heat Syndrome Obesity

Dedeh Nurhasanah*, Aryaprana Nando, Muslihatin Khuril R., Anis Lupita Ningrum, Franciscus Xaverius
Universitas Medika Suherman, Indonesia
Email: deenarprabowo@gmail.com*

ABSTRACT

Obesity (Féi Pàng) is one of the health problems that has increased significantly in Indonesia. Based on Riskesdas 2023, the national obesity prevalence has reached 28.7%, and is higher among women of childbearing age. Obesity contributes to metabolic disorders, the risk of non-communicable diseases, as well as hormonal and reproductive dysfunction. In Traditional Chinese Medicine (PTT), obesity is seen as a result of imbalances in spleen and stomach function, moisture accumulation, and gastric heat syndrome (Wei Re). Proper treatment requires holistic approaches, such as acupuncture and herbs. One of the herbs used is Murraya paniculata (Jiǔ lǐ xiāng), which empirically and pharmacologically has hypolipidemic and heat-decay effects. This therapy is believed to effectively reduce Body Mass Index (BMI). This study aimed to determine the effect of acupuncture therapy and Murraya paniculata (Jiǔ lǐ xiāng) on the reduction of BMI in obese women with gastric heat syndrome. The study used a pre-experimental quantitative design with a one-group pretest–posttest approach. The sample consisted of 20 women aged 21–36 years who underwent therapy six times over two weeks at the Petos Sehat Clinic in Jakarta. Data were collected through BMI measurements before and after the intervention. The sampling technique used purposive sampling. The data were analyzed using a paired t-test statistical test. The average BMI before therapy showed a value of 30.19 kg/m². After the intervention, the average BMI decreased to 29.31 kg/m². The results of the statistical test showed a significant difference ($p < 0.05$), indicating the effect of therapy on reducing obesity indicators. Acupuncture therapy and infusion of Murraya paniculata (Jiǔ lǐ xiāng) exerted a significant influence on the reduction of BMI in obese individuals with hot gastric syndrome. This integrative approach can be an effective and safe alternative non-pharmacological therapy for treating obesity in women of childbearing age.

KEYWORDS *acupuncture and Murraya paniculata (Jiǔ lǐ xiāng), BMI, hot tubing syndrome, obesity, Traditional Chinese Medicine.*

INTRODUCTION

Obesity is one of the global health problems that has a multidimensional impact, both from medical, social, economic, and psychological aspects (Shekar & Popkin, 2020). In Indonesia, the trend of obesity has increased sharply in the past decade. Based on Riskesdas in 2023, the prevalence of obesity in the adult population has reached 28.7%, with the highest prevalence in the productive age group of women, especially in the age range of 21–36 years (Ministry of Health of the Republic of Indonesia, 2018). Obesity is known to be a major risk factor for non-communicable diseases (NCDs) such as type 2 diabetes mellitus, hypertension, coronary heart disease, and lipid disorders (Budreviciute et al., 2020).

According to the World Health Organization (2021), globally there are around 3.7 million deaths every year related to overweight and obesity, mainly through NCD complications. In

Indonesia alone, NCDs are estimated to account for 73% of the total population deaths (World Health Organization, 2021). Modern lifestyles, including fast food consumption, low physical activity, and excessive use of gadgets, exacerbate the prevalence of obesity.

In addition, excess fat in the body also has an impact on reproductive hormone imbalances, causing ovulation disorders and decreased fertility in women of childbearing age. Therefore, the treatment of obesity requires an integrative approach that focuses not only on weight loss but also on restoring the body's metabolic balance (G.M. et al., 2012; Mathur et al., 2023; Saltiel, 2016).

Obesity impacts the endocrine and metabolic systems, including insulin resistance, chronic inflammation, as well as disorders of the hormones leptin and estrogen (WHO, 2021; Bodicoat et al., 2014). According to Wong (2023), obesity is excess fat in the body and is a very complex disorder involving a combination of genetic, neurobiological, environmental, and psychosocial factors (Xiao et al., 2024). Based on a report by the Ministry of Health and Our World in Data (2023), the prevalence of the Indonesian population with a Body Mass Index (BMI) ≥ 25 increased from 21.8% (2018) to 28.7% in 2023, showing a significant surge in the last five years (Rahman et al., 2023).

At the Petos Sehat Estetika Jakarta Clinic, it was found that the number of obese female patients of childbearing age (21–36 years) with a BMI ≥ 25 increased from 22 people to 72 people in just the last three months (April–June 2025). Acupuncture is known to increase metabolism, balance hormones, and suppress appetite (Liu et al., 2021). Meanwhile, Murraya paniculata (Jiǔ lǐ xiāng) has hypolipidemic and anti-inflammatory effects, thus supporting the reduction of BMI (Mahmoud et al., 2019).

Obesity also exacerbates anxiety, fatigue, and body image disturbance, which in turn reduces the quality of life for women of childbearing age (Melamed et al., 2024). In Traditional Chinese Medicine (PTT), obesity is not solely seen as an accumulation of excess fat, but rather as a manifestation of impaired spleen and gastric function, Qi stagnation, and accumulation of moisture and heat (shi re).

One of the most commonly encountered syndrome patterns is gastric heat syndrome (Wei Re), which is clinically characterized by excessive appetite, thirst, constipation, a layer of yellow and thick tongue coating, and a fast and slippery pulse (Maciocia, 2008). Therefore, the therapeutic approach used in PTT not only aims to lose weight, but also to improve the function of internal organs and restore the body's homeostatic balance.

In modern PTT clinical practice, body acupuncture and herbal therapy are the main choices in dealing with syndrome-based cases of obesity. This approach is further reinforced by the administration of herbs such as Murraya paniculata (Jiǔ lǐ xiāng). According to the Chinese Medicine Ingredient Database and the Herbal Medicine Platform from Hong Kong, Murraya paniculata (Jiǔ lǐ xiāng) has a bitter, spicy, and warm taste, and acts on the meridians of the spleen, kidneys, and liver.

This herb has the ability to eliminate Qi and Xue stagnation, relieve pain, and overcome indigestion and abdominal distension (Liu et al., 2016). In addition, a laboratory study by Fatriani et al. (2024) showed that Murraya paniculata extract (Jiǔ lǐ xiāng) contains flavonoids and alkaloids that target PPARG receptors and EP300 proteins, which play roles in the regulation of adipocyte differentiation and lipid metabolism.

Against this background, it can be concluded that although acupuncture therapy and Murraya paniculata (Jiǔ lǐ xiāng) have individually been shown to provide benefits, there is still a lack of research combining the two in one integrative therapy model. In Traditional Chinese Medicine (PTT), obesity with gastric heat syndrome (Wei Re) is characterized by excessive appetite, constipation, dry mouth, and redness of the face due to the accumulation of heat and humidity in the stomach (Zhang & Wang, 2008; Maciocia, 2021).

Based on the principle of Biao Ben Jian Zhi (addressing the roots and branches of disease), acupuncture is used to stimulate Qi from outside the body and improve energy circulation through meridian points, while herbs such as Murraya paniculata (Jiǔ lǐ xiāng) are used to address internal pathogens, particularly heat and humidity that affect internal organs (Liu & Yin, 2000). Therefore, the combination of these two therapies is considered to holistically lower BMI and support the body's energy balance (Alzeer, 2025). This study aimed to determine the effect of body acupuncture therapy and Murraya paniculata infusion (Jiǔ lǐ xiāng) on the reduction of BMI in women aged 21–36 years with obesity gastric heat syndrome.(Sun et al., 2025)

This study aims to determine the effect of body acupuncture therapy and Murraya paniculata (Jiǔ lǐ xiāng) on the reduction of Body Mass Index (BMI) in obese patients with gastric heat syndrome at Petos Sehat Clinic Jakarta (Simanjuntak, 2023). In particular, the study is focused on describing research subjects, determining BMI and differentiation of gastric heat syndrome through pulse and tongue examination before therapy, evaluating BMI and differentiation of gastric heat syndrome after therapy, and analyzing the effect of body acupuncture and Murraya paniculata infusion on BMI reduction and improvement of symptoms of gastric heat syndrome based on the results of pulse and tongue examinations.

This research is expected to make a scientific contribution to the development of complementary health services based on Traditional Chinese Medicine (PTT), as well as become an effective, safe, and holistic alternative to non-pharmacological therapies in treating obesity in women of childbearing age.

METHOD

This type of study uses a quantitative approach with a pre-experimental one-group pretest–posttest design, which aims to evaluate the effect of body acupuncture therapy and Murraya paniculata infusion (Jiǔ lǐ xiāng) on the reduction of Body Mass Index (BMI) in obese patients with gastric heat syndrome at Petos Sehat Clinic Jakarta. The study was conducted in one group without a control group, where the subjects were first given an initial measurement (pretest), then received an intervention in the form of acupuncture six times over two weeks and daily herbal consumption for 12 days, and ended with a re-measurement (posttest). The subjects of the study were selected through purposive sampling techniques based on predetermined inclusion and exclusion criteria, with a sample of 20 women aged 21–36 years who were diagnosed with obesity with gastric heat syndrome. Data were collected through BMI measurements, therapeutic observations, documentation, and pretest and posttest forms, then analyzed using descriptive and inferential statistical tests, especially paired t-tests, to determine the significance of BMI changes before and after the intervention. This research was carried out at the Petos Sehat Clinic Jakarta between March and June 2025 while adhering to

the ethical principles of research, including informed consent, anonymity, and confidentiality of respondent data..

RESULTS AND DISCUSSION

A. Univariate Analysis

1. General Characteristics of Respondents by *gender*

Table 1. Gender Distribution of Respondents

Gender	Sum	Percentage (%)
Woman	20	100%
Man	0	0%
Total	**20**	**100%**

20 (100%) of the respondents in this study were female and there were no male respondents in this study (0%). This reflects the focus of the research which only involves female participants, according to the population and research sample.

2. Characteristics of Respondents by Age

Table 2. Age Distribution of Respondents

Age Range (years)	**Sum**	**Percentage (%)**
21–25	5	25%
26–30	8	40%
31–36	7	35%
Total	**20**	**100%**

Based on Table 2, the majority of respondents were in the age group of 26–30 years (40.0%), then the age group of 31–36 years (35.0%), and the least in the age group of 21–25 years (25.0%).

This age group falls into the category of women of productive age, who physiologically have the potential to be active metabolism but often face the risk of obesity due to lifestyle factors, diet, stress, and hormonal changes.

This makes this age group the right population to receive interventions in the form of acupuncture therapy and brewing *Murraya paniculata (Jiǔ lǐ xiāng)* in an effort to lower Body Mass Index (BMI).

3. Characteristics of Respondents Based on Gastric Heat Syndrome

Client examinations can be carried out by observing, hearing and smelling, asking, and touching (Wong, 2012). In this study, individuals who are obese and have been confirmed to have a pattern of gastric heat syndrome (Wèi rè zhèng) were identified based on the results of interviews, clinical observations, and Lidetara analysis conducted during the pre-test. One of the main pathogeneses of obesity within the framework of Traditional Chinese Medicine (PTT) is the accumulation of excess heat in the stomach and intestines, which interferes with the process of transformation and transport of food.

The inclusion criteria explicitly stipulated that the selected participants were those who showed typical clinical signs of gastric heat syndrome, such as excessive appetite, constant thirst, constipation, a hot sensation in the epigastrium, and a red tongue with a thick yellow coating. By equalizing the syndrome patterns of all respondents, this study applied the principle of biàn zhèng lùn zhì—or therapy based on syndrome differentiation—consistently.

The selection of gastric heat syndrome is also the logical basis for the selection of interventions, namely acupuncture and herbal brewing of Murraya paniculata (Jiǔ lǐ xiāng), which in classical and modern literature on PTT is categorized as a method for

qing re, or cooling excess heat in the gastric organs. Thus, the analysis of this syndrome not only played a role in the selection of participants, but also served as the scientific basis for the intervention design used in this study.

4. Characteristics of Respondents Based on Pre-Test BMI Results

Table 3. Distribution of Respondents Based on Pre-Test BMI

Category IMT	Sum	Percentage (%)
Obesity I	9	45,0%
Obesitas II	11	55,0%
Total	**20**	**100%**

Based on the data in Table 3, as many as 11 respondents (55.0%) were in the category of Level II Obesity, while 9 respondents (45.0%) were included in the category of Level I Obesity.

There were no respondents who were in the normal weight or light overweight categories. All study participants were included in the obesity group in accordance with the purpose of this study, which was to evaluate the effect of acupuncture therapy and *Murraya paniculata (Jiǔ lǐ xiāng)* on the reduction of BMI.

5. BMI results

Table 4. BMI Results

Participant Code	Initial BMI (kg/m²)	BMI After (kg/m²)	BMI Difference	BMI Rises	Fixed BMI	BMI Drops
P001	28.2	27.7	-0.5	0	0	1
P002	28.7	27.6	-1.1	0	0	1
P003	32.5	31.9	-0.6	0	0	1
P004	31.3	30.4	-0.9	0	0	1
P005	30.3	28.8	-1.5	0	0	1
P006	29.4	28.9	-0.5	0	0	1
P007	30.9	30.9	0	0	1	0
P008	27.7	26.3	-1.4	0	0	1
P009	28.6	28.1	-0.5	0	0	1
P010	29.3	28.2	-1.1	0	0	1
P011	29.8	28.6	-1.2	0	0	1
P012	31.6	30.6	-1	0	0	1
P013	30	29	-1	0	0	1
P014	32.6	31.9	-0.7	0	0	1
P015	29	29	0	0	1	0
P016	31.9	30.8	-1.1	0	0	1
P017	31.4	29.9	-1.5	0	0	1
P018	30.5	29	-1.5	0	0	1
P019	29.8	29.3	-0.5	0	0	1
P020	30.3	29.4	-0.9	0	0	1
Total:				**0**	**2**	**18**

A total of 18 respondents or 90% of the total participants showed a decrease in BMI scores. This decrease showed a positive quantitative change in weight status after receiving combination therapy in the form of acupuncture and consumption of *Murraya paniculata (Jiǔ lǐ xiāng)* brewing. Meanwhile, 2 respondents or 10% were recorded to have a fixed BMI value, without experiencing a change from the initial value before the

intervention. None of the respondents experienced an increase in BMI after the intervention.

B. Bivariate Analysis

1. *Paired Sample Statistics*

Tabel 5. *Paired Sample Statistics Table*

Pair 1	*Mean*	*Hours of deviation*	*N*
BMI Before	30.19	1.40	20
BMI After	29.31	1.45	20

The results of the descriptive analysis showed that the average BMI before the intervention was 30.19 kg/m² with a standard deviation of 1.40, which means that the majority of participants were included in the category of Level II Obesity. After the intervention was performed, the average BMI decreased to 29.31 kg/m² with a standard deviation of 1.45, indicating that the average participant decreased to the category of Level I Obesity (BMI 25.0 – 29.9 kg/m²).

Thus, there was an average BMI difference of 1.56 kg/m² between before and after the therapy. This difference shows a positive effect of combination therapy interventions, although it is still in the form of a descriptive analysis. This supports the hypothesis that the combination of acupuncture and herbal infusion may help lower BMI in obese people, especially those showing patterns of heat stroke syndrome based on the differentiation analysis of the syndrome in Traditional Chinese Medicine.

2. *Paired Samples Correlation*

Table 6. Correlation of BMI Pairs Before and After Intervention

Pair 1	*N*	**Correlation (r)**	***Sig. (2-tailed)***
BMI Before BMI After	20	0.950	0.000

SPSS calculates Pearson's correlation with the formula:

$$r = \frac{\sum(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum(x_i - \bar{x})^2 \cdot \sum(y_i - \bar{y})^2}}$$

With:

1. x_i: BMI score before intervention (pre-test) for the i-th respondent
2. y_i: BMI score after intervention (post-test) for the i-th respondent
3. x: Average pre-test BMI score of all respondents
4. ȳ: Average post-test BMI score of all respondents
5. Σ: Sigma symbol means "sum up all data from 1 to n"

The results of the analysis showed that the value of the Pearson correlation coefficient was 0.950 with a significance value of p = 0.000. This suggests that there is a very strong and statistically significant relationship between BMI values before and after combination therapy of acupuncture and *herbal brewing of Murraya paniculata (Jiǔ lǐ xiāng)*. This very high positive correlation indicates that the pattern of BMI change tends to be consistent over time: the higher the BMI before therapy, the higher the BMI after therapy, albeit with a measurable decrease.

This consistency supports the validity of the measurement and confirms that the changes that occur are not the result of random variations, but rather the result of targeted and systematic interventions.

3. *Paired Samples Test*

Table 7. T Test of BMI Pairs Before and After Intervention

Pair	*Mean* Difference	*Hours of deviation*	*Std. Error Mean*	*t*	*df*	*Sig. (2-tailed)*
BMI Before – BMI After	0,875	0.45523	0.10179	8,596	19	0.000

Based on the results of the Paired Samples T-Test conducted on BMI data before and after the intervention, an average difference of 0.875 kg/m² was obtained. The calculated t-value was 8.596 with a degree of freedom (df) of 19, and a significance value (p-value) of 0.000. This significance value was smaller than $\alpha = 0.05$, suggesting that the difference between BMI values before and after therapy was statistically significant. Thus, the null hypothesis (H_0), stating that there is no difference between BMI before and after therapy, is rejected, while the alternative hypothesis (H_1) is accepted.

These results indicate that the administered intervention—namely the combination of acupuncture therapy and consumption of Murraya paniculata (Jiǔ lǐ xiāng) infusion—had a significant effect on the decrease in Body Mass Index in respondents with gastric heat syndrome. The statistical effect of this therapy supports previous findings that differentiation-based treatment of the syndrome can result in clinically meaningful changes in obesity conditions.

4. *Paired Samples Effect Sizes*

Table 8. Pairs T Test BMI Scores Before and After Intervention

Pair 1	*Cohen's d Hedges' correction*	*Standardize*	*Point Estimate*	*95% Confidence Interval Lower*	*95% Confidence Interval Upper*
BMI beforeIMT after	Cohen's d	0,45523	1.922	1.165	2.661
	Hedges' g	0,47425	1.845	1.118	2.555

Based on the results of the analysis, Cohen's d value was obtained as 1.922, which, according to Cohen's convention, indicates a very large effect size (cut-off: 0.8 = large; >1.2 = very large). This value shows that there was a statistically significant change in respondents' BMI scores before and after the combination therapy intervention.

Meanwhile, Hedges' g value, serving as a correction for small sample size (N = 20), was 1.845 and is also categorized as a very large effect. This value reinforces the results of the analysis by accounting for bias correction in small sample sizes, while still confirming that the intervention has a strong impact.

High effect sizes in both Cohen's d and Hedges' g confirm that the combination of acupuncture and Murraya paniculata (Jiǔ lǐ xiāng) infusion interventions had a substantial and significant impact on the decrease in Body Mass Index (BMI) in respondents with gastric heat syndrome.

Statistically, this reflects the therapeutic effect, and clinically, it suggests that this combination of therapies has the potential to be a relevant approach in obesity or

overweight management programs, with the aim of lowering the risk of degenerative diseases associated with high BMI.

C. Normality Test

Table 9. Results of the Normality Test (*Shapiro-Wilk*) on Respondents' BMI Data Before and After Intervention

Variable	Statistics Shapiro-Wilk	*Sig. (p-value)*	Conclusion
BMI Before	0,977	0,637	Usual
BMI After	0,970	0,765	Usual

Based on Table 5.9 above, it is known that the significance value (*p-value*) for BMI before intervention is 0.893, and for BMI after intervention is 0.765. Because both values are greater than the significance limit of 0.05, the data is declared to be normally distributed.

Thus, the assumption of normality is fulfilled and statistical analysis using the Paired *Sample T-Test parametric test is declared valid for use in this study. This strengthens the reliability of the results of the analysis of differences in BMI before and after acupuncture therapy and infusion of Murraya paniculata (Jiǔ lǐ xiāng)* in respondents with heat of the stomach syndrome.

Research Discussion

1. Discussion of BMI Reduction Before and After Therapy

The results of this study showed a significant decrease in Body Mass Index (BMI) after intervention with body acupuncture therapy and consumption of Murraya paniculata (Jiǔ lǐ xiāng) herbal brew in respondents diagnosed with gastric heat syndrome. Measurements were taken twice, namely before (pre-test) and after (post-test) the intervention. Based on the results of univariate analysis, the average baseline BMI of participants was 30.19 kg/m², indicating level I–II obesity status according to the WHO Asia classification. After six rounds of therapy in 12 days, the mean BMI decreased to 29.88 kg/m², with an average difference of 1.30 kg/m². This demonstrates noticeable weight loss in a relatively short time.

A decrease in BMI occurred in 90% (18 out of 20) of respondents, while 10% (2 people) experienced a persistent BMI condition. There were no cases of increased BMI after the intervention. These results confirm that the combination therapy had a pronounced clinical influence on body composition, particularly in the reduction of excess body fat mass. Although not all respondents experienced significant changes individually, the collective trend showed a positive impact of the intervention.

Furthermore, the shift in the distribution of obesity categories indicates the success of the therapy. Before the intervention, 11 people (55%) were in the category of Level II Obesity, and 9 people (45%) were in Level I Obesity. After therapy, the number of respondents in the Obesity II category decreased to 6 people (30%), while those in Obesity I increased to 14 people (70%). This indicates improvement in the severity of obesity, although most have not yet reached the ideal weight category.

The results of the Paired Samples T-Test statistic confirmed these findings, with a calculated t-value of 8.596 and a significance value (p-value) of 0.000 ($p < 0.05$), indicating a highly significant difference between BMI before and after the intervention. The pair's correlation value of 0.950 also reflects a very strong and positive relationship between pre-test and post-test data, indicating a consistent decrease in BMI among most respondents.

In addition to the significance test, effect size was also calculated to determine the magnitude of change in BMI. The results showed Cohen's d value of 1.922 and Hedges' g of 1.845, both of which fall into the very large effect category. This indicates that the interventions provided are not only statistically impactful, but also have a clinically significant and substantial impact on the obesity conditions experienced by respondents.

Physiologically, and based on the principles of Traditional Chinese Medicine (PTT), gastric heat syndrome is characterized by symptoms such as excessive thirst, high appetite with increasing weight, constipation, and a reddish face. Acupuncture therapy at key points such as LI11 (Quchi), LI4 (Hegu), ST44 (Neiting), SP6 (Sanyinjiao), ST40 (Fenglong), ST36 (Zusanli), CV12 (Zhongwan), and GB26 (Daimai) aims to cleanse gastric heat, strengthen the spleen, remove moisture, and improve Qi and blood circulation. Meanwhile, Murraya paniculata (Jiǔ lǐ xiāng) pharmacologically exhibits anti-inflammatory, hypolipidemic, and metabolism-accelerating properties, supporting the synergistic therapeutic effect.

Thus, the combination of acupuncture therapy and Murraya paniculata (Jiǔ lǐ xiāng) infusion is an effective, safe, and significant intervention for reducing BMI in obese people with gastric heat syndrome. These findings serve as a relevant reference for developing integrative complementary interventions and open opportunities for further research with larger samples and a longer study duration.

2. Discussion of Effect Size

Effect size is a statistical parameter used to determine the extent of an intervention's influence—not only in terms of statistical significance, but also regarding the magnitude of the impact caused in practical or clinical settings. In this study, effect sizes were calculated using two methods, namely Cohen's d and Hedges' g, both of which are widely used in pre-test and post-test analyses with paired designs.

Based on the results of the calculation, Cohen's d value was obtained as 1.922, which according to Cohen's convention is classified as a very large effect (cut-off >1.2). This value showed that the combination intervention of acupuncture therapy and the consumption of Murraya paniculata (Jiǔ lǐ xiāng) had a very strong influence on the decrease in Body Mass Index (BMI) in respondents. Meanwhile, the Hedges' g value of 1.845, which corrects for small sample sizes (N = 20), also falls within the large to very large effect category.

The magnitude of these effect sizes reinforces the findings of the paired sample t-test analysis, which showed statistical significance. Furthermore, Cohen's d and Hedges' g values indicate that the therapeutic effect is not the result of random fluctuation, but a meaningful and noteworthy change in clinical practice. In other words, this intervention was not only statistically effective but also clinically significant in lowering BMI in obese people with gastric heat syndrome.

This research aligns with several previous studies that demonstrate the effect of acupuncture in regulating the digestive system, improving metabolism, and lowering body fat through energy regulation (Qi), especially when combined with herbal therapy designed to reduce heat and humidity in the digestive system. Murraya paniculata (Jiǔ lǐ xiāng), as the herb used, has also been shown to possess anti-inflammatory properties, improve lipid profiles, and support the metabolic functions of the liver and stomach, thus enhancing the synergistic effect of acupuncture.

Thus, the high effect sizes observed in this study confirm that the applied therapy is not only theoretically or statistically effective but also provides significant clinical benefits for obese individuals with gastric heat syndrome. This makes the combination therapy a promising approach for further development in healthcare, particularly in the context of Traditional Chinese Medicine (PTT).

3. Interpretation of the Normality Test

Before proceeding to the inferential analysis using the paired sample t-test, a normality assumption test was first carried out on BMI data before and after the intervention. This is important because the parametric t-test requires the data to be normally distributed to produce valid and reliable results.

In this study, the normality test was performed using the Shapiro-Wilk method, which is appropriate for small sample sizes (less than 50 respondents). The test results showed a significance value (p-value) for BMI before intervention of 0.977, and for BMI after intervention, 0.970. Both values are greater than 0.05, meaning the data are statistically normally distributed.

With the normality assumption met, it can be concluded that the data are eligible for further analysis using the paired sample t-test. This also ensures that the observed differences in BMI values before and after therapy are not distorted by non-normal data distributions. Therefore, the interpretation of the t-test results can be considered valid and representative of the study population.

Fulfilling the normality assumption further supports the conclusion that the observed decrease in BMI among most respondents was not by chance, but a real effect of the structured and systematic combination therapy intervention of acupuncture and Murraya paniculata (Jiǔ lǐ xiāng) infusion.

4. Clinical Relevance and Previous Studies

The findings in this study showed that the combination of acupuncture therapy and Murraya paniculata (Jiǔ lǐ xiāng) infusion significantly lowered Body Mass Index (BMI) in respondents diagnosed with gastric heat syndrome. The mean decrease in BMI of 1.30 kg/m² was accompanied by very large effect sizes (Cohen's d = 1.922 and Hedges' g = 1.845), indicating that this intervention was not only statistically effective but also clinically relevant.

In the context of Traditional Chinese Medicine (PTT), gastric heat syndrome is often associated with the accumulation of heat and moisture in the body, impacting metabolic disorders, excessive appetite, and fat accumulation. Acupuncture points such as ST36 (Zusanli), ST40 (Fenglong), and SP6 (Sanyinjiao) are used to strengthen spleen and gastric function, enhance Qi circulation, and reduce pathological humidity. Brewed Murraya paniculata (Jiǔ lǐ xiāng) has aromatic and bitter properties that help to counteract Qi stagnation and internal heat, and support digestion.

A meta-analysis by Rosyida (2021) of six randomized controlled clinical trials (RCTs) in China and Korea showed that acupuncture was effective in reducing constipation (SMD = -1.40; p = 0.040). Although the primary focus was constipation, these findings support the evidence that acupuncture can produce therapeutic effects by modulating the nervous system, improving peristalsis, and enhancing organ function. Similar mechanisms may be highly relevant in the treatment of obesity, given that improving metabolism and digestive function is a main target of therapy.

The results of this study align with findings by Ningrum et al. (2025) showing that the perception of benefits, disease severity, cues to action, and self-efficacy play key roles in the selection of acupuncture. In this study, respondents with higher confidence in the effectiveness of acupuncture therapy and Murraya paniculata herbs showed more significant reductions in BMI compared to those who were skeptical about its benefits. This research is also consistent with previous studies; Liu et al. (2021) in the Journal of Integrative Medicine found that acupuncture aids weight loss and improves metabolic parameters in obese individuals.

Zhou et al. (2020) also concluded that acupuncture is effective in managing excess weight by improving energy circulation and reducing moisture accumulation. Furthermore, research by Mahmoud et al. (2019) demonstrated that Murraya paniculata (Jiǔ lǐ xiāng) leaf

extract possesses anti-inflammatory effects and reduces dyslipidemia, strengthening the scientific rationale for using this plant as adjunct therapy in obesity.

From a clinical perspective, a reduction in BMI of 1.30 kg/m² over a short period (12 days of intervention) is sufficient to lower the risk of obesity-related complications such as metabolic syndrome, hypertension, and type 2 diabetes. This underscores the potential for integrating traditional interventions like acupuncture and herbs in weight loss programs, particularly for metabolic disorders according to PTT principles.

Thus, the study's results not only support the therapeutic impact from both scientific and statistical standpoints but also provide a solid basis for clinical implementation as a complementary therapy in the management of obesity using a syndrome-based, individualized approach.

5. Research Limitations

Although the results of this study demonstrate a significant effect of the combination of acupuncture therapy and Murraya paniculata (Jiǔ lǐ xiāng) in reducing Body Mass Index (BMI), several limitations should be noted.

First, the research utilized a pre-experimental one-group pretest–posttest design without a control group. This limits the ability to rule out external factors (such as physical activity, unsupervised diet, and psychological conditions) that may have influenced the results. Without a comparison group, it is challenging to determine whether observed changes in BMI are entirely due to the intervention or are affected by other variables.

Second, the relatively small sample size (N = 20) restricts the generalizability of these findings to a broader population. Although the effectiveness results are strong, retesting with larger, more diverse cohorts would improve external validity.

Third, the brief duration of the intervention—only 12 days with 6 therapy sessions—may be insufficient to describe the long-term therapeutic impact on BMI and overall body composition. More stable and clinically significant weight loss typically requires longer intervention periods.

Fourth, reliance on self-reports and observations for herbal consumption cannot guarantee precise respondent compliance. The absence of detailed monitoring of diet and daily activity during the intervention also limits the evaluation of coexisting factors that may influence outcomes.

Given these limitations, the results of this study should serve as an initial reference for more comprehensive studies. Future research should adopt quasi-experimental or randomized controlled trial designs with longer durations, larger and more heterogeneous populations, and improved monitoring methods for rigorous evaluation.

CONCLUSION

Acupuncture therapy combined with the infusion of Murraya paniculata (Jiǔ lǐ xiāng) has been shown to be effective in lowering Body Mass Index (BMI) and improving symptoms of gastric heat syndrome in obese individuals. This study involved 20 female respondents aged 21–36 years diagnosed with obesity and gastric heat syndrome through interviews, pulse, and tongue examination. Before therapy, the average BMI of respondents was recorded at 30.19 kg/m² with a tense pulse and a red tongue featuring a thick yellowish coating. After six acupuncture sessions over two weeks, accompanied by daily herbal consumption for 12 days,

the average BMI decreased to 29.31 kg/m², the pulse normalized, and the tongue appeared pink with a normal coating.

Paired Sample T-Test analysis showed a significant decrease in BMI ($p = 0.000$) with a strong association ($r = 0.950$) and a large effect size (Cohen's $d = 1.922$), confirming the therapy's statistical and clinical effectiveness. These findings support the principles of Traditional Chinese Medicine in balancing organ function, resolving excess heat, and improving digestion, and may serve as a foundation for clinical practice guidelines, academic reference, and further research within the framework of evidence-based modern health.

REFERENCES

Alzeer, J. (2025). *Lifestylopathy as personalized medicine: A holistic approach to health*. Medical Research Archives, *13*(1).

Bodicoat, D. H., et al. (2014). Obesity and time to pregnancy: A retrospective study. *Human Reproduction Update, 20*(6), 768–776. https://doi.org/10.1093/humupd/dmu025

Budreviciute, A., Damiati, S., Sabir, D. K., Onder, K., Schuller-Goetzburg, P., Plakys, G., Katileviciute, A., Khoja, S., & Kodzius, R. (2020). Management and prevention strategies for non-communicable diseases (NCDs) and their risk factors. *Frontiers in Public Health, 8*, 574111. https://doi.org/10.3389/fpubh.2020.574111

CDC. (2023). *Adult obesity: Causes & consequences*. Centers for Disease Control and Prevention. https://www.cdc.gov/obesity

Fatriani, R., Pratiwi, F. A. K., Annisa, A., et al. (2024). Unveiling the anti-obesity potential of Kemuning (*Murraya paniculata*): A network pharmacology approach. *PLOS ONE, 19*(8), e0305544. https://doi.org/10.1371/journal.pone.0305544

G. M., C., M. B., I., K., B., C., J., & J. A., S. (2012). Telemedicine and paediatric obesity treatment: Review of the literature and lessons learnt. *Clinical Obesity, 2*(3–4).

Lian, Y.-L., Chen, C.-Y., Hammes, M., & Kolster, B. C. (2012). *Pictorial atlas of acupuncture: An illustrated manual of acupuncture points* (H. P. Ogal & W. Stör, Eds.; Special ed.). h.f.ullmann publishing GmbH.

Liu, G., & Yin, J. (2000). *Chinese medicine for obesity: Diagnosis and treatment*. People's Medical Publishing House.

Liu, T., Wang, N., Zhang, L., & Zhong, L. (2016). Chinese herbal medicine for functional abdominal pain syndrome: From clinical findings to basic understandings. *Evidence-Based Complementary and Alternative Medicine, 2016*(1), 8652523. https://doi.org/10.1155/2016/8652523

Maciocia, G. (2008). *The practice of Chinese medicine: The treatment of diseases with acupuncture and Chinese herbs* (2nd ed.). Churchill Livingstone.

Mathur, A., Taurin, S., & Alshammary, S. (2023). The safety and efficacy of mesenchymal stem cells in the treatment of type 2 diabetes: A literature review. *Diabetes, Metabolic Syndrome and Obesity*, 769–777. https://doi.org/10.2147/DMSO.S413242

Melamed, O. C., Selby, P., & Taylor, V. H. (2024). Obesity, mental health, and health-related quality of life. Dalam *Handbook of obesity* (Vol. 1, p. 581). CRC Press.

Ningrum, A. L., Prasetya, H., Murti, B., & Demartoto, A. (2025). From pain to preference: What drives patients to choose acupuncture for low back pain? *Indonesian Journal of Medicine, 10*(2), 133–141. https://doi.org/10.26911/theijmed-2025.10.02.05

Rahman, M. M., de Silva, A., Sassa, M., Islam, M. R., Aktar, S., & Akter, S. (2023). A systematic analysis and future projections of the nutritional status and interpretation of its drivers among school-aged children in South-East Asian countries. *The Lancet Regional Health – Southeast Asia, 16*. https://doi.org/10.1016/j.lansea.2022.100124

Rosyida, M. K. (2021). *Acupuncture therapy to reduce constipation: Meta-analysis* [Thesis]. Universitas Sebelas Maret.

Saltiel, A. R. (2016). New therapeutic approaches for the treatment of obesity. *Science Translational Medicine, 8*(323), 323rv2. https://doi.org/10.1126/scitranslmed.aad3749

Shekar, M., & Popkin, B. (2020). *Obesity: Health and economic consequences of an impending global challenge*. World Bank Publications.

Sim, K. J. (2011). *Dasar teori ilmu herba & akupunktur* (S. Subowo, Ed.). TCM Publication.

Sim, K. J. (2024). *Ilmu terapi jilid III: Herbal dan akupunktur* (Cetakan kedua). SituSeni.

Simanjuntak, L. (2023). *Nommensen Health and Medical Sciences International Conference*.

Sun, W., He, J., Wang, W., Lu, C., Lin, Y., Dou, Y., Yan, W., & Yu, J. (2025). Auricular acupressure versus an intermittent low-carbohydrate diet in children with overweight or obesity with gastric-heat and dampness-obstruction syndrome: Protocol for a randomized controlled trial. *JMIR Research Protocols, 14*(1), e59856. https://doi.org/10.2196/59856

Xiao, N., Ding, Y., Cui, B., Li, R., Qu, X., Zhou, H., Au, K., Fan, X., Xie, J., & Huang, Y. (2024). Navigating obesity: A comprehensive review of epidemiology, pathophysiology, complications and management strategies. *The Innovation Medicine, 2*(3), 100090–100091. https://doi.org/10.1016/j.inme.2024.100090