



Article

The Effect of Abdominal Acupuncture on Reducing Waist Circumference in Obesity Cases at Erny Harsono Acupuncture Private Practice, Cilebut Bogor

Erny Harsono¹, Nurtama Aditya Nugraha², Kurnia Eka Putri³

¹⁻³Acupuncture Department, Health Polytechnic Ministry of Health Surakarta, Indonesia

SUBMISSION TRACK

Received: January 31, 2026
Final Revision: July 18, 2026
Available Online: October 18, 2026

KEYWORDS

Knee Pain, Local Acupuncture, Ear Acupuncture, WOMAC Score

CORRESPONDENCE

Phone: +6285795302430
E-mail: ernyharsono99@gmail.com

ABSTRACT

Obesity is defined as an excess accumulation of body fat caused by a caloric intake exceeding energy requirements, with excessive abdominal fat significantly elevating the risk of degenerative conditions such as hypertension, diabetes mellitus, and cardiovascular disease criteria established by the Indonesian Ministry of Health set a waist circumference (WC) threshold of >90 cm for men and >80 cm for women. To evaluate the effect of abdominal acupuncture on reducing waist circumference among obese individuals, this quantitative study used a quasi-experimental pretest-posttest design with 30 respondents at the Erny Harsono Acupuncture Private Practice in Bogor from February to October 2025. Participants underwent eight sessions of "turtle formation" abdominal acupuncture administered twice weekly, with waist circumference measured in centimeters using a standardized measuring tape as the primary dependent variable. The findings revealed a statistically significant reduction in waist circumference following four weeks of therapy ($p < 0.001$). Specifically, 18 participants (60%) achieved a reduction of 6–10 cm, with an overall mean reduction of 6.83 cm (median: 6.50 cm; mode: 6.00 cm; range: 1–19 cm), demonstrating that abdominal acupuncture is an effective intervention for central obesity management.

I. INTRODUCTION

Obesity can occur when the calorie intake into the body is more than the calories needed and expended by the body⁽¹⁾. Excess calories that are not used by the body will be stored as energy reserves in the form of fat⁽²⁾. Fat, which is a conversion of excess calories, is stored in fat tissue (adipocytes) in various parts of the body⁽³⁾. Parts of the body that are

susceptible to being filled with fat are the cheeks, arms, thighs, and stomach, especially the stomach⁽²⁾. The continuous accumulation of abdominal fat can cause various health problems⁽⁴⁾. In the early stages, excess weight is an indicator of body fat accumulation. Continued excess weight will lead to obesity. Obesity can predispose to various deadly chronic diseases such as heart disease, diabetes, stroke, and cancer⁽⁴⁾. Various other

diseases that accompany obesity are hypercholesterolemia, osteoporosis, sleep apnea, and others⁽¹⁾. Heart disease, diabetes, hypercholesterolemia, and osteoporosis can cause an unpleasant sensory and emotional experience related to actual and potential tissue damage, also called pain⁽¹⁾. The pain that arises is often disruptive and reduces the quality of life⁽³⁾.

Data from the World Health Organization (WHO) in 2022 showed that around 43% of adults were overweight and 16% were obese⁽²⁾. The Indonesian Ministry of Health noted that the national prevalence of obesity increased from year to year in 2018 there were 21.8% cases of obesity, while in 2023 there were 23.4% cases of obesity⁽⁴⁾. The provinces with the highest obesity rates in Indonesia are DKI Jakarta Province with a percentage of 31.8%, Papua 31.3%, and North Sulawesi 30.6%⁵. Obesity management in both Western and Eastern medicine can be performed pharmacologically and non-pharmacologically. Eastern medicine, particularly Chinese medicine, particularly acupuncture, places special emphasis on obesity, as evidenced by several scientific journals on acupuncture, both domestically and internationally. Acupuncture, as part of physical therapy in Indonesia, is effective and worthy of consideration in the management of obesity.

Acupuncture provides mechanical stress to the hypodermis layer, which can mediate the biomechanical and physiological effects of loose connective tissue (adipose)⁽⁶⁾. When the needle penetrates the skin, it will pass through 3 main skin layers, namely epidermis, dermis, and hypodermis. The hypodermis layer is made of loose connective tissue (adipose), large blood vessels, and nerve bundles⁽¹⁾.

Acupuncture re-establishes homeostasis in the body by correcting imbalances in the form of "hyper or hypo" functions in the body so that it affects the triumvirate of the body system, namely the endocrine,

metabolic, and immune systems, so that the three can work to complement and strengthen each other⁽⁶⁾. When the body fails to maintain homeostatic conditions in one or more systems and their functions, disease arises⁽⁷⁾. In cases of obesity, the chaos of the triumvirate of the endocrine, immune, and metabolic systems causes diseases as explained above⁽⁸⁾.

Acupuncture has many therapeutic methods, one of which is abdominal acupuncture, which is a form of microacupuncture that depicts the stomach as a reflection of the entire body, so that punctures in the abdominal area can affect the function of body organs, often used for difficult and chronic cases and is effective for cases of pain⁽⁹⁾. Abdominal acupuncture targets the meridians that cross the abdominal area, with needle insertion trying to intervene in the body's metabolism, improve digestive function, and balance the body's energy (Qi) to get a balanced body weight⁽²⁾. Needle insertion of the abdominal acupuncture method, with the stomach as a point of fat accumulation, is stimulated to get a mechanical stress effect on the adipose tissue under the stomach. Acupuncture has also been proven to be very effective in reducing the level of pain that may arise in obesity through stimulation of acupuncture points, giving signals to the central nervous system to flow blood towards the pain center⁽⁶⁾.

This research is quantitative, namely research that, in the process of finding knowledge, uses data in the form of numbers as a tool for analyzing information about what is to be researched with the assumption that the research target is single-dimensional, fragmentary, and tends to be fixed so that it is easy to predict and variables can be identified and measured with objective and standard tools⁽¹⁰⁾. Therefore, this study aims to evaluate the effect of abdominal acupuncture on reducing waist circumference in obesity cases at Erny Harsono Acupuncture Private Practice, Cilebut Bogor.

II. METHODS

This study employed a quantitative quasi-experimental design using a single-group pretest-posttest approach to evaluate the effect of abdominal acupuncture as the independent variable on waist circumference as the dependent variable. The research was conducted at Erny Harsono's Independent Acupuncture Practice in Cilebut, Bogor, Indonesia, spanning from February to October 2025. Out of an estimated population of 38 obese clients identified during preliminary studies, a final sample of 30 respondents was selected using a non-probability purposive sampling technique based on predefined inclusion and exclusion criteria.

The intervention consisted of an eight-session abdominal acupuncture regimen administered over a four-week period, with participants receiving two 30-minute sessions per week. The procedure utilized the "turtle formation" technique targeting 26 specific abdominal acupuncture points, comprising Conception Vessel points (CV12 Zhongwan, CV10 Xiawan, CV6 Qihai, and CV4 Guanyuan), Kidney Meridian points (KI19 Yindu, KI17 Shangqu, and KI13 Qixue), Stomach Meridian points (ST25 Tianshu, ST24 Huaroumen, and ST26 Wailing), and Extra points (EX-AB1, EX-AB2, EX-AB4, EX-AB6, and EX-AB7). Sterile acupuncture needles measuring 1.0 or 1.5 cun were selected and inserted according to the individual participant's abdominal subcutaneous fat layer thickness.

Waist circumference was measured in centimeters prior to the first session (pretest) and following the eighth session (posttest) using a standardized, non-stretchable measuring tape. During measurement, participants stood relaxed and upright while the tape was positioned horizontally around the abdomen at the level of the umbilicus. Measurements were taken at the end of a normal exhalation, recorded to the nearest 0.1 cm, and

documented on standardized observation sheets for subsequent statistical analysis.

III. RESULT

The research subjects were divided into one group, consisting of 30 participants. The Abdominal acupuncture intervention was conducted in accordance with the Standard Operating Procedure (SOP) and was administered eight times, with a frequency of two sessions per week.

Table 1. Characteristics of Respondents

Characteristics	N	%
Age (years)		
20-30	0	0
31-40	3	10
41-50	6	20
51-60	2	7
61-70	19	63
Gender		
Man	2	7
Woman	28	93
Work		
Self-employed	2	7
Social Worker	2	7
Teacher	3	10
Housewife	4	13
Retired	19	63
Age (years)		
20-30	0	0
31-40	3	10

Table 1 presents the age characteristics of the study participants, which were classified into three categories age, gender, and work. The frequency distribution by sex showed that the largest distribution in the 61–70-year age group, comprising 19 study subjects (63%). The frequency distribution by sex showed that the majority of participants were female, with 28 subjects (93%), while male participants accounted for 2 subjects (7%). The frequency distribution based on occupation showed that the most common occupation in both groups was retired, comprising 19 study subjects (63%).

Table 2. Pre-test and Post-test Waist Circumference

Waist Circumference	Mean	SD	Min	Max
Pre-test	102.8	92	91	122

Post-test	96	92.5	80	116
------------------	----	------	----	-----

Table 2 presents the comparison of participants' waist circumference before and after the 8-session abdominal acupuncture intervention. Before the therapy (pre-test), the mean waist circumference was (Mean=102.8; SD= 92), ranging from. Following the 4-week treatment (post-test), the mean waist circumference decreased to (Mean=96.0; SD= 92.5), with individual values ranging from. These descriptive results indicate an overall reduction in waist circumference among the study participants after completing the intervention.

Table 3. Waist Circumference score After 8 Therapy

Pain Scale	N	(%)
1-5	10	33.5
6-10	18	60
11-15	1	3.33
16-20	1	3.33

Table 3 summarizes the distribution of participants based on the degree of waist circumference reduction achieved after eight therapy sessions. The majority of 18 participants (60%) experienced a waist circumference reduction ranging from 6 to 10. Furthermore, 10 participants (33.3%) recorded a reduction of 1 to 5, while a reduction of 11 to 15 and 6 to 20 was observed in 1 participant 3.3 each. These results demonstrate that 93.3 of the study respondents achieved a waist circumference reduction of at least 1 to 10 following the four-week abdominal acupuncture intervention.

Table 4. Normality Test

Research Data	N	p
Pre-Test	30	0.900
Post-Test	30	0.900

Table 4 shows that the normality test on the research subject data above using the Shapiro-Wilk test obtained the results of the normality test on the pre-test ($p=0.900$) and on the post-test data ($p=0.900$). So the entire research data is normally distributed because the significance $p>0.050$.

In homogeneity tests, the Levene test is generally used, which is based on a research design that produces data with two or more groups. In this study, because there is only 1 (one) group with 1 (one) treatment, the homogeneity test is not used.

The hypothesis test in this study used the Paired Sample T-test because the data were normally distributed and involved two measurements on the same group of subjects and were interrelated, namely abdominal circumference before and after acupuncture treatment. It was used to determine whether there was a change in abdominal circumference after abdominal acupuncture therapy. The results of the Independent T-test are as follows.

Table 5. Paired Sampel T-Test

Waist Circumference	N	Corelation	p
Pre-Test	30	0.931	<0.001
Post-Test			

Based on the results of Table 5, the paired sample t-test data show that the significance value is $p < 0.001$, so this shows that there is a significant difference between the abdominal circumference values before and after abdominal acupuncture therapy.

IV. DISCUSSION

The results of these age-based characteristics show that the elderly are the age group most likely to experience obesity in this study. As a person ages,

changes in body composition occur, namely an increase in fat mass, a decrease in free fat mass, and a decrease in bone mass. An increase in the proportion and distribution of body fat can cause an increase in central fat accumulation in the abdomen (central obesity)⁽¹⁴⁾.

Obesity can be experienced by all age groups, but at the age of 60, apart from the decline in metabolism, most people at that age have entered retirement with a more stable life and fewer routines, and activities that expend calories are not too much, excess calories are stored in the form of fat tissue, so the age range of 61-70 has a greater potential for obesity and various risk factors for obesity such as cholesterol, diabetes, gout, osteoporosis, and cardiovascular disorders⁽¹⁾.

Retirement often leads to a decline in physical activity and daily routine, thereby decreasing total energy expenditure. When caloric intake remains unchanged, this energetic imbalance can lead to weight gain and increase the risk of obesity in older adults⁽¹⁵⁾. The energy obtained by the body through calories from food and drink is much greater than the energy expended by the body in carrying out its functions and physical activity, and has the potential to cause obesity⁽¹⁶⁾.

The data presented in Table 1 show that the frequency distribution by gender is predominantly female, with 28 people (93%), while 2 men (7%) out of 30 people. Women have a basal metabolic rate that is 10% lower than men, so they tend to convert more food into fat rather than muscle and energy. Differences in basal metabolic rate lead to differences in muscle mass and fat mass in men and women, resulting in different obesity standards based on waist circumference, with

men exceeding 90 centimeters and women exceeding 80 centimeters.

The data presented in Table 1 show that the frequency distribution based on the measurement of abdominal circumference before therapy is mostly in the range of 90 to 100 cm, with as many as 16 people (15%) out of 30 people. The mean value is 102.87 cm, median 99 cm, mode 92 cm, in this study, the minimum abdominal circumference before therapy (pre-test) is 91 cm and the maximum abdominal circumference is 122 cm. Proving that Hippocrates' view that obesity is not a disease but a sign of another disease is correct⁽¹⁷⁾. The characteristics of abdominal circumference before therapy of the research subjects who are acupuncture clients from the Independent Practice of Acupuncture Erny Harsono Cilebut Bogor who come with various complaints of disease, in line with the statement that abnormal or excessive fat accumulation poses a health risk⁽⁴⁾. Obesity is the gateway to various diseases⁽¹⁾.

Meanwhile, Table 2 shows that the frequency distribution based on abdominal circumference measurements after Abdominal acupuncture therapy is mostly in the range of 80 to 90 centimeters. The mean value is 96 cm, the median is 92.5 cm, and the mode is 90 cm. In this study, the minimum abdominal circumference after therapy (post-test) is 80 cm and the maximum abdominal circumference is 116 cm. Referring to the two data, it can be seen that there is a difference in abdominal circumference in the research subjects, so it can be said that the study "The Effect of Abdominal Acupuncture Therapy in Reducing Abdominal Circumference in Obesity Cases at the Erny Harsono Cilebut Bogor Independent Acupuncture Clinic" has succeeded in reducing abdominal

circumference. The mechanical stress resulting from needle insertion has succeeded in influencing the biomechanics and physiology of loose connective tissue (adipose)⁽⁶⁾.

The data presented in Table 3 show that the frequency distribution based on the decrease in overall abdominal circumference after 8 sessions of Abdominal acupuncture therapy is in the range of 6 to 10 cm decrease, with as many as 18 people (60%) out of 30 people. The mean value is 6.83 cm, median 6.50 cm, and mode 6 cm. In this study, the decrease in abdominal circumference after 8 sessions of therapy, the minimum decrease is 1 cm, and the maximum abdominal circumference is 19 cm. There is a significant difference between the minimum and maximum decrease. This can occur because the researcher only provides interventions limited to acupuncture therapy, the subjects do not live in one room but live their lives as usual in their respective environments, so that eating patterns, movement patterns, stress patterns, and others run as usual because this study is a Quasi-experimental design study.

In a quasi-experimental study, the independent variable was manipulated to see its effect on the dependent variable⁽¹¹⁾. The independent variable in this study, abdominal acupuncture, was proven to have influenced the dependent variable, namely the subject's abdominal circumference. The observation sheet showed that in each therapy session there was a decrease in abdominal circumference, but in the course between each session, some subjects experienced an increase again. This study only conducted 8 therapy sessions at a rate of 2 times a week, so it was completed in 1 month due to the author's limited time. The journal "Clinical

Study for Simple Obesity" reported that the maximum results of abdominal acupuncture were seen after undergoing a minimum of 2 therapy cycles with a total of 30 sessions.

The hypothesis test in this study used the Paired t-test. This test was taken because the normality test showed that the data were normally distributed and homogeneous. The Paired T-test was used because this study involved one group of respondents with one therapy treatment. The Paired T-test was used to determine whether the two related data, namely the abdominal circumference data before therapy and the abdominal circumference data after abdominal acupuncture therapy, had an effect or not. From this test, the significance result was $p < 0.001$, so it was found that in this study, Abdominal Acupuncture therapy as an independent variable had an effect on the subject's abdominal circumference as a dependent variable, so the results indicate that the Abdominal acupuncture method can affect reducing abdominal circumference in obesity cases. Through needle insertion that produces mechanical stress, the biomechanical and physiological effects of adipose tissue result in a decrease in abdominal circumference⁽⁶⁾.

Abdominal acupuncture can even affect glucose metabolism in overweight and obese patients in Mojokerto sub-district⁽¹⁸⁾. Abdominal acupuncture therapy is also effective in reducing fat levels 10. In the 2nd cycle, with a total of 30 Abdominal acupuncture therapy sessions, it was reported that it can maximally affect Body Mass Index and body weight⁽²⁾. This is in line with the statement that acupuncture rebuilds homeostasis in the body by correcting imbalances in the form of hyper- and hypo-body functions that occur, so

that they affect the triumvirate of the body's systems, namely the endocrine, metabolic, and immune systems, so that all three can work together to complement and strengthen each other⁽⁶⁾. So it is not just about reducing abdominal circumference but also has the potential to resolve all risk factors of obesity.

V. CONCLUSION

This study demonstrates that abdominal acupuncture using the "turtle formation" technique is significantly effective in reducing waist circumference among indi-

viduals with obesity ($p < 0.001$). The study cohort predominantly consisted of women (93%), older adults aged 61 to 70 years (63%), and retirees (63%). Following eight sessions of therapy over four weeks, participants experienced a noticeable shift in waist circumference metrics, with the overall mean decreasing from 102.87 cm at pre-test to 96.00 cm at post-test. These findings confirm that abdominal acupuncture serves as a viable, non-pharmacological intervention for managing central obesity and reducing associated metabolic risks in adult and elderly populations.

REFERENCES

1. Hall JE, Widjajakusumah MD, Tanzil A, Ilyas E. Guyton dan Hall: buku ajar fisiologi kedokteran. Singapore: Elsevier. 2019. p. 311-2.
2. Mu MJ, Yuan YQ. Clinical study on simple obesity treated with abdomen acupuncture. *J Acupunct Tuina Sci*. 2008;6(3):165-8. doi:10.1007/s11726-008-0165-2.
3. Zimmer Z, Fraser K, Grol-Prokopczyk H, Zajacova A. A global study of pain prevalence across 52 countries: examining the role of country-level contextual factors. *Pain*. 2022;163(9):1740-50.
4. Lisna. Tantangan dan strategi. Badan Riset dan Inovasi Nasional [Internet]. 2024 [cited 2025 Feb 15].
5. Kementerian Kesehatan Republik Indonesia. Hasil utama SKI 2023. Badan Kebijakan Pembangunan Kesehatan [Internet]. 2023 [cited 2025 Feb 17].
6. Tjandrawinata RSK. Dasar biomedis akupunktur. Surabaya: Airlangga University Press; 2022.
7. Jie SK. Dasar teori ilmu herba dan akupunktur. 2nd ed. Subowo, editor. Singapore: TCM Publication; 2011.
8. Ouchi N, Parker JL, Lugus JJ, Walsh K. Adipokines in inflammation and metabolic disease. *Nat Rev Immunol*. 2011;11(2):85-97. doi:10.1038/nri2921.
9. Deadman P, Al-Khafaji M, Baker K. A manual of acupuncture. Journal of Chinese Medicine Publications; 1998.
10. Susanto PC, Arini DU, Yuntina L, Soehaditama JP, Nuraeni N. Konsep penelitian kuantitatif: populasi, sampel, dan analisis data (sebuah tinjauan pustaka). *J Ilmu Multidisiplin*. 2024;3(1):1-12.
11. Nasrudin J. Metodologi penelitian pendidikan: buku ajar praktis cara membuat penelitian. Riau: CV Angkasa Media Literasi; 2019.
12. Firmansyah D, Dede. Teknik pengambilan sampel umum dalam metodologi penelitian: literature review. *J Ilm Pendidik Holistik*. 2022;1(2):85-114.
13. Wang Y. Micro-acupuncture in practice. St. Louis: Churchill Livingstone/Elsevier; 2009.
14. Fenty F, Christasani PD, Djunarko I, Ayu Putri AD, Rahmadiva N, Ellennia M. Sosialisasi dampak obesitas sentral dan hipertensi pada kelompok posyandu lansia Danurejan, Yogyakarta. *J Pengabd Masy Indones*. 2023;3(1):57-62.

15. Sinaga E. Gambaran status gizi lansia di wilayah binaan Prodi Ners STIKes Santa Elisabeth Medan. *Elisabeth Health Jurnal*;2019 4(1):23-27. Doi:10.523-17/ehj.v4i1.254.
16. Heshmat S. Eating behavior and obesity: behavioral economics strategies for health professionals. New York: Springer Publishing Company; 2011.
17. Haslam DW, James WPT. Obesity. *Lancet*. 2005;366(9492):1197-209. doi:10.1016/S0140-6736(05)67483-1.
18. Purwanto P, Christiyawati MD, Sumanto S. Pengaruh terapi akupunktur terhadap metabolisme glukosa pada penderita overweight dan obesitas di Kelurahan Mojosongo Surakarta. *J Keterampilan Fis*. 2020;5(1):13-30.