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An Analysis of Body Composition and Physical status of middle aged Women

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Abstract: Background: Body composition and physical status are essential indicators of overall health, especially in middle-aged women. This group often undergoes significant physiological changes due to aging, hormonal shifts, and lifestyle factors, affecting their body composition, including fat mass, lean muscle mass, and bone density. Methodology: A total of 100 women from Varanasi city, comprising both employed individuals and housewives, participated in this study. These women were divided into two groups, each consisting of 100 subjects aged between 35 and 50 years. The selected variables for body composition analysis included total body fat, fat-free mass, bone mass, muscle mass, body mass index, and physical status. Results: The t-test for Equality of Means revealed a significant difference between the groups, t(198) = 1.660, with p-values indicating substantial differences in total body fat (p < .001), fat-free mass (p < .001), bone mass (p < .000), muscle mass (p < .001), and body mass index (p < .001). Furthermore, there was a significant difference in physical activity levels, t(198) = 11.714, p < .001). Conclusion: The study found a considerable difference in body composition parameters between employed women and housewives. Employed women exhibited lower total body fat and BMI, and higher muscle mass, fat-free mass, and bone mass compared to housewives. This suggests that employed women, likely due to more structured schedules and better access to physical exercise, maintain a healthier body composition.

Keywords: body composition, physical activity, housewives, employed women

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INTRODUCTION

Understanding the body composition and physical status of middle-aged women is not only crucial for promoting their health and well-being but also for addressing the unique challenges they face during this transitional phase of life. Middle-aged women experience a multitude of physiological changes, driven by factors such as hormonal fluctuations, aging processes, and lifestyle choices. These changes manifest in alterations in fat distribution, muscle mass, and bone density, all of which can impact overall health outcomes.

As women progress through middle age, maintaining optimal body composition becomes increasingly important. Excess fat accumulation, particularly around the abdomen, is linked to higher risks of cardiovascular diseases, insulin resistance, and metabolic disorders. Conversely, preserving lean muscle mass and bone density is essential for maintaining strength, and mobility and reducing the risk of osteoporosis and fractures. Beyond physiological changes, lifestyle factors play a pivotal role in shaping body composition and physical health in middle-aged women. Factors such as diet quality, physical activity levels, socioeconomic status, and access to healthcare services all contribute to health outcomes. Employed women and housewives, for instance, may have different daily routines and opportunities for physical exercise, which can significantly influence their body composition and overall health status.

This study aims to delve into these complexities by analysing key parameters of body composition, including total body fat, fat-free mass, bone mass, muscle mass, and body mass index (BMI), among middle-aged women in Varanasi City. By comparing these variables between employed women and housewives, the research seeks to uncover distinct patterns and disparities that may exist in their health profiles. Additionally, the study will explore differences in physical activity levels between these groups, providing further insights into lifestyle impacts on health.

The findings of this research are intended to inform targeted interventions and health promotion strategies tailored to the specific needs of middle-aged women. By identifying areas for improvement and understanding the factors influencing body composition, policymakers, healthcare providers, and individuals themselves can collaborate to enhance overall health outcomes and quality of life for this demographic. Ultimately, this study contributes to a deeper understanding of women's health in middle age and supports efforts to mitigate age-related health risks and promote healthy aging.

OBJECTIVE

This study aims to analyze the body composition and physical status of middle-aged women to provide insights into their health and identify areas for potential improvement through targeted strategies.

METHODOLOGY

Subjects

For this study, two hundred (100 employed women) and (100 housewives), middle-aged women (35 ± 50 years of age) willingly participated. All participants were briefed on the study's objectives and the procedures they would undergo, and they provided their informed consent by signing a consent form.

Criterion Measures

1. Total body fat, fat free mass, muscle mass, bone mass, and body mass index measured by BIA (body Imperial analyser).
2. Physical status measured by questionnaire (IPAQ).

Methods

All subjects declared their written informed consent and were familiar with the aims, methods and risks of participating in the study. We recruited 200 participants for the Body composition and physical status test, from Varanasi, which included 200 middle-aged (100) employed and (100) housewives. For measurement of body composition analyser (Omron) was used to analyse the human body composition based on the recommendation provided in the user manual (according to the principle of bioelectrical impedance, the unit of the different components in the body. The subjects were tested in the morning. When the test subjects barefoot standing on the pedal plate electrode, hands naturally hang down, hold the hand electrode gently, the subject is in a relaxed state, the test indexes include total body fat, fat free mass, muscle mass, bone mass, body mass index and physical activity. Descriptive body composition is presented as the means and standard deviation for middle-aged employed women and housewives. Student's t-test analysis was

performed to investigate differences in mean values of body composition and physical status of middle-aged women. Data analysis was performed using the Statistical Package for Social Sciences (SPSS) software version 25. A P-value<.05 was considered statistically significant.

STATISTICAL ANALYSIS

Results

From Table 1, the mean and standard deviation of body composition were calculated in employed women and housewives, Total body fat (21.9±7.) for EW (employed women) and (26.9±9.3) for housewives. The Fat-free mass of EW and Housewives were (53.2±4.9 and 49.6±5.4), respectively. Muscle mass in EW and housewives were (50.6±4.4 and 46.9±4.8). The bone mass in EW and housewives was (2.6±.2) and (2.4±.28), BMI in EW and housewives was 26.5±3.9 and 29.4±5.5, Physical activity in EW and housewives was (1195.9±810.5 and817.3±827.1) respectively.

Table 1. Mean and Standard deviation of middle-aged employed women and housewives

Variables	N	Mean ± SD	
		Employed Women	Housewives
Total body fat	100	21.9±7.1	26.9±9.3
Fat-free mass	100	53.2±4.9	49.6±5.4
Muscle mass	100	50.6±4.4	46.9±4.8
Bone mass	100	2.6±.2	2.4±.28
Body mass index	100	26.5±3.9	29.4±5.5
Physical status	100	1195.9±810.5	817.3±827.1

Table 2. T-test of middle-aged Employed Women and Housewives

Variables	N	Mean difference	Std. Error difference	p-value
Total body fat	100	-4.91	1.17	.000
Fat-free mass	100	3.5	.73	.000
Muscle mass	100	3.6	.66	.000
Bone mass	100	.23	.03	.000
Body mass index	100	-2.8	.68	.000
Physical status	100	-378.6	115.8	.001

Table 2. presents the results of a t-test comparing middle-aged employed women and housewives across various physical and body composition variables. The mean difference in total body fat between the two groups was -4.91 with a standard error of 1.17, and this difference was statistically significant ($p < .001$). For fat-free mass, the M_deff was 3.5 with a Std_Ed of .73, also showing statistical significance ($p < .001$). Similarly, the mean difference in muscle mass was 3.6 with a standard error of .66, which was significant ($p < .001$). Bone mass showed a mean difference of .23 with a standard error of .03, again significant ($p < .001$). The body mass index (BMI) had a mean difference of -2.8 with a standard error of .68, which was

significant ($p < .001$). Lastly, the mean difference in physical status was -378.6 with a standard error of 115.8, and this difference was statistically significant ($p = .001$).

DISCUSSION

This study examines how middle-aged employed women and housewives in Varanasi City differ in terms of body composition and physical status. The findings highlight the impact of employment status on health and body composition by revealing significant disparities across a variety of parameters. Weight of the Body The total body fat of employed women was significantly lower than that of housewives, with a mean difference of -4.91 (p.001) This suggests that employment may be linked to increased amounts of physical activity or healthier choices made in one's lifestyle, thereby reducing fat accumulation. This distinction is pivotal, taking into account the higher gamble of cardiovascular illnesses and metabolic problems connected with an overabundance muscle to fat ratio, especially stomach fat, which is predominant among housewives (Janssen et al., 2002).

Muscle and fat-free mass The review shows that utilized ladies have essentially higher sans fat mass and bulk than housewives, with mean contrasts of 3.5 ($p < .001$) and 3.6 ($p < .001$), separately. Keeping up with higher sans fat mass and bulk is essential for generally wellbeing, as these parts are connected to better metabolic wellbeing, portability, and lower dangers of persistent circumstances like osteoporosis and sarcopenia (Cruz-Jentoft et al., 2010).

The way of life and day to day schedules of utilized ladies, potentially including more active work and organized work out, may add to these advantageous contrasts. Bone Mass Between the two groups, there is also a significant difference in bone mass, with employed women having more bone mass (mean difference of.23, p .001). Bone wellbeing is basic, particularly in middle age, to forestall osteoporosis and breaks. According to Kohrt et al. (2004), the higher levels of physical activity that are typically associated with employment may be the cause of this distinction. Weight List (BMI) With a mean difference of -2.8 (p.001), the BMI of employed women was significantly lower than that of housewives. Lower BMI in utilized ladies could demonstrate better weight the executives rehearse, which is fundamental for lessening the gamble of heftiness-related medical problems. According to Flegal et al. (2012), this difference may be explained by the structured environment and possible access to better dietary options.

Actual Status Last but not least, employed women had a significant mean difference in physical status that was -378.6 ($p = .001$) in Favor of them. This difference is measured by the overall level of physical activity. This significant difference emphasizes the importance of a healthy lifestyle. Utilized ladies might take part in additional routine proactive tasks as a component of their work and day to day drive, adding to better actual wellbeing measurements (Warburton et al., 2006)

CONCLUSION

The study concludes that there are notable disparities in the physical status and body composition of middle-aged employed women and housewives. Because they manage their weight better and engage in more physical activity, employed women typically have healthier profiles. By addressing the particular difficulties housewives face, specific health promotion techniques can enhance their general well-being and

standard of living, promoting healthier aging in this population. This study emphasises how crucial it is to take lifestyle and work status into account when creating middle-aged women's health interventions.

References

1. Cruz-Jentoft, A. J., Baeyens, J. P., Bauer, J. M., Boirie, Y., Cederholm, T., Landi, F., ... & Zamboni, M. (2010). Sarcopenia: European consensus on definition and diagnosis. *Age and Ageing, 39*(4), 412-423.
2. Flegal, K. M., Kit, B. K., Orpana, H., & Graubard, B. I. (2013). Association of all-cause mortality with overweight and obesity using standard body mass index categories: a systematic review and meta-analysis. *JAMA, 309*(1), 71-82.
3. Janssen, I., Katzmarzyk, P. T., & Ross, R. (2002). Body mass index, waist circumference, and health risk: evidence in support of current National Institutes of Health guidelines. *Archives of Internal Medicine, 162*(18), 2074-2079.
4. Kohrt, W. M., Bloomfield, S. A., Little, K. D., Nelson, M. E., & Yingling, V. R. (2004). Physical activity and bone health. *Medicine & Science in Sports & Exercise, 36*(11), 1985-1996.
5. Warburton, D. E., Nicol, C. W., & Bredin, S. S. (2006). Health benefits of physical activity: the evidence. *CMAJ, 174*(6), 801-809.
6. Finkelstein EA, Ruhm CJ, Kosa KM. Economic causes and consequences of obesity. Ann Rev Public Health 2005;26:239–57.
7. Wang H, Wang J, Liu MM, et al. Epidemiology of general obesity, abdominal obesity and related risk factors in urban adults from 33 communities of northeast china: the CHPSNE study. BMC Public Health 2012;12:967.
8. Hruby A, Manson JE, Qi L, et al. Determinants and consequences of obesity. Am J Public Health 2016;106:1656–62.
9. Withrow D, Alter DA. The economic burden of obesity worldwide: a systematic review of the direct costs of obesity. Obes Rev 2011;12:131–41.
10. Wang ZM, Pierson RN, Jr, Heymsfield SB. The five-level model: a new approach to organizing body-composition research. Am J Clin Nutr 1992;56:19–28.
11. Chomtho S, Fewtrell MS, Jaffe A, et al. Evaluation of arm anthropometry for assessing pediatric body composition: evidence from healthy and sick children. Pediatr Res 2006;59:860–5.
12. Xu KZ, Zhu C, Kim MS, et al. Pomegranate flower ameliorates fatty liver in an animal model of type 2 diabetes and obesity. J Ethnopharmacol 2009;123:280–7.
13. Brown TM, Cueto M, Fee E. The World Health Organization and the transition from “international” to “global” public health. Am J Public Health 2006;96:62–72.

14. Azzeh FS, Bukhari HM, Header EA, et al. Trends in overweight or obesity and other anthropometric indices in adults aged 18-60 years in western Saudi Arabia. Ann Saudi Med 2017;37:106–13.

15. Mott JW, Wang J, Thornton JC, et al. Relation between body fat and age in 4 ethnic groups. Am J Clin Nutr 1999;69:1007–13.

16. Liu H, Zhao XG, Li LI, et al. Body composition analysis among adults with overweight and obesity in Urumqi. J Chengdu Med Coll 2015;10:49–52

17. Yusuf S, Hawken S, Ounpuu S, et al. Obesity and the risk of myocardial infarction in 27,000 participants from 52 countries: a case-control study. Lancet (London, England) 2005;366:1640–9.

18. Heo M, Faith MS, Pietrobelli A, et al. Percentage of body fat cutoffs by sex, age, and race-ethnicity in the US adult population from NHANES 1999-2004. Am J Clin Nutr 2012;95:594–602.

19. Sameer AZ, Husam AO, Suad AH, et al. High prevalence of metabolic syndrome among Kuwaiti adults —a wake-up call for public health intervention. Int J Environ Res Public Health 2012;9:1984–96.

20. Finelli C, Sommella L, Gioia S, et al. Should visceral fat be reduced to increase longevity? Ageing Res Rev 2013;12:996–1004.