The Exercise Tendency in Woman with Obesity

Umatul Khoiriyah
Department of Medical Education
Faculty of Medicine, Universitas Islam Indonesia
Yogyakarta, Indonesia
umakhoiriyah@uii.ac.id

Ika Fidianingsih
Department of Histology
Faculty of Medicine, Universitas Islam Indonesia
Yogyakarta, Indonesia
ika_fidianingsih@uii.ac.id

Titis Nurmasitoh
Department of Physiology
Faculty of Medicine, Universitas Islam Indonesia
Yogyakarta, Indonesia
titisnurmasitoh@uii.ac.id

Miranti Dewi Pramaningtyas
Department of Histology
Faculty of Medicine, Universitas Islam Indonesia
Yogyakarta, Indonesia
miranti.dewi@uii.ac.id

Ninda Devita
Faculty of Medicine, Universitas Islam Indonesia
Yogyakarta, Indonesia
ninda.devita@uii.ac.id

Adika Zhulhi Arjana
Department of Clinical Pathology
Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada
Yogyakarta, Indonesia

Abstract— **Obesity is still a national problem. The prevalence of obesity is raising with increasing individual income. Various innovations in the field of sports do not increase the desire and tendency to exercise. Personal motivation is needed to lose weight which is directly beneficial to health. The presence of stigma in obese women may increase the tendency to exercise. The purpose of this study was to investigate the desire to exercise in obese adult women. This report is the second report of the ongoing research entitled "The Effect of Obesity towards Low Physical Activity" funded by the Research and Community Service Directorate, General Directorate of Research Strengthening and Developing, Ministry of Research, Technology, and Higher Education, Indonesia. This study took data from 10 obese female subjects and 12 non-obese female subjects with age matching. Data was collected through a questionnaire and analyzed using the Mann Whitney test. Data analysis employed the Medcalc program and was declared significant with p <0.05. The analysis revealed that there was no difference in median sports motivation scores between groups (60.5 vs 62, p = 0.407). The results of this study indicate that stigma in obese women has no effect on the desire to exercise.**

Keywords: obesity, motivation, exercise

I. INTRODUCTION

Obesity is a complex disease caused by the interaction between the environment, genetic predisposition, and human behavior [1]. Obesity can be calculated by measuring the waist to hip ratio or fat thickness [2]. The most widely used criteria can be calculated by measuring an individual's weight and height (kg/m_2). The World Health Organization classify BMI to normal, overweight and obese. However, the definition of obesity is not quite simple as that, it is believed an etiologically complex phenotype primarily associated with excess adiposity, or body fatness, that can manifest metabolically and not just in terms of body size [3].

Obesity is still a national problem. Data from the World Health Organization shows around 1.6 billion people were overweight and approximately 400 million people were obese [1]. Another WHO study in 2015, at least 2.3 billion adults were overweight and around 700 million were obese. If these trends continue, it can estimate in 2030 approximately 38% of people will be overweight and 20% will be obese [3]. In Indonesia, a survey from Riskesdas 2018 showed 18,6% of adults (>18 years) estimated as overweight and 21,8% were obese. The data has increased from 2013, Riskesdas estimated that 11,5% of adults were overweight and 14,8% were obese. Women have a higher prevalence than men. Risk factors for obesity in women are marital status, household income, living settlement, physical activity, energy from carbohydrate, and energy from sugary sweetened foods [4].

Obesity can affect gender. However, it is a particular concern for women. Many diseases related to obesity. Obesity is related to cardiovascular diseases, endocrine diseases like diabetes, and musculoskeletal diseases. Obesity also increases the risk of premature death. Obesity is having an impact on the menstrual cycle and menopause. Obesity increase risk of abortion, labor with cesarean (c-) higher maternal and neonatal mortality rates and congenital malformations. Obesity is an independent risk factor for dementia and Alzheimer's disease. Cancer such as breast and endometrial is also related to obesity [2], [5], [6].

Depression, one of the most mental health problem in women, is also related to obesity. Women have stigma and high societal pressure to remain thin. Obesity is causing low self-image and self-esteem, which can promote depression. Poor food choice, overeating, and reduced exercise are caused by depression, which contributes to obesity progression. Others factor-like poor socioeconomic status, low income, and experience of violence are risk factors for common mental health disorders especially in women, including depression, anxiety, posttraumatic stress disorder (PTSD) and dementia, which also promote obesity [2], [5].

Various innovations in the field of sports do not increase the desire and tendency to exercise. Personal motivation is needed to lose weight which is directly beneficial to health. Social, structural and individual factors are barriers to

physical activity [7]. Gender norms and expectations are social factors. Women consider doing household activity than do exercise. Few opportunities for active commuting, limited indoor space for exercise in the home, and low perceived access to convenient and affordable exercise classes are structural barriers. Teixeira *et al.*, 2006 showed that support to focus on diet is associated with short-term weight loss. Another study from Smalley *et al.*, 2016 showed ethnic identity may be an important factor in motivation for change among AfricanAmerican Women [8], [9]. The purpose of this study was to investigate the desire to exercise in obese adult women.

II. METHODS

Design of this study was a quasi-experimental study using a non-randomized post-test control group design. This study was is the second report of the ongoing research entitled "The Effect of Obesity towards Low Physical Activity". This study was funded by the Research and Community Service
Directorate, General Directorate of Research Strengthening and Developing, Ministry of Research, Technology, and Higher Education, Indonesia.

The subject of this study was an obese and non-obese female who matched based on their age. Obese group was defined as Body Mass Index (BMI) more than 25. Meanwhile, the control group consisted of subjects whose BMI less than or equal to 25. BMI was calculated by dividing weight with height squared (kg/m_2). Inclusion criteria were female with an age range of 18-40 years While the exclusion criteria were patients with Parkinson's condition, depression, anxiety, strokes that are proven through psychiatric and neurological examination results, breastfeeding or pregnancy, smoking, and taking L-Dopa or methyldopa drugs.

The subject recruitment was carried out through open announcements on social media starting in June 2018. Data were carried out in at JIH Hospital, Yogyakarta. This study is approved by the Ethics Committee of the Faculty of Medicine, Universitas Islam Indonesia and has obtained information passed the ethical review with number 48 / Ka.Kom.Et / 70 / KE / V / 2018.

The subject was measured neurological examination by neurologist for exclusion neurology disorder. Furthermore, the subject will be measured by blood pressure, height, and weight by the nurse. After that, subject filled out the questionnaires for anxiety, depression, exercise motivation.

The anxiety questionnaire used was the Beck Anxiety Inventory (BAI) developed by Beck et al (1988) with the reliability of 0.75. This questionnaire consists of 21 statement items related to anxiety symptoms in the adult population. The questionnaire to measure the level of depression is the Beck Depression Inventory (BDI) developed by Beck and Steer (1987) and adapted into Indonesian by Susilowati (2008) with a reliability of 0.84. This questionnaire consists of 21 items of statements that aim to explore symptoms/symptoms of depression. The motivation was measured by exercise motivation questionnaire. This questionnaire consisted of 19 statement items with 5 Likert scales. This questionnaire was independently developed by researchers with a reliability of 0.71.

Motivation as a dependent variable was assessed in numerical terms obtained from questionnaire scores. Independent variable was obese or non-obese that was assessed in the categorical term. Differences between two groups were analyzed using the Mann Whitney test. Data analysis used the Medcalc program and was declared significant with p <0.05.

III. RESULTS AND DISCUSSIONS

A total of 26 subjects met the inclusion criteria. 4 subjects were excluded because of anxiety and depression scores were high. A total of 22 subjects were included in the research analysis. The mean BMI of the obese group was 34.56 kg / m2 while the control group was 20.12 kg / m_2. Both groups were relatively similar in mean and median age. Anxiety scores between the two groups were not significantly different. Likewise for depression scores (Table 1).

The average BMI of the Indonesian population is 23.1 and 23.8 for men and women, respectively. The WHO standard reference for diagnosing obese is a BMI $\geq$30 [10]. This reference is slightly different from the reference for the Asia
Pacific region, which gives a cut-off point for obesity BMI $\geq$25. Meanwhile, the obesity cut-off point for the Indonesian population is $\geq$26 [11]

The high BMI is due to multifactorial factors, including excessive food intake, frequent consumption of fast food, lack of physical activity, and stress levels [12], [13]. Other studies have found that urban-dwelling locations and marital status have a higher risk of obesity [14].

A high BMI value affects body image in individuals, especially in women. Women tend to want a slimmer body, while men are divided into groups that want a more muscular, bigger body, and some want to be slimmer. Concern for body image tends to be lower in obese people who are not seeking treatment [15].

Anxiety scores in this study were examined using the Beck Anxiety Inventory (BAI), which consisted of 21 items. Is a tool that is proven in checking the presence of anxiety. Anxiety is categorized into a minimum (score 0-7), mild (score 8-15), moderate (score 16-25), and severe (23-63) [16]. Depression scores in this study were examined using the Beck Depression Inventory (BDI), which consisted of 21 items. Depression screening in the general population uses a cut-off point> 14 [17].

The results of the analysis of differences in the level of sports motivation between the two groups showed no significant difference in the median (60.5 vs 62, p = 0.407). This shows that the tendency of concern for body image is not proven in this study (Figure 1).

TABLE 1. COMPARISON OF OBESE AND CONTROL GROUP

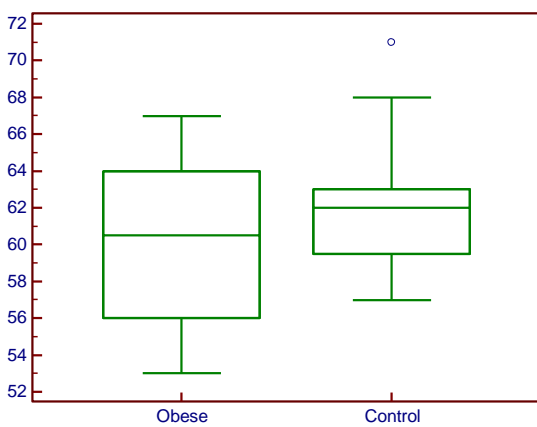|	Obese (10)		Control (12)	
	Mean ± SD	*Median (min-max)*	*Mean ± SD*	*Median (min-max)*
BMI (kg/m²)	34.56 ± 5.32	33.82 (27.34 - 45.36)	20.12 ± 1.79	19.9 (17.29 - 24.44)
Age (years)	29 ± 6	27.5 (20 - 38)	26.25 ± 6.06	26 (18 - 40)
Anxiety Score	14.7 ± 8.73	14 (0 - 26)	13.58 ± 6.27	13.5 (5 - 25)
Depression Score	7 ± 3.62	6.5 (0 - 13)	5 ± 3.3	4.5 (2 - 12)

Fig. 1. Box plot of motivation score between obese and control group

IV. CONCLUSIONS

This study found that there is no significant difference in the tendency to exercise in an obese adult woman compared with control.

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