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Physical Activity and Body Mass Index Status of Elderly in Serang Banten Province

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Abstract

Physical inactivity is considered one of the health problems associated with many types of chronic diseases. The level of physical activity is often used as a parameter for monitoring and evaluation of public health. This monitoring is critical because it helps prevent various illnesses, inactivity and decreases mortality rates for the elderly. This study aimed to determine the level of physical activity and BMI of the elderly in Serang City. The research method used is a qualitative descriptive method, involving 84 elderly from Serang and Cipocok Jaya districts in Serang City, Banten Province. The level of physical activity was obtained through the International Physical Activity Questionnaires (IPAQ) questionnaire. The results showed that the elderly in Serang City had a low physical activity with a METs value of 438.6 and had a BMI of 26.4, which was in the obese or obese category. The elderly in Kota Serang have low physical activity and are in the category of obesity or overweight. This research can be used as initial data for related institutions regarding the condition of the elderly in Serang so that it can create activities that have a positive impact on the elderly in Serang City.

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INTRODUCTION

Physical activity is defined as any bodily movement produced by skeletal muscles that result in energy expenditure (Caspersen and Christenson, 1985; Pantelić et al., 2012). Physical inactivity is considered a public health problem and is associated with various chronic diseases such as hypertension, stroke, colon cancer, obesity, type 2 diabetes, and osteoporosis (Celis-Morales et al., 2017; Pantelić, Ranđelović, and Milanović., 2013).

Physical activity can be categorized into three categories, namely low, medium and

high intensity. It depends on calorie burn, duration of physical activity, body weight, and oxygen uptake of a person (ACSM, 2009). Data published by the American College of Sports Medicine (ACSM) concluded that doing moderate-intensity physical activity at least 30 minutes per day three times a week will produce significant health benefits (ACSM, 2009). Meanwhile, the World Health Organization (WHO) recommends that walking at least 10,000 steps per day is very good for maintaining one's health (WHO, 2013).

Also, the level of physical activity is often used as a parameter for monitoring and evaluating public health and is almost always associated with a person's health status. This monitoring is critical because it helps prevent various diseases, inactivity and decreases mortality rates for the elderly (Masood and Reidpath, 2017; Matsushita et al., 2008; Tarui et al., 2020).

Body mass index (BMI) and waist circumference were adopted based on the WHO classification to assess obesity. However, the BMI classification recommended by WHO is not considered suitable for Asians because they have more body fat than the standard BMI (Amarya, Singh, and Sabharwal, 2014; Dudeja et al., 2001).

Obesity causes serious health complications resulting in mortality and morbidity. Several medical complications, such as diabetes, hypertension, arthritis, cardiovascular disease, urinary incontinence, and various types of cancer, are associated with obesity in old age (Amarya et al., 2014; Daviglus et al., 2004).

Several studies on physical activity have been carried out. Research conducted in 2017-2018 states that ITB Joint Preparation Stage (TPB) students have high biological activity above 70% (Gunawan et al., 2019; Sunadi and Permana, 2017). The factor that made physical activity in the good category for the research subjects in both studies was the implementation of sports courses at ITB during the TPB period so that the level of physical activity was in the excellent category.

Several studies on BMI related to obesity have been conducted and concluded that the BMI of the elderly in developing countries is higher than the BMI of developed countries (Jésus et al., 2017; Masood and Reidpath, 2017; Matsushita et al., 2008; Tarui et al., 2020).

From several studies regarding physical activity status and BMI, not many studies have examined physical activity levels in the elderly and BMI, especially in Serang City, Banten Province. Therefore, based on the research background that has been described, it is necessary to know the status of physical activity and BMI in the elderly in Serang City so that it can provide programs and suggestions for related parties regarding the importance of awareness of physical activity for the community, especially the elderly.

METHODS

This study used a qualitative descriptive method with a purposive random sampling technique. The respondents' criteria are older adults with an age range of 50-65 who live in the Serang and Cipocok Jaya Districts, Serang City, Banten Province. Eighty-four people had become respondents.

The instrument used was a modified International Physical Activity Questionnaire (IPAQ) questionnaire, anthropometric measurements (height, weight, and body mass index). The output of IPAQ is Metabolic Equivalent (METs). IPAQ consists of three criteria, low, medium, and high levels of physical activity. Insufficient physical activity levels with METs below 600, moderate physical activity levels 600 to 3000, and increased physical activity levels above 3000.

Measurement of Body Mass Index (BMI) is calculated using the BrianMac Sports Coach formula based on height and weight (kg/m2). Data were analyzed using the One-sample T-Test with a confidence level of 95%, with SPSS version 22.

FINDINGS AND DISCUSSION

Findings

Metabolic Equivalent (METs) measurements resulted in data on the mean age of respondents 55.8 (± 4.3), height 154.9 (± 8.2), bodyweight 67.3 (± 10.1), and BMI 26.4 (± 3.6). The level of physical activity is included in the low category with the number 438.6 (± 65.6) METs.

Table 1. Research Subject Data

No	Variabel	Result
1.	Age (years)	55.8 ± 4.3
2.	Height (cm)	154.9 ± 8.2
3.	Weight (kg)	67.3 ± 10.1
4.	IMT/BMI	26.4 ± 3.6
5.	METs	438.6 ± 65.6
6.	Sleep Duration	363.8 ± 28.4

IMT/BMI= body mass index
METs= *Metabolic Equivalent*

Discussion

This study shows that the respondents have an average age of 55.8 years, which according to WHO and the Ministry of Health, are categorized as elderly (Depkes, 2009; WHO. 2013). The average body mass index

(BMI) of respondents ranged from a value of 26.4 so that this value is in the category of obese or mild obesity because it is in the range of 25.1-27.0 (Depkes, 2009; WHO, 2013).

Our results are not much different from previous studies on obesity rates in several developing countries. The study's conclusion states that the elderly in several developing countries have an average BMI of 27.8 and are obese (Jésus et al., 2017).

Several other studies have conclusions that are different from the results of our research. This study concluded that the elderly in several developed countries have a normal BMI and are not obese (Masood and Reidpath., 2017; Matsushita et al., 2008; Tarui et al., 2020).

Obesity is a public health problem that can cause many complications and is a risk factor for several diseases' development and death. Obesity can lead to cardiovascular, respiratory, metabolic, and cancer diseases. Nutritional status can change with age. Loss of appetite, functional disabilities, impaired swallowing and taste, loneliness, medication, neurodegenerative diseases, and other factors can cause weight loss and increase malnutrition risk (Jésus et al., 2017; Lorefält et al., 2009).

Economic development with urbanization can lead to an increase in obesity in developing countries experiencing nutritional transitions (Fruhstorfer et al., 2016; Jésus et al., 2017). In contrast to cases in developed countries, the rate of obesity in the elderly is low due to a better understanding of nutrition, health, and lifestyle than in developing countries (Masood and Reidpath., 2017; Matsushita et al., 2008; Tarui et al., 2020).

The government's role in reducing obesity rates, especially among the elderly, must be further enhanced. This is done so that the elderly can enjoy life in their old age healthily and not quickly get sick due to obesity. Previous research conducted in Japan suggested that the Japanese Ministry of Health and Welfare had initiated the Japan Sehat 21 project to encourage lifestyle changes and weight loss.

The Japanese Ministry of Health and Welfare prepares intensive lifestyle interventions during the annual medical check-up. To establish cost-effective prevention strategies against obesity-related disorders and identify target populations at greater risk of weight gain (Matsushita et al., 2008; McCurry, 2007).

In the research we have conducted, the respondents did the level of physical activity in the low category with the METs value of 438.6. Our results are not much different from previous studies, which concluded that physical activity in the elderly in Serbia and South Korea is in a low category (Pantelić et al., 2012; Park et al., 2014). The standard physical category of the elderly also occurs in children. Previous research conducted in Bandung stated that elementary school children's activities were in a low category (Hasan et al., 2020). Different results occurred in studies conducted in Japan. This study

concluded that the elderly in Japan have moderate physical activity with a METs value of 1200 (Hirayama et al., 2008). However, it has been confirmed that the elderly are less physically active than other populations (Pantelić et al., 2012, Pantelić et al., 2013; Tomioka et al., 2011).

The benefits of regular physical activity, especially for the elderly, are that it can reduce the risk of cardiovascular disease, cancer (Nelson et al., 2007), and dementia (Knopman et al., 1999), and research in 2018 states that by doing physical activity three times a week for 6 weeks successively even though high air pollution can increase the VO2max value (Bahri et al., 2017). However, the elderly are less likely to participate in physical activities, as was the case with our research respondents.

A survey conducted in America states that the elderly spend 35.2% of the total energy expenditure on household activities such as washing clothes, washing dishes, ironing, and other household tasks and only 5.2% on physical activities (Dong et al., 2004) (Ainsworth et al., 2000; Dong et al., 2004). As many as 250,000 deaths per year in the United States are associated with a lack of routine physical activity in the elderly, comparable to those caused by high blood pressure and obesity (McGinnis, 1993; Pantelić et al., 2013). The low level of physical activity carried out by the people of Serang City, especially the elderly in this study, must immediately find a solution by related parties to increase the level of physical activity.

The sleep duration of respondents in our study ranged from 363 minutes or 6.5 hours when converted into hours. According to the health ministry guidelines, the amount of sleep needed for ages 40-60 years ranges from 7 hours. The 6.5-hour mark in our study is close to the guidelines issued by the ministry of health. Some of the effects of lack of sleep, especially in the elderly, will lead to obesity or overweight, increased stress, frequent forgetfulness, and worsening of the body's health condition (Ministry of Health).

The conditions experienced by the elderly in Serang City who are the research subjects must be taken into consideration by related agencies such as the health office and the offices related to the elderly in Serang City or Banten Province to pay attention to the phenomena in this study in the form of low physical activity performed by the elderly and the level of obesity relatively high. So that from this research, related agencies can create programs that encourage an active lifestyle for the elderly in Serang City so that it is beneficial for the elderly. This is done so that the elderly can enjoy life in their old age healthily and not quickly get sick to increase life expectancy.

CONCLUSION

Based on the results and discussion of this study, it can be concluded that the elderly in Serang City have low physical activity and are in the category of obesity or overweight. This research can be used as initial data for

related agencies regarding the condition of the elderly in Serang to create activities that have a positive impact on the elderly in Serang City. Keeping in mind the clinical importance, this particular field needs further research by increasing the research sample to cover all the elderly in Banten province so that the characteristics of the elderly can be objectively known.

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