



TITLE

OBESITY FACTORS ON THE INCIDENCE OF JOINT PAIN IN THE ELDERLY

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ABSTRACT

Aging is a process that will be experienced by humans according to the cycle of growth and development. Changes that occur both physically and psychologically often cause disorders and health problems that must be resolved. Problems with the physical aspect of the elderly, one of which is a decrease in musculoskeletal function, especially in the joints, often manifests, namely the appearance of joint pain. The presence of joint cartilage damage due to inflammation, as well as an increase in the load on the joints due to excess body weight (obesity) are other factors that often arise. The hip and knee joints are the parts that support the body's weight, so they are the joints that experience the most problems. The purpose of this study was to determine the relationship between obesity and the incidence of knee joint pain in the elderly.

The research design is correlational analytic with a cross sectional approach, the sample used is 50 respondents using purposive sampling. The instrument used was an observation sheet to measure the respondent's obesity variable and to determine the presence of joint pain using an interview form. The measurement results are then processed and bivariate analysis is carried out using the chi square test.

From the results of the research analysis, the value of $p = 0.04$ where $\alpha = 0.05$, this means that $p < \alpha$ means that there is a correlation between the level of obesity and the occurrence of joint pain. This is because apart from age, as well as increasing body weight, the ability of the knee joint to support the body as a whole is getting heavier due to friction of the joint cartilage.

From the results of these studies, it can be concluded that in the elderly, excess body weight can affect the ability of bones and joints with joint pain manifestations.

KEYWORDS

Obesity, joint pain, elderly

INTRODUCTION

The Old age is a part of the human life cycle which is characterized by a decrease in physical and psychological conditions. One of the physical conditions experienced is the musculoskeletal system. Disorders that are often experienced are in the joints with the most common symptom, namely joint pain (Kuniano, 2015) Joint pain is a common complaint that occurs in the elderly group. According to Stanley (2012), the causative factor includes the process of degeneration due to increasing age, this condition is caused by damage to joint cartilage which results in thinning of joint cartilage so that the bone surfaces grow close together and are prone to friction. joints.

Although old age is a typical cause of joint pain, another cause is being overweight or obese. Obesity is a condition characterized by the accumulation of excess fat tissue (Sarafino dkk., 2015). Contributing factors include the consumption of foods high in fat and calories, lack of activity, changes in mobility and transportation, less active work, an increasing economic level accompanied by changes in lifestyle and eating patterns. Circumstances that occur over a long period of time lead to the accumulation of fat tissue or obesity (Ryan et al., 2016). The degree of obesity is determined based on the Body Mass Index (BMI). Body Mass Index (BMI) is a mathematical formula related to adult body fat, and is expressed as body weight in kilograms divided by the square of height in meters (Janssen et al., 2002). In obese conditions, the burden will be heavier on the hips and knees, this causes the manifestation of joint pain in addition to the inflammatory effect caused by the accumulation of fatty substances in the joints.

From WHO data in 2016 there were 39% of the world's population who were overweight or around 1.9 billion adults over 18 years. In Indonesia, the prevalence of obesity in the population increased from 2007 to 2018 at 10.5% to 14.8% in 2013 and 21.8% (Riskesdas, 2018). Data in 2018 in East Java province as many as 16% of the population or as much as 1,163,118 residents and those affected were obese. The examination is carried out for a period of one year and is said to be obese if the measurement results of the body mass index (BMI) exceed normal (Dinkes Jawa Timur, 2018). A preliminary study conducted in January 2019 found the total number of elderly people in 2018 which amounted to 1,201 people. While the data obtained from the Poskesdes Ketanon village were elderly with obesity as many as 58 people.

Joint pain as a manifestation that appears can cause changes in joint movement activity, joint stiffness and fatal consequences can cause

paralysis. This of course affects the fulfillment of daily activities (Aspiani, 2014). Other effects that arise according to (Widyanto, 2017) are other diseases that follow such as rheumatic diseases and gout and trauma to the bones.

Handling that can be done in the elderly to reduce the risk of joint pain caused by excess body weight is to maintain proportional activity and exercise and maintain a balanced diet according to the body's needs so that this can reduce the load on the joints and knees and maintain bone consistency. .

Based on the above background, the researchers wanted to examine whether there is a relationship between obesity and the incidence of knee joint pain

METHOD

The research design was a quantitative analytic study with a cross sectional approach. The population used was all elderly posyandu members in Ketanon Tulungagung Village who were registered in 2019 using a sample of 50 people with a sampling technique using purposive sampling. The variables studied were the level of obesity and the incidence of knee joint pain in the elderly. The instrument used was an observation sheet in the form of weight and height measurements to determine BMI, while the second instrument used an interview observation sheet. The study was conducted in January – April 2019 on elderly posyandu members in Ketanon village. After measuring the research variables, they were analyzed using the chi square statistical test.

RESULT

1. Univariate analysis

a. Obesity level

Table 1: Distribution of the frequency of obesity levels in respondents in Ketanon Village, Kedungwaru Tulungagung in 2019

Obesity level	Frequency	Percent (%)
Pra Obesity	15	30,0
Mild Obesity	24	48,0
Moderate Obesity	11	22,0
Amount	50	100

From table 1, it can be seen that almost most of the respondents have a mild obesity rate of 48%.

b. Knee joint pain

Table 2: Distribution of the frequency of knee joint pain in Posyandu Elderly Ketanon Kedungwaru Tulungagung village in 2019

Joint Pain incident	Frequency	Percent(%)
Pain	27	54
No pain	23	46
Total	50	100

From table 2, it was found that some respondents experienced joint pain as many as 27 respondents (54%)

2. Bivariate analysis

Table 3. Analysis of obesity levels with the incidence of joint pain

Obesity level	Joint pain incident				Total	
	No pain		Pain			
	F	%	F	%	F	%
Pra Obesity	12	80	3	20	15	100
Mild Obesity	9	37	15	63	24	100
Moderate Obesity	2	18	9	82	11	100
Total	23	46	27	54	50	100

From table 3 above, it was obtained from all pre-obese respondents, as many as 80% did not experience joint pain, while those who were mildly obese as many as 82% experienced joint pain.

From the results of statistical analysis using the Chi-Square test using $\alpha = 0.05$, the p value = 0.004 where $p < 0.05$ so H_0 is rejected, which means there is a relationship between obesity and the incidence of knee joint pain in the elderly.

DISCUSSION

1. Obesity rate

From the table 1, it was found that a total of 50 elderly respondents, almost half of them were mildly obese as many as 24 people (48%). According to Misnadiarly (2013), the condition of body weight exceeding normal can be categorized as obesity. According to Mambodiyanto & Susiyadi (2016) increasing age causes changes in the components of the body in the form of reduced bone and muscle mass, increased lipid mass and decreased free lipid, this is accompanied by a disproportionate distribution of lipid that

accumulates in the abdomen which causes obesity in the elderly. Increasing age also affects hormonal aspects so that the risk of obesity can also increase if life activities are reduced. The results of this study are in line with research by Mogi dkk., (2014), of 25 respondents, 13 of whom are obese.

Based on the discussion above, there is a compatibility between facts and theories that increasing age, decreasing activity, hormones and changes in body fat metabolism tend to cause body weight to exceed normal or obesity. This is sharpened along with changes in unhealthy eating patterns and lifestyles along with the improvement of the economy.

2. Occurrence of joint pain

Based on table 2, it can be seen that from a total of 50 respondents, most of them experienced knee joint pain as many as 27 respondents (54%). According to Brunner & Suddarth (2015), pain is related to actual or potential tissue damage that is captured as a sensory and emotional response from the body. Causes Pain in the knee can be caused by multiple factors, including genetics, environment, hormones and changes in the reproductive system. Age and obesity are risk factors for joint pain. This is in accordance with research conducted by

From the facts and theories above, joint damage occurs in the elderly due to the degenerative process, older people often experience joint pain.

3. Analysis of the relationship between obesity levels and the incidence of joint pain

From the results of the Chi-Square test on the relationship between obesity and the incidence of knee joint pain in the elderly in Ketanon village, Kedungwaru Tulungagung, $p = 0.004$ where $p < 0.05$ so H_0 is rejected and H_1 is accepted. This means that there is a relationship between obesity and the incidence of knee joint pain in the elderly. According to Sarafino dkk. (2015) Obesity is a disorder or disease characterized by excessive accumulation of body fat tissue. People who are obese have an increased load on the joints, especially the hip and knee bones. Excessive body weight causes excessive stress on the hips and knees. This causes a high risk of joint pain, especially in the knee area.

According to Brunner & Suddarth, (2015), degeneration of organs causes age to be vulnerable to the possibility of experiencing obesity. Especially when you get older, you will be more likely to experience obesity if you don't maintain your diet and regulate activities. When it occurs in those who are elderly, obesity can threaten a person's quality of life. The increase in body weight can also cause an increase in the load on the knee and hip joints and pain manifestations

appear. This is also the same as research conducted by Pratiwi (2015), excess body weight can lead to an increased risk of developing OA in joints that carry heavy loads.

Based on the results of research conducted by researchers and the theory that supports this research, the researchers agree that the facts and theories are appropriate, namely obesity in the elderly can experience joint pain in the knee. This condition occurs because obese people experience an increase in the load on the joints that support weight so that it can cause symptoms, namely joint pain in the knee.

CONCLUSION

There is a relationship between obesity and the incidence of joint pain in the elderly where this is caused in addition to the age factor, also due to excess body weight which causes the knee as a supporting joint to wear out.

SUGGESTION

To reduce joint pain complaints in the elderly by maintaining proportional activity and exercise and maintaining a balanced diet according to the body's needs so that this can reduce the load on the joints and knees and maintain bone consistency.

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