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The Role of Physical Activity in Adolescent Obesity: A Literature Review

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Abstract

Background: Obesity or commonly known as overweight is a problem that is quite worrying among teenagers. Obesity in adolescence is very important to note because 80% will have a chance of obesity in adulthood. Obesity can arise from exceeded energy intake. This is compounded by a decrease in physical activity and unhealthy food. The purpose of this study is to determine the role of physical activity in adolescents with obesity. Methods: Using the Literature Review method of the role of physical activity in obese adolescents. The sources are searched via the internet with the databases of Neliti, EbscoHost, PubMed, and Atlantis Press. The keywords used are physical activity, obesity, and adolescents. This research using inclusion criteria that aim to determine the role of physical activity in obese adolescents, full text, Indonesian and English articles from 2015-2020. Ten articles are obtained. Results: Light physical activity and moderate physical activity trigger adolescents to have obesity. This happens because only a small amount of energy intake in the body is used for activities such as using technology and sedentary lifestyle behavior. Conclusion: There is a role of light physical activity and moderate physical activity in obese adolescents. The use of e-technology and sedentary lifestyle is directly related to physical activity and obesity.

Keyword:

Physical Activity, Obesity, Adolescent

INTRODUCTION

Obesity problems that occur in parts of the world, including in Indonesia. In Indonesia, obesity occurs in all socio-economic levels and in all age groups (Harry 2017). Obesity or commonly known as obesity is a problem that is quite worrying among adolescents (Wulandari, Lestari & Fachlevy 2016). Obesity is an abnormal accumulation of fat or excessive fat accumulation that can pose a health risk (Word Health Organization 2020). Obesity is a medical condition where excess body fat that accumulates can have adverse effects on health, namely reducing life expectancy or increasing health problems in the future (Yahya 2017). Sedentary behavior is an example of decreased energy in adolescents, namely playing games for hours and watching television (Miko & Pratiwi 2017). This problem has developed into an epidemic, more than 4 million people have died each year due to obesity in 2017 according to the global burden of disease (Word Health Organization, 2020).

According to data, more than 340 million children and adolescents aged 5-19 years were overweight or obese in 2016. The prevalence of overweight and obesity among children and adolescents aged 5-19 years has increased dramatically from 4% in 1975 to more than 18% in 2016. While just under 1% of children and adolescents aged 5-19 years were obese in 1975, more than 124 million children and adolescents, 6% girls and 8% boys, were obese in 2016 (World Health Organization 2020). The prevalence of overweight and obesity in America is the highest, but this prevalence has remained stable in the last 5 years. Different in Asia, although the prevalence is quite low but it is increasing rapidly from year to year (GBD 2015 Obesity Collaborators, 2017). Indonesia is one of the countries in Southeast Asia that has experienced several increases in obesity prevalence (Iskandar, et al. 2018). Adolescents are the age group with the highest risk of obesity. According to WHO, adolescents are residents in the age range of 10-19 years, according to the Regulation of the Minister of Health of the Republic of Indonesia Number 25 of 2014, adolescents in the age range of 10-18 years. Differences in definition indicate that there is no universal agreement on age limits for the adolescent group. Data from Riskesdas (2018), it is known that central obesity in the age group ≥ 15 years in Indonesia is 31.0%. According to DINKES data (2018), obesity examinations in East Java at the age of ≥ 15 years were 16% or as many as 1,163,118 residents who were obese. According to DINKES data (2018), Obesity examinations in Surabaya at the age of ≥ 15 years were carried out on 1,051,440 residents (46.38%) and those affected by obesity were 15.51% or 163,036 with a proportion of 56,656 men (14.65%) and 106,380 women (16.01%).

Adolescence is one of the important growth and development periods to determine the next development period. Adolescent obesity is very important to note because in adolescents who suffer from obesity, 80% have a high chance of suffering from obesity as adults (Wulandari, et al. 2016). Obesity is interrelated with an imbalance between body energy intake and expenditure. However, a new study says that behavior, genetic factors, and physiological factors play an important role. Obesity can arise due to energy intake that exceeds expenditure. This is exacerbated by decreased physical activity and unhealthy foods (Iskandar, et al. 2018). Nowadays, the lifestyle of teenagers is different from the lifestyle of teenagers several decades ago. With the sophistication of the environment and modern facilities, it reduces the opportunities for children and teenagers to do physical activities. Teenagers prefer to play games, play with electronic equipment, ride motorbikes, and are lazy to do activities outside the home such as walking and sports. Children often eat outside the home and consume fast food (Rendi, et al. 2018). In line with research conducted by Kumala, Margawati & Rahadiyanti (2019) which was conducted at SMP Negeri 2 Kendal, it said that teenagers have low physical activity because teenagers spend more free time watching TV, playing gadgets and rarely doing activities outside the home. This inactive lifestyle is associated with the main cause of obesity (Iskandar, et al. 2018).

Obesity will have a negative impact on social and psychosocial development in adolescents due to stigma, including an increased risk of depression because they are often rejected by their friends and teased and ostracized because of their weight (Wulandari, et al. 2016). In children and adolescents, diseases that arise due to obesity will appear, namely type 2 diabetes mellitus, hypertension, dyslipidemia and coronary heart disease (CHD) (Harry 2017). The impact if this research is not carried out is that there will be a decrease in knowledge in adolescents who are

obese so that these adolescents will underestimate the importance of physical activity.

WHO's global strategy outlines the actions needed to support a healthy diet and regular activity about health, diet, and physical activity (Word Health Organization 2020). The need for regular physical activity and exercise can increase muscle mass and reduce fat mass in the body (Iskandar, et al. 2018). Based on the results of research conducted by Zuhdy (2015), the results obtained physical activities that are often done by adolescent girls are household activities with 89.8% of female students in grade 1 of high school regularly doing household physical activities. Dancing and yoga are physical activities that are also regularly done. Physical activity is a body movement to release energy, the activity is done depending on the frequency, intensity and time of physical activity which has a significant influence on the stability of a person's weight. The more active a person is in doing physical activity, the more energy is needed. Research conducted by Restuastuti, et al. (2016) suggests that adolescents who are obese should regulate their diet by doing more active physical activities.

Physical activity is one way to lose weight. Physical activity or exercise can make both physical and psychological changes that are beneficial for obese adolescents (Hasdianah, Siyoto & Nurwijayanti 2014). According to Harry (2017) physical activity during adolescence if done properly can reduce the risk of degenerative diseases in adulthood. Physical activity can reduce the risk of type 2 diabetes mellitus, hypertension, dyslipidemia and coronary heart disease. Research conducted by Aripin (2015) said that physical activity if done routinely can maintain maximum nutritional status, can burn body fat deposits, can reduce the risk of overweight and obesity in adolescents. Based on the data and phenomena that occur, researchers are interested in describing the results of previous studies with existing theories regarding the "Role of Physical Activity in Obese Adolescents" in the form of a Systematic Review.

METHODS

The research design used is Literature Review. The strategy used to search for this research article uses an internet search method. The database search used is Neliti, EbscoHost, PubMed, Atlantis Press from 2015 to 2020. For article searches, keywords or keywords used to search the database are: Physical Activity AND Obesity AND Adolescent or physical activity AND obesity AND adolescents. In data extraction, researchers will review the articles used and the next stage is to extract data. The results of data extraction obtained definite results from the amount of initial data owned which still met the requirements for further analysis. In this study, the exclusion criteria used were articles not about physical activity in adolescent obesity, discussing other than the mechanism of physical activity in adolescent obesity, no comparison, no results regarding physical activity in adolescent obesity, year of publication less than 2015, other than English or Indonesian, systematic review. Found as many as 12,477 articles. In the first search of the Neliti database, 28 articles were found, EbscoHost 307 articles, PubMed 12,138 articles, Atlantis Press 4 articles. Then all articles in each database were selected from the search for articles in the last 5 years, using English or Indonesian, titles and abstracts that meet the requirements totaling 29 articles. Of the 29 articles that have met the first selection, the availability of full text will be selected again, which meets the requirements totaling 26 articles, and then analyzed according to the formulation of the problem, namely how is the role of physical activity in obese adolescents that meet the criteria of 10 articles to be reviewed.

RESULTS AND DISCUSSION

In writing this literature review, there are 10 articles on the role of physical activity in obese adolescents. The articles are made into one type that discusses physical activity in obese adolescents. The discussion is carried out by describing the results of one study with another. Based on the results of the articles obtained, the overall results of the articles in general are the characteristics of the respondents who are junior high and high school adolescents with an average age of 11 to 19 years. From nine articles, it shows that adolescents who have light to moderate physical activity have a greater tendency to experience obesity when compared to adolescents who have heavy physical activity such as exercising, this is due to a sedentary lifestyle and technological advances (use of electronic goods). Obese adolescents do more activities that do not involve much movement and only use a little energy such as watching television, playing cellphones or laptops, playing games, sitting, and lying down while listening to songs (Garnis & Dieny 2015). Most adolescents also

do routine activities after school such as cleaning themselves, cleaning their rooms, helping their parents sweep, mop, and sometimes cook at home (Indriant, et al. 2016). Obese individuals have an average BMI of 29.57 ± 3.91, hours spent exercising an average of 4.94 ± 1.87 and hours spent using e-technology 14.07 ± 2.25 (Atif, et al. 2018). However, there is one article that found that there is no significant relationship between physical activity and the incidence of obesity. This is because most of the activities carried out tend to be the same from morning to evening which are already scheduled, such as attending classes that take more time, such as sitting in each class hour lasting around 45 minutes per lesson hour. There are other factors that result in no relationship between physical activity and the incidence of adolescent obesity, such as family income and nutritional intake. Adolescents who have high-income parents will provide high pocket money for their children and also easy transportation. Excessive nutritional intake will result in significant obesity (Sari, Erlina & Bebasari 2017).

In adolescents who are obese, the physical activity they do is mostly in the light and moderate categories, namely none of them do physical activity in the heavy category. Lack of physical activity in adolescents contributes greatly to the incidence of obesity. Adolescents with limited activity will experience an energy imbalance in a positive direction, leading to energy storage and weight gain (Indriant 2016). Lack of physical activity has a significant relationship with obesity, with lack of physical activity having a greater chance of experiencing obesity than students who are more active. This is due to current technological advances, ranging from activities carried out at home and outside the home (Restuastusi, et.al. 2016). In addition to studying, most of the time of adolescents is spent playing. Playing for children should not be just ordinary physical activity, but can be a means of learning that is fun and exercising indirectly. It's just that, currently the type of game that is developing is a game that is spoiled by technology (Dewi & Kartini 2017). These studies are in accordance with the theory that states that sufficient activity is needed to burn excess energy. If someone consumes too much food and is not balanced with physical activity, excess energy will be stored and converted into fat. If this condition occurs for a long time, it will cause obesity. Commonly known as a sedentary lifestyle (Yahya, 2017).

In writing this literature review, the researcher assumes that there is a role for light physical activity and moderate physical activity in adolescents who are obese because only a little energy intake in the body is used for activities and most of it is stored as body fat, in other words, obese adolescents only use a little energy such as a high sedentary lifestyle and the use of technology to do activities. Light physical activity is physical activity that only requires a little energy and does not change breathing.

Physical activity is recommended for every individual to improve and maintain body condition. When doing physical activity requires energy to move. The energy expended during physical activity is determined by the type, intensity and duration of the activity. Inactive activities result in decreased calorie use so that the number of calories expended is small compared to the number of calories consumed which can result in excess calories. These excess calories will accumulate and can be at risk of obesity in adolescents. An obese person is usually lazier to move when compared to someone who is not obese. Obese adolescents should regulate their diet and increase daily physical activity to prevent an increase in the prevalence of obesity in adolescents and the incidence of type 2 diabetes mellitus, coronary heart disease, hypertension, dyslipidemia, endothelial dysfunction, increased inflammation, heart failure, osteoarthritis, cancer, and obstructive sleep apnea. Increasing physical activity with sports that require strength makes sweating so contributing to a person's weight loss.

CONCLUSION

Physical activity in adolescents shows a significant relationship to normal body weight. The use of e-technology is directly related to physical activity and obesity, the results show an increase in the consequences of sedentary activity on adiposity during adolescence. Not only the use of e-technology but also sedentary lifestyle is directly related to physical activity and obesity, such as sitting, not doing housework, watching television.

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