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THE OBESITY LEVEL AND ABDOMINAL FAT AMONG A RURAL TAMIL SCHOOL STUDENTS IN MALAYSIA

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ABSTRACT

Diseases caused by body fat accretion are alarming among Malaysian population. This study aims to determine the level of obesity (BMI) and abdominal fat among 210 students, ten to twelve years old (93 boys and 117 girls) from Vagesar Primary school, a rural Tamil School, in Malaysia. This ex post facto study was conducted using Omron Karada Scan HBF-375 Body Composition Monitor with Scale and Waist to Hip Ratio (WHR) protocol to measure abdominal fat. Research outcome showed that 46 boys (49.5%) and 72 girls (61.5%) are prone to the risk of cardiovascular diseases based on the level of abdominal fat using WHO (1998), Asian norm. However, it is clear from the result, that about 102 students (49 boys and 53 girls) 48%, were underweight according to WHO (2004) Asian BMI norm. This describes an unfavourable environment in which the corresponding respondents could possibly suffer from deficiency in minerals and vitamins. Therefore, the rural Tamil school students must be offered sufficient awareness on issues of body fat accretion and deficiency in nutrition. Based on these study, respondents especially female students needs to take preventive measures to reduce abdominal fat, in addition to control of diet and at the same time increase physical activities. Appropriate action must be taken by the teachers and parents to ensure the quality of life with proper nutrients to avoid any cardiovascular diseases in feature.

KEYWORDS: Abdominal Fat, Cardiovascular Diseases, Nutrition, Obesity & Underweight

INTRODUCTION

Fat is one of the important sources of energy for physical metabolic processes. The dietary fat supplies essential nutrients and energy to the body. At the same time, the fat also helps the body to absorb, utilizes certain vitamins, into, and out of cells, excretes for maintenance of healthy nervous system and brain function. Composition of excess body fat is considered as a critical problem. This has contributed to a variety of diseases such as coronary disease associated with hypertension, diabetes, increased risk of cancer, stroke, orthopedic disorders and various other health problems such as irregular menstrual problems (Baumgartner, Jackson, Mahar, & Rowe, 2005). Chandrasekharan (2012) and Mohd Zaher et.al, (2009), states that surplus fat or obese can harm health because it increases the risk of hypertension, diabetes mellitus, cancer and osteoartitis. Body Mass Index (BMI) is a measurement that relates the weight to height. Although it is called "Index", BMI is actually a ratio expressed as weight (in kilograms) divided by height squared (in meters). Based on Asian BMI norms by WHO (2004), a person who suffers from obesity has BMI value of 27.5 kg / m^2 or more.

Abdominal fat is stored in the fatty tissues of the central part of the body around the internal organs. Studies have shown that an increased amount of abdominal fat is associated with an increased risk of heart disease, diabetes, some cancers and early death. Factors that lead to increased abdominal fat are caused by heredity, hormonal changes in the body,

increasing age and a sedentary lifestyle (Chen Wang, et.al, 2010). Obesity leads to many health problems such as high risk of heart disease and high blood pressure. Generally, those who suffer from obesity were not able to enjoy a normal lifestyle experienced by those who are in ideal weight. Apparently, obesity may also occur during childhood and continues to affect them, as they grew older. Factors such as diet, exercise, knowledge and influence of environmental factors also contribute to the occurance of obesity (Dorothy Hausman, Mary Ann Johnson, Adam Davey & Leonard Poon, 2011).

In Malaysia, 29 percent of the adult population are overweight and 14 percent were obese at the year of 2006 (Liow Tiong Lai, 2010) and Mohammad Nor et. al.(2012). The World Health Organization (WHO) estimates roughly that 2.3 billion people in the world will be overweight and 700 million people worldwide will suffer from obesity by the year of 2015. National Health and Morbidity Survey, (NHMS 2011), showed that 29.4 percent of Malaysians between 18 years to 30 years are at the level of overweight and15.1 percent of them are obese. Meanwhile, the percentage of abdominal fat for adolescents aged between 18 and 19 years are 44.7 percentage. WHO (1998), also predicts that the death rate of cardiovascular disease through worldwide will increase from 20 percent in 1999 to 40 percent by 2020. Besides, Diabetes is also closely linked with obesity. According to the WHO report (2010), Malaysia will face the phenomenon of chronic diabetes by 2030. It estimated that an increase of 164 percent, which is about 2.48 million diabetics, would exist compared with 0.94 million in 2000. This situation will indirectly bring various cardiovascular related critical diseases.

A study conducted by Ramphal. et al, (2012), finds the ethnic Indians in Malaysia to be having the highest prevalence in metabolic syndrome compared to other ethnicities in Malaysia. The NHMS III conducted in 2006 also shows the highest prevalence of diabetes mellitus among ethnic Indians compared to other races in Malaysia. Thus the need to address obesity at childhood level among the ethnic Indians in Malaysia is imperative.

Serdula et al, (1993) and sahar et.al, (2012), says that for all studies and across all ages, the risk of adult obesity was at least twice as high for obese children as for nonobese children. WHO has declared that childhood obesity is one of the most serious public health challenges of the 21st century. It gives rise to high prevalence of diabetes and cardiovascular diseases at a relatively younger age. The WHO Member States in the 66th World Health Assembly have agreed on a voluntary global Non Communicable desease (NCD) target to halt the rise in diabetes and obesity. It is preventable and WHO has emphasised those efforts should start by countering childhood obesity.

This study aims to assess the level of BMI and abdominal fat and risk of cardiovascular deseases among 10 to 12 years old students in SJKT Vageesar, a rural Tamil School in Kuala Selangor. Although many studies of body fat have been performed on athletes and students abroad, but not many studies or research on BMI and abdominal fat percentage conducted among the ethnic Indian rural students in our country.

Generally, many students of SJKT Vageesar, Kuala Selangor are less active in extra-curricular activities and Physical Education. Achievement of sports activity every year proves that the school authority only concentrates on academic excellence, whereas student's achievement in sports is still unsatisfactory. Obesity is the main reason to this dreadful condition. If this situation continues, it is likely that these students may continue unhealthy lifestyle and deal with various ailments that would be detrimental to their daily lives. This study can determine the level of body fat among students so that they acquire current data of their health level and aware of the importance of physical activity in their daily lives. Studies on body fat content were chosen because that is the basic knowledge that should be known by every human being in order to ensure healthy growth process.

METHODOLOGY

This ex- post facto study conducted among 210 students from Vagesar Tamil Primary school, a rural Tamil School, in Malaysia. 93 respondents were boys and 117 were girls. A total of 210 respondents aged 10 to 12 years old participated voluntarily in this study. Karada Scan Omron HBF-375 Body Composition Monitor with Scale used to measure Body Mass Index and Waist to Hip Ratio (WHR), was used to measure the abdominal fat.

RESULTS

The BMI analysis shows 52.69 percent boys and 45.30 percent girls were underweight. 26.88 percent boys and 35.04 percent girls were in the normal level. Around 5 percent boys and girls were overweight. 10.75 percent boys and 2.56 percent girls were pre-obese. 4.30 percent of boys and 12.80 percent girls in level of obese class one. In total 19.97 percent respondents were in overweight and obese category. However, none of them were in obese class two and three. The overweight and obese ratio between girls and boys seems to be equal. (Table 1).

Table 1: BMI Level by Gender Based on Norm for Asian Society - WHO 2004

Classification	Morbidity Risk	Male		Female		Total	
		(N)	(%)	(N)	(%)	(N)	(%)
Underweight	Low	49	52.69	53	45.30	102	48.57
Normal	Moderate	25	26.88	41	35.04	66	31.44
Overweight	Increase	5	5.38	5	4.30	10	4.76
Pre-obese	Increase	10	10.75	3	2.56	13	6.19
Obese I	High	4	4.30	15	12.80	19	9.02
Total		**93**	**100**	**117**	**100**	**210**	**100**

The WHR test for abdominal fat indicated that out of 210 respondents only 2.86 percent boys were in very good level. There were 44.10 percent boys and 38.50 percent girls in good category. In total around 41 percent were good. 39.80 percent boys and 12.80 percent girls were moderate. 9.70 percent boys and 40.20 percent girls were having high level of abdominal fat and another 10 girls (4.76%) were in very high category. This result shows that almost 31.42 percent respondents were having high risk of cardiovascular diaseases. Out of this 34.42 percent, more girls were in high risk compare to boys and the girls should be aware of their condition (Table 2).

Table 2: Abdominal Fat Level by GenderBased on Waist Hip Ratio Norm WHO 1998

Classification	Male		Female		Total	
	N	(%)	N	(%)	N	(%)
Very Good	6	6.40	0	0.00	6	2.86
Good	41	44.10	45	38.50	86	40.96
Moderate	37	39.80	15	12.80	52	24.76
High	9	9.70	47	40.20	56	26.66
Very High	0	0	10	8.50	10	4.76
Total	**93**	**100**	**117**	**100**	**210**	**100**

DISSCUSIONS

The findings indicated that almost 20 percent students aged 10 to 12 in Vageesar Tamil school were overweight and obese. In total 48.57 percent were under weight. This result also shows that almost 31.42 percent respondents were having high risk of cardiovascular diseases. Eventhough this research focused on obesity and abdominal fat, the finding

indicated a high level of deficiency in nutritions among this respondents. Almost 50 percent of the respondents were underweight. This condition can cause some other serious health problems such as anemia, skin deseas, tooth deseases and others. This clearly proves that the sample should give particular attention on their overall body fat and on abdominal fat especially girls to ensure a life without any risk of cardiovascular diseases. Obesity also affects the self-esteem of students and contributes to their poor academic performance. Richard (2000), finds obese students demonstrate significantly lower levels of self-esteem by early adolescence. With decreasing levels of self-esteem, they demonstrate significantly higher rates of sadness, loneliness, and nervousness and are more likely to engage in high-risk behaviors such as smoking or consuming alcohol.This young people need to be regulated by physical activity for ensuring the reduction of excess body fat. This action will definitely give a positive impact on the academic achievement of the students.

CONCLUSIONS

Generally, it can be stated that body fat increase the risk of cardiovascular morbidity. At the same time, abdominal fat and body mass index also tend to affect the physical strength and endurance. The type of food taken must be compatible with the breakdown of a balanced diet. Diet style should be controlled to ensure excessive fat free healthy body. Finally, the researcher hope the results of this study provide a strength to educators, coaches, teachers of Physical Education and Sports Science teachers about the importance of healthy lifestyle practices. This clearly illustrates the importance of keeping the body in order to secure further intelligence, which guarantees the quality of one's academic success. Rossner (1998), says that, although obesity has underlying genetic causes, possibly explaining about 50% of the body weight variation, the dramatic recent increase worldwide must be due to behavioural reasons which include sedentary lifestyle and dietary habits..This indicates that a healthy lifestyle should be cultivated since childhood for hope of nurturing a healthy and prosperous regime. It has been shown by reference to the vision of the Ministry of Health (MOH) which states, "A nation working together towards better health". A healthy lifestyle can be obtained with the cooperation of certain groups. Public unawareness and underestimating the importance of healthy lifestyle may lead to various health problems. Malaysians must realize that prevention is better than cure.

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