

# Prevalence of Overweight and Obesity in Elderly people from Kg Baru Sepang, Selangor, Malaysia

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**Abstract-** Overweight is an increasing health problem in the world. It is associated with the development of diabetes mellitus, coronary heart disease, hypertension and osteoarthritis. The objectives of this study were to determine the prevalence of overweight and diseases related, among the elderly population in Kg. Baru, Sepang, Selangor and to identify their self-conscious on weight status. A descriptive cross-sectional study was conducted on elderly persons, who consented to participate. The prevalence of overweight and obese were 34% and 30%, respectively. Majority of the overweight respondents were diabetic (61.1%), whereas among the obese elderly 72.2% were having hypertension. Among the elderly respondents with overweight and obese, 83.3% and 62.5% respectively, were not conscious about their own body weight status and it was statistically significance ( $p < 0.05$ ). It is crucial for this group of subjects to have their weight reduced by methods such as dietary control and physical exercise. Health education should also be targeted on this aspect.

**Index Terms-** overweight, obese, elderly, diabetes mellitus, hypertension, self-conscious

## I. INTRODUCTION

In 2014, a Lancet study estimated that the number of overweight adults in the world was 2.1 billion in 2013, compared with 857 million in 1980.<sup>1</sup> The rate of obesity also increases with age at least up to 50 or 60 years old.<sup>2</sup> A study among elderly in Spain shows, the prevalence of overweight and obesity in men was 49% and 31.5%, respectively, whereas the corresponding percentages in women were 39.8% and 40.8%.<sup>3</sup> The prevalence of overweight and obesity was also high (41.8% and 23.4%, respectively) in Brazil.<sup>4</sup> In Malaysia, the National Health Morbidity Survey<sup>5</sup> revealed that the overweight prevalence among respondents more than 60 years old are increasing from 36% (2011) to 36.9% (2015), whereas the prevalence of obesity maintained at 16%.

People who are obese, compared to those with a normal or healthy weight, are at increased risk for many serious diseases and health conditions, as it is associated with poorer mental health outcomes, reduced quality of life, and the leading causes of death in worldwide, including diabetes, heart disease, stroke, and some types of cancer.<sup>6,7</sup> World Health Organization has classified health problems associated with obesity as either nonfatal or life threatening.<sup>8</sup> The life-threatening illnesses related to obesity include cardiovascular disease or conditions associated with insulin resistance, such as type 2 diabetes; certain types of cancers, especially hormonally related and large-bowel cancer; and gallbladder disease. Older age and obesity are two of the most powerful risk factors for uncontrolled hypertension and is a major determinant of mortality and stroke incidence, particularly in senior years.<sup>9</sup> Obesity is also significantly and independently associated with an increase in the prevalence of type 2 diabetes and hypertension, in all ages, including old age.<sup>10</sup> The National Health Morbidity Survey 2015<sup>5</sup> also revealed that there is an increasing in prevalence of known diabetes mellitus among adult more than 60 year old, from 36% (2011) to 38.3% (2015). Whereas the hypertension prevalence is increasing from 32.7% (2011) to 37.1% (2015)

Both elderly men and women who are overweight or obese at age 65 in U.S., had worse health outcomes than the normal weight cohorts.<sup>11</sup> This place significant financial burdens on the U.S. healthcare system, where the elderly men who are overweight or obese at age 65 had 6–13% more lifetime health care expenditures than the same age cohort within normal weight range at age 65. Whereas, elderly women who were overweight or obese at age 65 spent 11–17 percent more than those in a normal weight range. Medical costs associated with overweight and obesity may involve direct cost such as preventive, diagnostic, and treatment services related to obesity, and indirect cost, which includes productivity.<sup>12,13</sup>

A study in Southern city of Turkey shows that the percentage of girls defining their body weight as overweight and obese is significantly higher than the boys ( $p = 0.0001$ ). The intention ( $p = 0.0001$ ) and interventions to lose weight are also significantly

higher in girls than boys.<sup>14</sup> The appropriate weight perception is directly associated with actual weight, education, occupation and income, and that it is more frequent among women than among men too.<sup>15</sup>

Therefore, with a strong positive relationship between higher BMI and increased medical care expenditure,<sup>16</sup> and the odds ratio for the overweight and obese (compared to normal weight) to be 1.59 and 3.44, respectively for diabetes, 1.82 and 3.50, respectively for high blood pressure,<sup>17</sup> the objectives of this study were to estimate the prevalence of overweight and obesity and to identify self-conscious on weight status in a representative sample of the elderly population in Kg Baru Sepang, Selangor.

## II. RESEARCH ELABORATIONS

A descriptive cross-sectional study was conducted in Kg Baru Sepang, Selangor. The area has a multiracial community but the majority consists of Chinese ethnicity, with different socio-economic backgrounds. Universal sampling was done. All Malaysian who were 60 years old and above, not mentally retarded, deaf and mute, understand Malay language and stayed more than six months were selected as respondents. A face-to-face interview session using a questionnaire was done on elderly respondents, who consented to participate. The questionnaire included data on socio-demographic characteristics and self-consciousness on their weight status.

Body Mass Index (BMI) measurement was obtained based on WHO international standard for adults.<sup>18</sup> The respondent was classified as having overweight if BMI measured 25-29.9 kg/m<sup>2</sup> and obese if BMI measured at least 30 kg/m<sup>2</sup>. Systolic and diastolic blood pressure (BP), were taken with the respondent sitting on a chair after at least five minutes of rest.<sup>19</sup> The respondent was classified as at risk if BP measured 120/80-139/89 mmHg and hypertension if BP more than 139/89 mmHg. All measurements of blood pressure were taken twice with a five-minute interval. The average value was used for data analysis. Random blood sugar measurement was adapted from Clinical Practice Guideline (CPG) for Management of Type 2 Diabetes Mellitus.<sup>20</sup> The respondent was at risk if RBS measured 7.0-11.0 mmol/l and having diabetes mellitus if RBS more than 11.0 mmol/l.

Data was analysed using "Statistical Package for Social Sciences (SPSS) version 20. Fisher's Exact Test analyses the association between self-conscious status (independent variable) and weight status (dependent variable).

## III. FINDINGS

Fifty-three respondents, who were 60 and above, have agreed to participate in this study. There were 28 (53%) males and 25 (47%) females. Eighty-nine percent of the respondents were Chinese (n=47), seven percent were Malays (n=4) and four percent were Indians (n=2). Majority of the respondents (49%) have no formal education, whereas 34% had primary education, married (85%) and housewives (40%).

**Table 1. Body Mass Index status among respondents**

BMI Status	No.	%
Underweight	1	2.0
Normal	18	34.0
Overweight	18	34.0
Obese	16	30.0
<b>TOTAL</b>	<b>53</b>	<b>100.0</b>

Overall, with BMI measurement, the percentage of having at least overweight was 64%, in which 30% of the respondents were obese. Only two percent were underweight (Table 1).

Meanwhile, Table 2 shows the prevalence of overweight were higher among elderly, who more than 70-years old (38.9%) compare to obese which was higher among respondents who were 60-64 years age group (43.8%).

Female showed higher prevalence in overweight (61.1%) compared to male, who were more obese (56.3%). Malay and Chinese respondents showed higher prevalence in obesity (12.5% and 87.5%, respectively).

Majority of respondents with no formal education were obese (50%), whereas 44.4% of respondent who have primary education were overweight. Among married respondents, majority were overweight (53.3%).

**Table 2. Prevalence of overweight and obesity by socio-demography**

Status	Overweight (n=18)		Obesity (n=16)	
	No.	%	No.	%
<b>Age</b>				
60-64	6	33.3	7	43.8
65-69	5	27.8	5	31.3
>69	7	38.9	4	25.0
<b>Gender</b>				
Male	7	38.9	9	56.3
Female	11	61.1	7	43.8
<b>Race</b>				
Malay	2	11.1	2	12.5

Chinese	15	83.3	14	87.5
Indian	1	5.6	0	0.0
<b>Level of education</b>				
No formal education	7	38.9	8	50.0
Primary	8	44.4	5	31.3
Secondary	3	16.7	3	18.8
<b>Marital status</b>				
Single	0	0.0	1	6.3
Widow / Divorce	2	11.1	1	6.3
Married	16	88.9	14	87.5
<b>TOTAL</b>	<b>18</b>	<b>100</b>	<b>16</b>	<b>100</b>

Majority of the overweight respondents were diabetic (61.1%) and only 38.9% have hypertension. Whereas among the obese elderly 72.2% were having hypertension (Table 3).

**Table 3. Status of Diabetes mellitus and Hypertension among respondents who were overweight and obese**

BMI status	Diabetes mellitus status		Hypertension status		Total
	Yes n (%)	No n (%)	Yes n (%)	No n (%)	
<b>Overweight</b>	11 (61.1)	7 (38.9)	7 (38.9)	11 (61.1)	<b>18 (100)</b>
<b>Obese</b>	14 (31.3)	2 (68.7)	13 (72.2)	3 (27.8)	<b>16 (100)</b>
<b>P value</b>	0.007*		0.000*		

\*Fisher exact test

**Table 4. Association between weight status and self-conscious among overweight and obeserespondents**

BMI status	Self-conscious status		Total	P value
	Yes n (%)	No n (%)		
<b>Overweight</b>	3 (16.7)	15 (83.3)	<b>18 (100)</b>	0.019*
<b>Obese</b>	6 (37.5)	10 (62.5)	<b>16 (100)</b>	

\*Fisher exact test

Among elderly respondents with overweight and obese, 83.3% and 62.5% respectively, were not conscious about their own body weight status. Fisher’s exact test showed there was a significant association between weight status and self-conscious ( $p < 0.05$ ) (Table 4).

**Table 5. Attempt to lose weight among those who were self-conscious**

BMI status	Attempt to lose weight		Total	P value
	Yes n (%)	No n (%)		
<b>Overweight</b>	2 (66.7)	1 (33.3)	<b>3 (100)</b>	0.595*
<b>Obese</b>	3 (50.0)	3 (50.0)	<b>6 (100)</b>	

\*Fisher exact test

Majority (66.7%) of overweight respondents, who were self-conscious on their weight status, have tried to lose weight, compared to those who were obese (Table 5). However, there was no statistically significant ( $p > 0.05$ ) in association between weight status and attempt to lose weight among those who were conscious on their overweight status.

#### IV. DISCUSSION

In 2010, overweight and obesity already were estimated to cause 3.4 million deaths, 3.9% of years of life lost and 3.8% of disability adjusted life years (DALYs) globally.<sup>21</sup> The prevalence of overweight and obesity increases with age and ranges from 15% to 20% in

industrialized countries.<sup>22, 23</sup>Overweight (including obesity) rates have almost stabilised in Italy, England and the United States, and have grown modestly in Canada, Korea and Spain, in the past ten years.<sup>24</sup>Overall, 39% and 13% of Canadian older adults were classified as overweight and obese, respectively,<sup>23</sup> whereas in Korea, the prevalence trend in overweight/obesity increased in men from 1998 to 2009.<sup>25</sup>A study by Fabíola<sup>4</sup> shows that there are high prevalence of overweight and obesity among elderly (41.8% and 23.4%, respectively).This is consistent with our study, in which the prevalence of overweight and obesity among elderly in Kg. BaruSepangwere 34% and 30%, respectively. These findings were higher than previously reported in 2011<sup>26</sup>, which were 33.6% and 19.5%, respectively. Thus the combined prevalence of overweight and obesity among our respondents and study by Zainudin,<sup>27</sup> which show the increase of prevalence of overweight and obesity (51.1% and 15.5%, respectively) were worrying.

Respondent's age had a significant negative association with overweight and obesity. Among all elderly persons aged 50 or more, a higher prevalence of overweight and obesity were found among the relatively younger age groups (50–69) than among older persons aged 70 or older,<sup>28</sup> similar with study done by Ustu<sup>29</sup> and consistent with our finding in obesity. The lower prevalence among older persons aged 70 or more might be due to loss of appetite, lost interest in excessive eating, increased morbidities, and accompanied wasting. Physiological anorexia of aging is a normal consequence of food intake changes with increasing aging.<sup>28</sup>Globally, the proportion of adults with a BMI of 25 or greater increased from 28.8% (28.4-29.3) in 1980 to 36.9% (36.3-37.4) in 2013 for men and from 29.8% (29.3-30.2) to 38.0% (37.5-38.5) for women. Increases were observed in developed and developing countries, but with different sex patterns. In developed countries, men have higher rates of overweight and obesity, while in developing countries, women exhibit higher rates and this relationship persists over time.<sup>30</sup> This is consistent with a study done in a community-based national study, which reports that 43% of men and 77% of women aged 55–65 were obese.<sup>31</sup> However, our result showed higher level of obesity among male and higher level of overweight among female respondents.This result was a combination of the prevalence of overweight and obesity in some Arab and European countries. For example in Egypt the prevalence among women and men was about 75% and 60%, respectively; in Jordan was 66% and 62%, respectively; and in Syria was 64% and 59%, respectively. However, the prevalence of overweight and obesity among women European countries is less than men. WHO reports lower overweight/obesity prevalence among women than men in United Kingdom (61% vs. 68%, respectively), France (45% vs. 57% respectively), Denmark (46% vs. 58%, respectively) and Canada (59% vs. 68%, respectively).<sup>32</sup> Several factors are likely to contribute to the higher overweight / obesity level among women than men. The most common community health problem is lack of physical activity, especially among females where 71.3% females and 58% males are insufficiently active.<sup>32</sup>The annual report of the KNSS also reports that about 75% of adult females did not engage in any physical activity compared with 60% of adult males.<sup>33</sup>

In our study, overweight and obesity were noticed more among the married couples. This might be due to positive reinforcement among them to eat together and might relate to the effects of body weight on interpersonal attractiveness.<sup>34</sup>Married elderly Kuwaitis living with spouse and/or children are likely to be surrounded by social support and warm family atmosphere that may enhance increased caloric intake facilitated by elongated duration of everyday meals, and at social gatherings.<sup>35</sup>The lower education respondents had higher prevalence of both overweight and obesity. Being literate gives individuals to value life and live healthy in accordance; diet restriction, keeping fit physically and routine health screenings. Absence or minimal exposure to education deprives these individuals from good habits which in turn encourage unhealthy eating, sedentary lifestyles and to suffer from chronic illness.<sup>27</sup> Similar study also supported our finding that obesity was seen in the lower education society and lower education contributed higher risk of obesity, suggesting lower level awareness on the risks and consequences of obesity.<sup>36,37</sup>

Many of the health problems related to overweight and obesity among older persons are the same as among younger age groups.<sup>23</sup>Obesity plays a role in predisposing the patients to diabetes mellitus or hypertension. High body mass index (BMI) can be a predictor of someone getting these diseases.<sup>38</sup>The prevalence of diabetes increased with increasing age (3.2%, 11.5%, and 20.4% among persons who were 20 to 39, 40 to 59, and  $\geq 60$  years of age, respectively) and with increasing weight (7.6%, 12.8%, and 18.5% among persons with a body-mass index of 18.5 to 24.9, 25.0 to 29.9, and  $\geq 30.0$ , respectively).<sup>39</sup> Kirkman<sup>40</sup> reports the prevalence of diabetes among U.S. adults aged  $\geq 65$  years varies from 22 to 33%, and diabetes mellitus is associated with hypertension (2.7 [1.6-4.5];  $p < 0.01$ ).<sup>41</sup> Those aged  $\geq 75$  years have higher rates than those aged 65–74 years for most complications. Deaths from hyperglycemic crises also are significantly higher in older adults.<sup>42</sup>The prevalence of hypertension among the elderly in Malaysia has been reported as high as 58.3% and 54.5% in the community, and ranging from 36.0 to 50.3% in old folks homes.<sup>43, 44</sup>WHO previously reports multiple logistic regression analyses identified a higher body mass index and diabetes mellitus correlates with the hypertension<sup>45</sup> and a study done by Yap finds that hypertensive patients usually have co-morbid with diabetes mellitus.<sup>46</sup> This is consistent with our finding where there were statistically significant between higher body mass index with diabetes mellitus and hypertension ( $p < 0.05$ ).These data emphasize the urgent need for a comprehensive integrated population-based intervention program to ameliorate the growing problem of diabetes mellitus and hypertension.The importance of controlling body weight should be highlighted as controlling body

weight, decreasing the degree of weight gain, and delaying the beginning age of weight gain contributes to lower risk of suffering from hypertension and were effective measures in prevention and cure of hypertension and diabetes mellitus.<sup>47</sup>

The self-concept is the awareness one has of oneself<sup>48</sup> and it is a collection of hundreds of self-perceptions, which among those perceptions is regarding body image or toward one's own physical appearance.<sup>49, 50</sup> Many of respondents who are self-conscious about their appearance, are dissatisfied with their bodies.<sup>51</sup> This body dissatisfaction increases during adolescence and continues into adulthood.<sup>52</sup> The finding is consistent with our result where majority of the respondents who have higher body mass index were not self-conscious toward their weight status and this was statistically significance. Similar as our finding, Befort<sup>53</sup> reports many obese respondents are interested in weight loss and have experienced in weight loss attempts. However, their interest in weight loss was largely driven by a desire to improve their health. Although appearance concerns are not as important as health concerns for motivating weight loss, negative body image may still play a role in weight control behaviors.

## V. CONCLUSION

The prevalence of overweight and obesity were higher among elderly and there is a potential of higher prevalence of diabetic and hypertensive among obese elderly. Although there was no association between overweight status and self-conscious but the higher prevalence among them who were not conscious on their body weight problem were very worrisome.

As adults age, it is important to ensure that they not only live longer, but that their lives are fulfilling and lived in dignity with as much independence as possible. While good nutrition and regular exercise can influence a person's weight, the focus cannot be on changing individual behaviours alone. Reversing the long term upward trends in overweight and obesity, especially among elderly, will require concerted and sustained action across all sectors of the community through multi-strategy interventions. Also, further studies are needed to collect more data and develop guidelines for preventing and managing overweight and obesity among elderly.

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