

# Physical Inactivity Status and BMI Level among Community in Salak, Sepang, Selangor, Malaysia

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**Abstract-** Physical inactivity has a major health impact on the world. It is now identified as the fourth leading risk factor for global mortality. Being physically inactive or sedentary activity increases the risk of being overweight. Overweight and obesity are also major risk factors for a number of chronic diseases. This study aims to assess the physical inactivity status and body mass index level among residences in Salak, Sepang, Selangor.

A cross sectional study was done among Malaysian, aged more than 18-year-old. Respondents that fulfill the inclusion & exclusion criteria were interviewed with validated questionnaires and data were analyze using SPSS.

The prevalence of physical inactivity was 14.4%. Majority was among the age group of 50-59 years (25%), female (15.3%), married (14.4%), primary education (75%), unemployed (30.8%) and those who have monthly household income more than RM 5000 (16.4%). No time and tired were among the top barrier factors toward physically active. Majority of the respondents were also overweight or obese.

The awareness on physical activity should be strengthened by various means. Being physically fit is associated with many health benefits. Therefore, regardless of environment setting and barriers, creative solutions should be executed in order for a community to lead an active lifestyle.

**Index Terms-** Physical inactivity, BMI level, Overweight, Obese, Sub urban, Selangor.

## I. INTRODUCTION

Physical activity is defined as any bodily movement produced by skeletal muscles that results in energy expenditure. The energy expenditure can be measured in kilocalories. Physical activity in daily life can be categorized into occupational, sports, conditioning, household, or other activities. Exercise is a subset of physical activity that is planned, structured, and repetitive and has as a final or an intermediate objective the improvement or maintenance of physical fitness.<sup>1</sup>

Physical inactivity is now identified as the fourth leading risk factor for global mortality, and it is estimated to be the main cause for approximately 21–25% of breast and colon cancers, 27% of diabetes and approximately 30% of ischemic heart disease burden.<sup>2</sup> Therefore, the elimination of physical inactivity would remove between 6% and 10% of the major non-communicable diseases (NCDs), type 2 diabetes, breast and colon cancers, and increase life expectancy.<sup>3</sup>

In 2011, a study estimated that 1 in 5 people are insufficiently physically active. The sample recruited almost 300,000 individuals older than 15 years, from 76 different countries.<sup>4</sup> In Canada, physical inactivity represents 3.7% of the overall health care costs, whereas in China, more than 15% of both medical and non-medical costs are attributable to physical inactivity, per year.<sup>5,6</sup> The National Health Morbidity Survey (NHMS) conducted in 2015 showed that the prevalence of physical inactivity was 33.5%.<sup>7</sup> Although the benefits of physical activity and exercise are widely acknowledged, older individuals remain sedentary.<sup>8</sup>

It has been reported that one additional hour of sedentary activity increases the risk of being overweight (13%) and developing high abdominal fat (26%).<sup>9</sup> In a Canadian population study, the prevalence of obesity was significantly higher in people who watched television for more than 21 hours per week, and lower in people who watched television for fewer than 5 hours per week (from 25% to 14% in men and from 24% to 11% in women), regardless of leisure-time and physical activity.<sup>10</sup>

In relation to that, lower leisure-time physical activity (LTPA) and higher body mass index (BMI) are found to be independently associated with risk of heart failure (HF).<sup>11</sup> Overweight and obesity are also major risk factors for a number of chronic diseases, including diabetes, cardiovascular diseases and cancer.<sup>12</sup> A study by Australian Institute of Health and Welfare reported that 14% of

disease burden due to overweight and obesity in the year 2020 could be avoided if the population at risk in 2011 reduced their body mass index.<sup>13</sup>

Thus, this study was conducted to determine the physical inactivity status and correlation with BMI level among residences in Salak, Sepang, Selangor. Therefore, findings can be used to increase the awareness on the importance of physically active and relationship with BMI level.

## II. RESEARCH ELABORATIONS

A descriptive cross-sectional study was carried out in a residential area in Salak, Sepang, Selangor, which consisted of approximately 250 populations with majority is Malay. The neighborhood comprises of single and double storey houses with total of 130 houses.

The housing area has been stratified earlier before systematic random sampling was conducted to choose the respondents' houses, followed by simple random sampling to select the respondent within the household. All Malaysian who were living in the area for at least six months, aged more than 18 years, not mentally retarded, deaf and mute, were selected as respondents. Respondents who refused to participate in the survey or were not there during the survey after three visits, will be considered as non-respondents

Data was collected through face to face interview using a validated questionnaire from National Health Morbidity Survey 2015 [7]. The data has been analyzed using descriptive statistics to get the frequency and relative frequency (percentage) for physical inactivity and Body Mass Index level, and also sociodemographic variables. The body mass index (BMI), was calculated and classified based on Clinical Practice Guideline (CPG) on primary & secondary prevention of cardiovascular diseases into Normal (BMI <23kg/m<sup>2</sup>), Overweight (BMI 23-27kg/m<sup>2</sup>) and Obese (BMI ≥ 28 kg/m<sup>2</sup>).<sup>14</sup>

The correlation was determined by Pearson correlation coefficient. The level of significance was set at  $p < 0.05$  and confidence level at 95%.

## III. FINDINGS

A total of 125 participants participated in this study, giving an overall response rate of 86.2%.

**Table 1. Prevalence of physical inactivity status among respondents**

Physical activity status	n	%
Active	107	85.6
Inactive	18	14.4
<b>Total</b>	<b>125</b>	<b>100.0</b>

The prevalence of physically inactive is 14.4% (Table 1).

**Table 2. Prevalence of physical inactivity by socio-demography**

Socio-demography	Physical activity status		TOTAL n (%)	p value
	Active n (%)	Inactive n (%)		
<b>Age</b>				
< 20	3 (100)	0	3 (100)	0.572
20-29	23 (85.2)	4 (14.8)	27 (100)	
30-39	30 (85.7)	5 (14.3)	35 (100)	
40-49	25 (92.6)	2 (7.4)	27 (100)	
50-59	18 (75.0)	6 (25.0)	24 (100)	
≥ 60	8 (88.9)	1 (11.1)	9 (100)	
<b>Gender</b>				
Male	46 (86.8)	7 (13.2)	53 (100)	0.745
Female	61 (84.7)	11 (15.3)	72 (100)	
<b>Marital status</b>				
Single	25 (83.9)	5 (16.1)	31 (100)	0.688

Married	77 (85.6)	13 (14.4)	90 (100)	
Widow / Divorce	4 (100)	0	4 (100)	
<b>Level of education</b>				
Primary	1 (25.0)	3 (75.0)	4 (100)	0.000
Secondary	48 (94.1)	3 (5.9)	51 (100)	
Tertiary	58 (82.9)	12 (17.1)	70 (100)	
<b>Occupation</b>				
Government/semi-gov.	30 (85.7)	5 (14.3)	35 (100)	0.498
Private	33 (86.8)	5 (13.2)	38 (100)	
Self-employed	15 (93.8)	1 (6.2)	16 (100)	
Housewife	6 (85.7)	1 (14.3)	7 (100)	
Unemployed	9 (69.2)	4 (30.8)	13 (100)	
Retiree	7 (77.8)	2 (22.2)	9 (100)	
Student	7 (100)	0	7 (100)	
<b>Household monthly income (RM)</b>				
< RM 5,000	51 (87.9)	7 (12.1)	58 (100)	0.383
≥ RM 5,000	56 (83.6)	11 (16.4)	67 (100)	

The higher prevalence is among the age group of 50-59 years (25%), female (15.3%), married (14.4%), primary education (75%), unemployed (30.8%) and those who have monthly household income more than RM 5000 (16.4%) (Table 2).

**Table 3. Factors of physical inactivity among the residents**

Barrier factors	n	%
No time	8	44.5
Tired	6	33.4
No motivation/ interest	3	16.5
Health problems	1	5.6
<b>Total</b>	<b>18</b>	<b>100</b>

Among the factors of physical inactivity among the respondents are no time (44.5%) and tired (33.4%) (Table 3).

**Table 4. Prevalence of BMI among the residents**

BMI level (kg/m <sup>2</sup> )	Frequency, (n)	Percentage, (%)
< 23	21	16.8
<b>23 - 28</b>	<b>67</b>	<b>53.6</b>
> 28	37	29.6
<b>TOTAL</b>	<b>125</b>	<b>100</b>

Majority (85.2%) of the respondents have BMI level at least 23 kg/m<sup>2</sup> (Table 4).

**Table 5. Association between physical activity status and BMI level**

Physical activity status	BMI level (kg/m <sup>2</sup> )		Total n (%)	P value
	< 23	≥ 23		
	n (%)	n (%)		
<b>Active</b>	18 (16.8)	89 (83.2)	<b>107 (100)</b>	<b>0.738</b>
<b>Inactive</b>	3 (16.7)	15 (83.3)	<b>18 (100)</b>	

*Fisher's test = 0.785*

Among the residents who are physically inactive, 83.3% have BMI level more than 23 kg/m<sup>2</sup>. However, statistically there is no significant association between physical activity status and BMI level among the residents ( $p > 0.05$ ) (Table 5). Pearson's correlation coefficient (Table 6) also shows no significant correlation between physical activity and BMI level (Pearson's  $r = -0.085$ ).

**Table 6. Correlation between physical inactivity and Body Mass Index**

Correlation		BMI
Physical activity	Pearson correlation	-0.085
	P value	0.348
	N	125

#### IV. DISCUSSION

Our study has shown that the prevalence of physical inactivity (14.4%) was lower as compared to a study conducted by Lian et al., whose findings show that more than 60% of Malaysians were physically inactive.<sup>15</sup> This could be due to the awareness on the benefits of physical activity with easier access to internet technologies as the information can now be accessed at home or away 24-h a day seven days a week, at the convenience of the individual.<sup>16</sup> Moreover, this improvement is also in light of intensive efforts by the Malaysian government to promote healthy lifestyles over the past 10 years.<sup>17</sup>

The same study also stated there was a significant increasing trend of activity from the age group of 45 – 49 years old until the age of 75 years old and above (30%).<sup>17</sup> Whereas, our data showed the highest prevalence of physical inactivity were in group age of 50 – 59 years old (25%), but dropped at the age of more than 60 years old (11.1%). This might be due to a sedentary lifestyle, rather than biological aging.<sup>18</sup> Those who were 50-59 years old are in the phase of retirement transition, which was consistent with our result that showed the highest prevalence of physical inactivity by occupation were among the retirees and unemployed residents (30.8% and 22.2%, respectively). As older people no longer need to spend time at work due to retirement, they tend to reduce their involvement in physical activities as compared to younger individuals.<sup>19</sup>

The residents who are in 50-59 years old also marked as the third highest prevalence of overweight (58.3%) and obesity (29.2%). It is positively supported by Huidong et al., who found that in urban and rural men and women in China, BMI, waist circumference, and percentage body fat were each associated inversely with physical activity level but positively with sedentary leisure time.<sup>20</sup> An increased level of physical activity was also significantly associated with a lower risk of overweight and obesity after adjusting it for age ( $p = < 0.001$ ).<sup>21</sup>

The common contributing factors for physical inactivity in our study were 'having no time', 'tired' and 'no motivation/ interest'. These were consistent with previous studies, which reported that 'not having enough time' as the most common barrier to do physical activity in Malaysia.<sup>22,23</sup> Lack of time amongst respondents may be partly due to increasing financial responsibilities for males from extended families (Samir et al., 2011).<sup>24</sup>

This was quite consistent with our findings, where majority of our residents were employed and have monthly household income of more than RM5000. The employment was a strong predictor of physical inactivity, where those who are working full time or part-time

are more likely to be inactive ( $P < 0001$ ) and workers are more or less forced to sit almost the whole working day without proper break and increases sedentary components. <sup>25, 26</sup>

Female are found to be more inactive (15.3%) as compared to male (13.2%), which was consistent with a study as reported by Mohd Zikrullah, et al. where females are more inactive (66.7%) than males (46.5%). <sup>27</sup> The prevalence of females who were inactive could be associated with their roles as housewives, in which our finding showed 14.3% of housewives were physically inactive. Female housewives were too busy carrying out their responsibilities and roles such as taking care of house (87.6%) and taking care and tidying the house (96.8%). <sup>28</sup>

In terms of psychosocial, females do not perceive that they have as diverse a network of support or motivation from significant others to perform their physical activity when compared to male. <sup>29</sup> 'No motivation/interest' listed as the third contributors of physical inactivity (16.5%) in our study with higher prevalence of inactivity among single residents (16.1%), which were consistent with a previous study that reported higher prevalence among female and single residents (11.3% and 19.2%, respectively). <sup>30</sup> Having partner is important in giving support and help to be consistent in living a healthier life. <sup>31</sup>

Physical inactivity may lead to increase in BMI as reported 77% respondents who were physically inactive were overweight. <sup>32</sup> Although our study showed no correlation between physical inactivity and BMI ( $p > 0.05$ ), a previous study has suggested that physical activity alone cannot maintain BMI and body fat percent, but it can reduce the risk of overweight and high body fat percent in the population. <sup>33</sup>

## V. CONCLUSION

The prevalence of physical inactivity among the residents of was relatively lower with the most common factor contributing to physical inactivity was 'no time'. However, there was no significant correlation between physical inactivity and Body Mass Index.

In future, it is important to strengthen the program on physical activity as a healthy life style, together with other components such as good nutrition and no smoking. Also, further studies are needed to collect more data and develop guidelines for preventing and managing physical inactivity among working adult.

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