

Factors influencing physical inactivity among adults in Negeri Sembilan, Peninsular Malaysia

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ABSTRACT

Background: Physical inactivity remains the most important modifiable risk factor in preventing a variety of non-communicable diseases (NCDs) and has been identified to be a risk factor for obesity, heart disease and cancers. This study examined the prevalence and factors associated with physical inactivity among the suburban adult population in Port Dickson district, Negeri Sembilan, Peninsular Malaysia.

Material and Methods: This was a community based cross-sectional study involving 397 adult respondents conducted in February 2016. Data was collected by face-to-face interview using a structured questionnaire. Data regarding socio-demographic factors (age, gender, ethnicity, education level, marital status and monthly income, working hours), current behavioural stage of physical activity and perceived benefits and barriers to physical activity were collected. Physical activity measured using the International Physical Activity Questionnaire (IPAQ) with the cut-off point of less than 600 met-min per week was considered to be physically inactive.

Results: The prevalence of physical inactivity among adult population was 36.3%. Factors significantly associated with physical inactivity included age, gender, marital status, working hours and current behavioural stage of physical activity.

Conclusion: Physical inactivity is high among the adult community in Negeri Sembilan district, Peninsular Malaysia and was strongly associated with age, gender, marital status, working hours and current behavioural stage of physical activity. It is important to identify individuals with physical inactivity and its associated factors early as this could severely affect the quality of life of the individuals.

KEY WORDS:

Physical inactivity, IPAQ, suburban, adult population, Peninsular Malaysia

INTRODUCTION

Physical inactivity remains the most important modifiable risk factor in preventing a variety of non-communicable diseases (NCDs). It has also been identified as a risk factor for obesity, heart disease and cancers.¹ According to the World Health Organization (WHO), physical inactivity is estimated to be linked in about 10% cases of breast, colon and rectal cancers, 16% cases of diabetes mellitus and 22% cases of

ischaemic heart disease.² WHO reported that about 1.9 million deaths are attributed to physical inactivity annually.²

According to the National Centre for Chronic Disease Prevention and Health Promotion, young Malaysians are inactive, unfit and overweight.³ This has threatening effects on efforts to restore good health among the population especially against cardiovascular diseases. This is an important point to consider as the prevention of diseases mentioned lies in the effectiveness of healthy lifestyle promotion among the adults.

Improvement in healthy behaviours such as balanced diet and physical activity will lead to a reduction in the risk of NCDs and cancers among the adult population. The solution lies in primary prevention and promotion of physical activity among the population.³

According to the Malaysian Adult Nutritional Survey (MANS) study among 18 to 59 year old adults reported that most Malaysian adults walk only 9.5% of the day and climbing of stairs only 0.1% of the day.⁴ This showed that most Malaysian adults were physically inactive and choose to live a sedentary life. The Third National Health and Morbidity Survey (NHMS III) study conducted by the Ministry of Health Malaysia among adults aged 18 years and over reported a physical inactivity prevalence of 43.7%.⁵

The objectives of the study was to estimate the prevalence of physical inactivity and identify factors associated with physical inactivity among suburban adult population in Negeri Sembilan, Peninsular Malaysia.

MATERIALS AND METHODS

This was a community based cross-sectional study conducted in six housing areas in Port Dickson district, Negeri Sembilan, Peninsular Malaysia in February 2016. A total of 397 adult respondents took part in the study. Simple random sampling was used to select households in the selected housing areas. All adults aged between 18 and 64 years old from the selected households were included in the study. Non-Malaysian and those with severe communication problems, such as total inability to comprehend in the Bahasa Malaysia language (national language of Malaysia) were excluded.

After consent from eligible individuals, a face-to-face interview using a pre-tested pre-coded structured questionnaire was conducted by trained personnel. The

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respondents were briefed of the purpose of the study. Data regarding socio-demographic factors (age, gender, ethnicity, education level, marital status and monthly income, working hours), current behavioural stage of physical activity and perceived benefits and barriers to physical activity were collected.

Physical activity was measured using the International Physical Activity Questionnaire (IPAQ) with the cut-off point of less than 600 met-min per week was considered to be physically inactive.^{6,7} Metabolic equivalent (met) is defined as the number of calories consumed by an individual per minute in an activity relative to the Basal Metabolic Rate. A single unit (1 met) is the caloric consumption of the individual while at complete rest. Those achieving 600 met-min per week or more are considered to be physically active.^{6,7}

The perceived benefits and barriers to physical activity were assessed using the Exercise Benefits/Barriers Scale (EBBS)⁸. The EBBS have acceptable psychometric properties and is associated with physical activity levels. Twenty-nine of the 43 items on the EBBS measure perceived physical, psychological and social benefits associated with physical activity with a cronbach's alpha of 0.95. Fourteen of the 43 items on the EBBS assess potential barriers for engaging in physical activity with a cronbach's alpha of 0.86.^{8,9}

All variables were coded and entered into the Statistical Package for Social Sciences, release 18.0 (SPSS Inc., Chicago, IL). Descriptive statistics were used for all variables studied. Univariate associations between variables and physical inactivity were estimated using binary logistic regression, Odds Ratio (OR) and 95% Confidence Interval (95% CI) with the level of significance set at 0.05. All variables associated with physical inactivity were included in the initial multivariate model to produce the final multivariate model.

RESULTS

A total of 397 adults participated in the study. The mean (SD) age was 40.1 (15.3) years. About 60% of the respondents were female. Among the respondents there were about 48.8% Malays and 51.2% non-Malays. About 84% of the respondents had secondary school education or higher, married/separated or widow (65.6%) and with a monthly income of less than RM3,000 (75.7%). The mean (SD) working hours was 8.6 (2.5) hours a day with 63.3% working for less than eight hours (Table I).

The prevalence of physical inactivity among suburban adults in Port Dickson district, Negeri Sembilan, Peninsular Malaysia was 36.3% (95%CI: 31.7, 41.1) (Table II). There was no evidence to show that ethnicity, education level, monthly income; and perceived benefits and barriers were associated with physical inactivity. Adults aged more than 40 years old, females, married, working more than 8 hours a day and in contemplation stage of current behaviour stage of physical activity were significantly associated with physical inactivity ($p < 0.05$) (Table III and IV).

Multivariate logistic regression analysis using the forward LR method found adults aged 40 years and above were 2.4 times more likely to be physically inactive compared to adults aged

under 40 years old (OR: 2.39, 95%CI: 1.24, 4.63). Females were 1.5 times more likely to be physically inactive compared to males (OR: 1.46, 95%CI: 1.21, 2.24) and those who were married were 1.3 times more likely to be physically inactive compared to singles (OR: 1.31, 95%CI: 1.02, 3.78). Adults who work eight hours or more a day were 4 times more likely to be physically inactive compared to those working for less than eight hours (OR: 3.87, 95%CI: 1.95, 7.68). Current behaviour stage of physical activity was associated with physical inactivity where those in contemplation stage were 3.3 times more likely to be physically inactive compared to those in action stage (OR: 3.27, 95%CI: 1.51, 7.05) (Table V).

DISCUSSION

The prevalence of physical inactivity among suburban adults was 36.3%. A study conducted by Guthold et al. based on a pooled analysis of 358 population-based surveys with 1.9 million participants reported a global age-standardised prevalence of physical inactivity as 27.5% (95% CI: 25.0, 32.2) in 2016.¹⁰ The prevalence was more than twice as high in high-income countries (36.8%) compared to low-income countries (16.2%).¹⁰ A study among adults in Ho Chi Minh City, Vietnam reported a prevalence of 43.8%.¹¹ In Malaysia, according to the Malaysian Adult Nutritional Survey (MANS) study among 18 to 59 year old adults reported that most adults walk only 9.5% of the day and climbing of stairs only 0.1% of the day.⁴ This showed that most Malaysian adults were physically inactive and were sedentary. The Malaysia National Health and Mortality Survey III conducted by the Ministry of Health Malaysia among adults aged 18 years and over reported the prevalence of physical inactivity as 43.7%⁵ and the World Health Survey by WHO among adults aged 25 and 64 years old was 60.1%.¹²

In this study, physical inactivity was more common among adults aged 40 years and older. This finding is consistent with other studies.^{10,13,14} Based on data from the 2008 Health Survey for England among 14250 households, it was found that there was a marked age-related decline in the proportion of physical activity.¹³ A study by Tan et al. found that rates of insufficient activity increases with age.¹⁵ Similar finding was also noted by Tuyckom et al.¹⁴ On the other hand, Lin et al with an eight year follow up study among 1435 Taiwanese population aged 65 years and above found that physical activity is common and associated with lower mortality risk.¹⁶ Study by Hu et al. among men aged 50 to 69 years were more likely to perform over 30 minutes of commuting physical activity on foot or by bicycle than males aged 15 to 34 years.¹⁷ This showed that the elderly could be motivated to indulge in physical activity and reduce mortality risk. As the number of aging population rises in Malaysia which leads to a strain on the health care system, encouraging the elderly to be physically active would reduce the health care burden.

This study showed that physical inactivity was more common among females compared to males. The finding on gender difference was consistent with studies conducted by Guthold¹⁰, and Tan.¹⁵ A study among adults in Ho Chi Minh City concluded that some differences in the pattern of physical activity between men and women were noted, with insufficient activity levels decreasing with age among women but not for men.¹¹ Studies conducted among Malaysian adults

Table I: Socio-demographic characteristics of the respondents (N = 397)

Characteristics	Mean (SD)	n (%)
Age (n = 378)	40.1 (15.3)	
≥ 40		213 (56.3)
< 40		165 (43.7)
Gender (n = 379)		
Female		228 (60.2)
Male		151 (39.8)
Ethnicity (n = 389)		
Malay		190 (48.8)
Non-Malay		199 (51.2)
Education Level (n = 371)		
Primary and below		59 (15.9)
Secondary and above		321 (84.1)
Marital Status (n = 375)		
Married/ Separated/ Widow		243 (65.6)
Single		129 (34.4)
Monthly Income (RM) (n = 321)	2083.0 (1500.5)	
< 3,000		243 (75.7)
≥ 3,000		78 (24.3)
Working Hours (hours/day) (n = 199)	8.6 (2.5)	
≥ 8		73 (26.7)
< 8		126 (63.3)

RM, Ringgit Malaysia; SD, standard deviation

Table II: Level of Physical Activity measured using IPAQ

Level of Physical Activity	n	%
Inactive	144	36.3
Active	253	63.7

Table III: Association between Physical Activity and Socio-demographic Factors

Characteristics	Characteristics		p-value*	OR	95% CI
	Inactive n (%)	Active n (%)			
Age			0.005		
≥ 40	87 (42.6)	117 (57.4)		1.84	1.20 , 2.84
< 40	50 (28.7)	124 (71.3)			
Gender			0.040		
Female	89 (40.5)	131 (59.5)		1.57	1.02 , 2.42
Male	48 (30.2)	111 (69.8)			
Ethnicity			0.616		
Malay	62 (34.8)	116 (65.2)		0.90	0.59 , 1.37
Non-Malay	75 (37.3)	126 (62.7)			
Education Level			0.450		
Primary and below	25 (40.3)	37 (59.7)		1.24	0.71 , 2.17
Secondary and above	109 (35.3)	200 (64.7)			
Marital Status			0.027		
Married/ Separated/ Widow	98 (40.0)	147 (60.0)		1.68	1.16 , 2.65
Single	37 (28.5)	93 (71.5)			
Monthly Income (RM)			0.736		
< 3,000	93 (38.1)	151 (61.9)		0.91	0.54 , 1.54
≥ 3,000	31 (40.3)	46 (59.7)			
Working Hours (hours/day)			0.001		
≥ 8	37 (52.9)	33 (47.1)		2.90	1.58 , 5.31
< 8	36 (27.9)	93 (72.1)			

OR, Odds Ratio; CI, Confidence Interval

* computed using binary logistic regression

Table IV: Association between Physical Activity and Current Behaviour Stage of Physical Activity; and Perceived Benefits and Barriers to Physical Activity

Characteristics	Physical Activity		p-value*	OR	95% CI
	Inactive n (%)	Active n (%)			
Current Behaviour Stage of Physical Activity					
Contemplation Stage	114 (43.7)	147 (56.3)	0.001	3.41	1.98 , 5.88
Action Stage	20 (18.5)	88 (81.5)			
Perceived Benefits and Barriers to Physical Activity (EBBS)					
< 120	31 (37.3)	52 (62.7)	0.804	1.07	0.64 , 1.77
≥ 120	104 (35.9)	186 (64.1)			

OR, Odds Ratio; CI, Confidence Interval; EBBS, Exercise Benefits/ Barriers Scale

* computed using binary logistic regression

Table V: Predictors of Physical Inactivity

Factors	OR	95% CI	Adjusted OR	95% CI Adjusted OR
Age				
≥ 40	1.84	1.20 , 2.84	2.39	1.24 , 4.63
< 40				
Gender				
Female	1.73	1.42 , 2.42	1.46	1.21 , 2.24
Male				
Marital Status				
Married/ Separated/ Widow	1.68	1.16 , 2.65	1.31	1.02 , 3.78
Single				
Working Hours (hours/day)				
≥ 8	2.90	1.58 , 5.31	3.87	1.95 , 7.68
< 8				
Current Behaviour Stage of Physical Activity				
Contemplation Stage				
Action Stage	3.41	1.98 , 5.88	3.27	1.51 , 7.05

OR, Odds Ratio; CI, Confidence Interval

concluded that females are more physically inactive compared to males.^{18,19,20} The reason may be due to the many roles a woman performs in the house that leaves them with less time for physical activity.

Adults who were single were more likely to be physically active compared to married adults. A study among 398 adults in Penang, Malaysia concluded that married individuals were less likely to take part in physical activity as frequently as those who were single.²⁰ Similar finding was also noted in the United Kingdom.^{21,22} The reason may be that household commitments often borne by married individuals could pose a restriction on them engaging in leisure-time physical activities.

In this study, physical inactivity was associated with adults working eight and more hours a day. Studies conducted in America and Australia showed contradicting results.^{23,24} Cook et al., concluded that in general, adults working longer hours were more likely to meet aerobic guidelines, with those working 45-49 hours weekly the most likely to meet guidelines.²³ Angrave et al., reported no significant association between long working hours and incidence of physical activity.²⁴

CONCLUSION

In conclusion, the prevalence of physical inactivity among suburban adults in Port Dickson district, Negeri Sembilan, Peninsular Malaysia was high. An improved understanding of the variables associated with physical inactivity will aid in the search for those factors that predispose to sedentary lifestyle. This study showed that factors significantly associated with physical inactivity included age, gender, marital status, working hours and current behavioural stage of physical activity. It is important to identify individuals with physical inactivity and its associated factors early as this could greatly affect the quality of life of the individuals.

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