

PHYSICAL ACTIVITY: PREVALENCE, BARRIERS AND ASSOCIATION WITH SLEEPING DURATION AMONG RESIDENTS IN APARTMENTS AT DENGKIL, SEPANG, SELANGOR, MALAYSIA

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Abstract

Significant health benefits can be obtained even by moderate amount of physical activity in daily routine and among the benefits are improving in sleep quality and its duration. Shorter sleep duration also consistently predicts subsequent weight gain in most people. Therefore, this study aimed to determine the association between the physical activity and total sleep duration. A cross-sectional study was conducted in apartments area in Dengkil, Sepang, Selangor. A Systematic random sampling was conducted to choose the respondents' unit and a simple random sample of adults aged 18 years and above was selected. Data were collected by an interviewed structured questionnaire. Chi-square test was performed to determine the association between physical activity status and sleeping duration. Majority of respondents were physically inactive (58.7%). Busy, lazy and health problems were the common barrier factors towards physically active among respondents. Statistically, there was significant association between physical activity status and sleeping duration. Awareness and campaign on physical activity should be strengthened in order to have physically active community.

Keywords: Physical Active, Barriers, Sleep Duration, Health Benefits, Quality of Life

1.0. Introduction

Regular physical activity plays a significant role in improving and maintaining one's health and well-being, especially when people gets older. Significant health benefits can be obtained even by moderate amount of physical activity in daily routine and the benefits of physical activity include lowering the risk of getting coronary health disease, stroke, type 2 diabetes mellitus, hypertension and some cancers (Costello, 2011). The global prevalence of physical inactivity among adults was 17% and physical inactivity is the fourth leading risk factor for global mortality, causing an estimated 3.2 million deaths and 2.6 million are in low- and middle-income countries (WHO, 2010).

National Health Morbidity Survey (2015) reports that most of the respondents have moderate physical activity (42.2%) followed by low physical activity (31.0 %). Physical activity may be important as non-pharmacological approaches to improve sleep quality and duration sleep patterns. Study by Yang, (2012) suggest that physical activities can improve overall sleep quality. Due to the wealth of evidence linking sleep to a range of health outcomes, there is a growing recognition of the importance of sleep to improve population health and the high level of physical activity also has significant effect on total sleep duration (Kredlow, et al. 2015). However, a research conducted by Magee & Hale (2012) shows that shorter sleep duration consistently predicts subsequent weight gain in most people.

Thus this study has been conducted to determine the prevalence and barriers towards physical activity, as well as the association with total of sleeping duration among the community. This finding are very essential in assisting the respondents aware on the important of being physically active and good sleep duration in improving their wellbeing, quality of life and optimum function in daily life.

2.0. METHODOLOGY

A cross-sectional study was carried out in apartments area in Kota Warisan, Sepang, Selangor, which comprises of 12 blocks of apartments with 960 units.

Systematic random sampling was conducted to choose the respondents' unit, followed by simple random sampling to select the respondent within the household. All residents who were living in the apartments, aged more than 18 years, not mentally retarded, deaf and mute, from each unit were selected. 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 set of validated questionnaire from NHMS (2015). The data has been analyzed using descriptive statistics to get the frequency and relative frequency (percentage) for physical activity level and socio demographic variables. The association was determined by Pearson chi-square test. The level of significance was set at $p < 0.05$ and confidence level at 95%.

3.0. RESULTS

There were 218 respondents participated in this study, which giving a full response rate.

Table 1: Prevalence of physically active among respondents

Physical Activity status	n	%
Active	90	41.3
Inactive	128	58.7
Total	218	100

Majority of the respondents are physically inactive (58.7%) as shown in Table 1.

Table 2: Socio-demographic characteristics of respondents

Socio-demography		Physical activity status		TOTAL n (%)	p-value
		Active n (%)	Inactive n (%)		
Gender:	Male	46 (53.5)	40(46.5)	86(100)	0.03
	Female	44 (33.5)	88(66.7)	132(100)	
Age:	< 20	3(37.5)	5 (62.5)	8 (100)	0.607
	20-29	34(46.5)	39(53.4)	73 (100)	
	30-39	24(39.3)	37(60.7)	61(100)	
	40-49	20(45.5)	24(54.5)	44(100)	
	50-59	5(19.4)	12(70.6)	17(100)	
	≥60	4(26.7)	11(73.3)	15(100)	
Ethnic:	Malay	82(41.0)	118(59.0)	200 (100)	0.249
	Chinese	0 (0)	1 (100.0)	1 (100)	
	Indian	4(80.0)	1(20.0)	5 (100)	
	Others	4(33.3)	8 (66.7)	12 (100)	
Marital Status:	Single	37(52.9)	33 (47.1)	70(100)	0.106
	Married	49(36.5)	85(63.4)	134(100)	
	Divorcee / widow	4 (28.6)	10 (71.4)	14 (100)	
Education Level:	No Formal	0 (0)	2 (100)	2 (100)	0.309
	Primary	6 (30.0)	14 (70.0)	20 (100)	
	Secondary	53(40.4)	78(59.5)	131 (100)	
	Tertiary	31(47.7)	34(52.3)	65 (100)	
Occupation:	Unemployed	7(27.3)	16(72.7)	22 (100)	0.068
	Student	3 (50.0)	3 (50.0)	6 (100)	
	Housewife	12(27.9)	31(72.1)	43 (100)	
	Government	5 (50.0)	5 (50.0)	10 (100)	
	Private	55 (50.0)	55 (50.0)	110 (100)	
	Self-employed	9 (39.1)	14 (60.9)	23 (100)	
	Retired	0 (0)	4 (100)	4 (100)	
Monthly income:	< RM 1000	4 (30.8)	9 (69.2)	13 (100)	0.693
	RM 1000 - 4999	77 (42.1)	106 (57.9)	183 (100)	
	RM 5000 – 9999	9 (45.0)	11 (55.0)	20 (100)	
	≥ RM 10000	0 (0)	1 (100)	1 (100)	

The prevalence of physically active are higher among male (63.5%), age 20-29 years (46.5%), and single respondents (52.9%) (Table 2).

Table 3: Barrier Factors for Physically Active among Respondents

No	Barrier Factors	Frequency	Percentage
1.	Busy	106	48.6
2.	Lazy	32	14.7
3.	Health problems	28	12.8
4.	Not interested	24	11.0
5.	No reason	18	8.3
6.	Feel enough exercising	4	1.8
7.	No suitable place	3	1.4
8.	No partner	2	1.0
9.	Weather	1	0.4
Total		218	100.0

Busy, lazy and health problems are the common barrier factors towards physically active among respondents (48.6%, 14.7% and 12.8%, respectively) (Table 3).

Table 4: Association between physical activity status and sleeping duration

Physical activity Status	Sleeping duration		Total n (%)	P-value (χ^2 value)
	Adequate n (%)	Inadequate n (%)		
Active	45 (50.0)	45 (50.0)	90 (100)	0.028
Inactive	45 (35.2)	83 (64.8)	128 (100)	(4.803)

Among respondents who are physically inactive, 64.8% are having inadequate sleeping duration. Statistically there is a significant association between physical activity and sleeping duration among respondents ($p < 0.05$) (Table 4).

4.0. DISCUSSION

More than half of the total respondents were physically inactive and majority were female. These were consistent with a study by Ying (2014) which reports that 43.7% of Malaysian adult are physically inactive and women have a significantly higher prevalence (50.5%) of physical inactivity than men (35.3%). Jamil (2015) also has stated that female has higher prevalence of physical inactivity (70.3%) than male (43.0%) during busy time. It may be due to most of our female respondents who are not working spent their majority time for

house chores associated with their role as mother and wives, as stated by Oakley (2018) where 80% of married women do more housework than their husbands. Meanwhile, for career women, most of their time was spent at work as reported by Sabil & Marican (2011) where 54% women respondents work more than 40 hours per week, 49.4% bring office work at home and 29.4% have to go to work on weekends.

A study conducted among villagers in Kuang, Selangor reveals that there is a higher prevalence of 'not enough time' among middle age and elderly respondents (46.7% vs. 48.4%, respectively) (Justine, et al., 2013). However, in the UK and USA, older adults spend on average 70% of their waking hours being sedentary and at least half of everyone over 70 years old sits for 80% of the day as mentioned by (Stamatakis, et al, 2012). This is consistent with studies done by Ying (2014), Jamil (2015) and our finding which showed 73.3% of respondents at the age 60 years old and above, and retirees (100%) were also physically inactive. While, the elderly are not active due to the age-related reduction in energy flux contribute to the age-related decline in functional independence. Goran (1992) and age-related behavioral changes may influence exercise self-efficacy and expectation for exercise (Conn, et al., 2003). Justine (2013) also found that elderly individuals.

Other than busy, laziness and health problem were among the barriers in our finding. These might also be the contributing factors of physically inactive among elderly. Justin et al (2015) reports 51.7% of elderly are too tired to do physical activity as they tended to have lower self-efficacy because they believed that their physical ability had deteriorated with age.

Worldwide, estimated that physical inactivity causes 6% of the burden of disease from coronary heart disease, 7% of type 2 diabetes, 10% of breast cancer, and 10% of colon cancer (Lee et al., 2012). At the same time, chronic health conditions may limit their ability to participate in physical activity (Costello et al., 2011) and majority of the elderly expressed the view that their sedentary behavior is mostly determined by arthritis-related stiffness and pain (Chastin et al., 2014).

No partner or companion in doing the physical activity might also the reason of physically inactive among elderly. Twenty-eight percent of elderly in Kuang, Selangor stated that they did not exercise because they have 'no one to exercise with' (Justin, et al., 2015). National Health Morbidity Survey 2015 (NHMS, 2015b) also shows single group (65.9%) or married (68.2%) adults are significantly more active compared to widow / widower and divorcee (53.7). Based on our survey, 38.5% of the respondents are single or divorcee/widow

and these could be one of the groups that would come with the reason of having no partner to exercise with as the divorcee, widow, and widower have the highest prevalence of physically inactive and one of the barriers for physically active was no partner. Having partner is important in giving support and help to be consistent in living a healthier life (Gellert, et al., 2011).

The National Health Morbidity Survey 2015 (NHMS, 2015b) states that primary educated person tends to have higher prevalence in physical activity (67.3%) compared to tertiary educated person (64.5%). Among Chinese in Shenzhen, those with higher education level (> 6 years) has lower prevalence in physical inactivity (61.6%) compared to those with lower educational level (\leq 6 years) (65.7%) (Zhou et al., 2018). However, our study showed that primary educated respondents have the highest prevalence of physical inactivity compared to the tertiary educated. This is may be due to highly educated people would have more knowledge on the importance of leading an active lifestyle towards their health, supported by a study conducted among Chinese adult where the result found that compared with lower educated (secondary education and below) participants, those with university or higher education level scores 1.7 points higher in their physical activity knowledge (Hui, et al., 2014). This could be due to the association between education level and knowledge on health (Osborn, 2011).

During sleep, immune system releases proteins that is called cytokines, which helps in promoting sleep. Sleep deprivation or lacking of sleep may affect the production of these protective cytokines, in which total sleep deprivation has significantly affect towards the circadian secretory pattern of cortisol and interleukin-6 among 12 healthy men (Chennaoui, et al., 2011). A study conducted among 26 medically healthy subjects at UCLA General Clinical Research Center shows that after a night sleep loss, there is marked increase of lipopolysaccharide (LPS) which may cause chronic illnesses such as hypertension, diabetes and overweight (Irwin, et al., 2010). Other studies show that inadequate sleeping was associated with greater likelihood of developing hypertension (Fang, et al., 2012) and twice the risk of being overweight, compared with sleeping for long duration (Fatima, et al., 2015). Studies also have shown there are significant interaction between physical activity or time spent outdoors and total sleep time (Kredlow, et al., 2015 and Murray, 2017), which is consistent with our finding.

5.0. CONCLUSION

In conclusion, majority of the female, elderly, retiree and single residents who were physically inactive are potential of having inadequate sleeping, which may cause health problems. Moreover, the most frequent barriers towards physical activity such as busy, lazy and health problem are modifiable variables. Therefore, it is important for being physically active and adequate sleeping duration for a healthy lifestyle and greater living.

For future study, we recommend a further analysis on health benefit of becoming physically active. In order to encourage active and healthy lifestyle, we should educate them the importance of active lifestyle and how it gives good effect on our health.

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References

1. Chastin, S., Fitzpatrick, N., Andrews, M., DiCroce, N., Chastin, S. F. M., Fitzpatrick, N., DiCroce, N. 2014. Determinants of Sedentary Behavior, Motivation, Barriers and Strategies to Reduce Sitting Time in Older Women: A Qualitative Investigation. *International Journal of Environmental Research and Public Health*, 11(1), 773–791.
2. Chennaoui, M., Sauvet, F., Drogou, C., Van Beers, P., Langrume, C., Guillard, M., Gomez-Merino, D. 2011. Effect of one night of sleep loss on changes in tumor necrosis factor alpha (TNF- α) levels in healthy men. *Cytokine*, 56(2), 318–324.
3. Conn V. S., Burks K. J., Pomeroy S. H., Ulbrich S. L., Cochran J. E. 2003. Older women and exercise: explanatory concepts. *Womens Health Issues*. 2003; 13:158-66.
4. Costello, E., Kafchinski, M., Vrazel, J., & Sullivan, P. 2011. Motivators, barriers, and beliefs regarding physical activity in an older adult population. *Journal of Geriatric Physical Therapy*. 34(3), 138–147.
5. Fang, J., Wheaton, A., Keenan, N., Greenlund, K., Perry, G. 2012. Association of Sleep Duration and Hypertension Among US Adults Varies by Age and Sex. *American Journal of Hypertension*, 25(3), 335–341.
6. Fatima, Y., Doi, S., Mamun, A. 2015. Longitudinal impact of sleep on overweight and obesity in children and adolescents: A systematic review and bias-adjusted meta-analysis. *Obesity Reviews*, 16(2), 137–149.
7. Gellert, P., Ziegelmann, J. P., Warner, L. M., & Schwarzer, R. 2011. Physical activity intervention in older adults: Does a participating partner make a difference? *European Journal of Ageing*, 8(3), 211–219.
8. Goran, M. I., & Poehlman, E. T. 1992. Total energy expenditure and energy requirements in healthy elderly persons. *Metabolism*, 41(7), 744–753.
9. Irwin, M. R., Carrillo, C., & Olmstead, R. 2010. Brain, Behavior, and Immunity Sleep loss activates cellular markers of inflammation : Sex differences. *Brain Behavior and Immunity*, 24(1), 54–57.

10. Jamil, A. T., Singh, R., Ismail, A., & Omar, A. 2015. Non-leisure time physical activity for adult Malaysian and determinant factors. *Malaysian Journal of Public Health Medicine*, 15(3), 84–93.
11. Justine, M., Azizan, A., Hassan, V., Salleh, Z., & Manaf, H. 2013. Barriers to participation in physical activity and exercise among middle-aged and elderly individuals. *Singapore Medical Journal*, 54(10), 581–586.
12. Kredlow, M. A., Capozzoli, M. C., Hearon, B. A., Calkins, A. W., & Otto, M. W. 2015. The effects of physical activity on sleep: a meta-analytic review. *Journal of Behavioral Medicine*, 38(3), 427–449.
13. Lee, I. M., Shiroma, E. J., Lobelo, F., Puska, P., Blair, S. N., & Katzmarzyk, P. T. 2012. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *The Lancet*, 380(9838), 219–229.
14. Magee, L., & Hale, L. 2012. Longitudinal associations between sleep duration and subsequent weight gain: A systematic review. *Sleep Medicine Reviews*, 16(3), 231–241.
15. Murray, K., Godbole, S., Natarajan, L., Full, K., Hipp, J. A., Glanz, K., Mitchell, J., Laden, F., James, P., Quante, M., Kerr, J. 2017. The relations between sleep, time of physical activity, and time outdoors among adult women. *PLoS ONE*, 12(9), 1–13.
16. NHMS. 2015. Vol I: Methodology and General Findings. Institute for Public Health, National Institutes of Health, Ministry of Health Malaysia, 1, 290.
17. NHMS. 2015. Vol. II: *Non-Communicable Diseases Risk Factors & Other Health Problems* Ministry of Health Malaysia, 2, 172.
18. Oakley, A. 2018. *The Sociology of Housework*. Bristol: Policy Press.
19. Osborn, C. 2011. The Mechanisms Linking Health Literacy to Behavior and Health Status. *American Journal of Health Behavior*, 35(1).
20. Sabil, S., & Marican, S. (2011). *Working Hours, Work-family Conflict and Work-family Enrichment Among Professional Women: A Malaysian Case*.
21. Stamatakis, E., Davis, M., Stathi, A., & Hamer, M. 2012. Associations between multiple indicators of objectively-measured and self-reported sedentary behaviour and cardiometabolic risk in older adults. *Preventive Medicine*, 54(1), 82–87.
22. WHO. 2010. *Global Recommendation on Physical Activity for Health*.
23. Yang, P.Y., Ho, K.H., Chen, H.C., Chien, M.Y. 2012. Exercise training improves sleep quality in middle-aged and older adults with sleep problems: a systematic review. *J Physiother*. 58: 157–163.
24. Zhou, Y., Wu, J., Zhang, S., Yan, S., He, L., Mkandawire, N., Song, X., Gan, Y., Li, W., Yang, T., Li, J., Zeng, X., Wang, Z., Lu, Z. (2018). Prevalence and risk factors of physical inactivity among middle-aged and older Chinese in Shenzhen : a cross-sectional study, 1–7.