ORIGINAL ARTICLE

Factors Associated With the Level of Physical Activities Among Non-Academic Staffs in the Faculty of Medicine and Health Sciences of a Public University in Selangor, Malaysia

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ABSTRACT

Introduction: Many Malaysians does not engage in regular physical activity. The objective of this study was to determine the factors associated with the level of physical activity among non-academics staff in the Faculty of Medicine and Health Sciences (FMHS), Universiti Putra Malaysia (UPM). **Methods:** This was a cross-sectional study using a self-administered questionnaire consisting socio-demographic, International Physical Activity Questionnaires (short form) and Depression, Anxiety and Stress Scale (DASS) scales to measure the level of physical activity and association with psychosocial and environmental factors. Ethical approval was obtained from the Ethics Committee for Research Involving Human Subjects (JKEUPM). Data was analysed using the SPSS 20.0. A p value of ≤ 0.05 was considered as statistically significant. **Results:** The response rate was 84% or 120 respondents. 68 (56.7%) respondents was found to have a good level of physical activity. Majority of them were women (70 [58.3%]), aged of < 33 years old (72 [60.0 %]), Malays (113 [94.2%]), and had tertiary education (81[67.5%]). There are significant associations between socio-demographic factors [gender (p=0.013), age (p=0.025) and level of education (p=0.020)] and environmental factor (performing physical activity at gymnasium (p=0.021)) with the level of physical activity on univariate analysis. On multivariate logistic regression, lower educational level (OR 2.96, p=0.016) and performing physical activity at gymnasium/sport centres (OR 4.66, p= 0.026) were associated with engaging with physical activity. **Conclusion:** Majority of the respondents have a good level of physical activity. Interventions should be planned for staffs otherwise identified as not having a good level of physical activity.

Keywords: Malaysia, Faculty of Medicine and Health Sciences, Physical activity, Non-academic staff, Factors

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INTRODUCTION

Hypertension, smoking, diabetes, physical inactivity and obesity are the five major cause of mortality worldwide (1). Globally in 2010, only 23% of adults 18 years and above were insufficiently active, with South-East Asia having the physically inactive prevalence of 15% (2).
Rapid modernization has change the lifestyle and practice of Malaysian just like rest of the world. Physical activity is defined as any bodily movement produced by skeletal muscle that require energy expenditure (3). Regular physical activity at the recommended amount has been proven to reduce the risk of developing serious illness such as ischemic heart disease, diabetes, and serious cancer that involves the breasts and the intestines. Following recommendation by World Health Organization, to reduce the risk of all-cause mortality, a healthy individual shout devote at least 150 minutes a week to perform physical activity or moderate intensity such as cycling, and brisk walking or half that that time for more vigorous intensity physical activity such as jogging and swimming (4).

A study in 2014 found that, only 56.2% to 64.3% of Malaysian adult were physically active. In the latest National and Health Morbidity Survey done in 2015, 66.5% of Malaysian adults were physically active (5). Adult life can be the most challenging time (6,7). They tend to go to work early in the morning and go back in the evening, leaving no time for leisure activities. The ever advancement of technologies also affect their physical

activity where most of adults become dependent toward the use of automated machines to perform even simple daily activities such as switching on and off the room light and fans.

A study done by Foong et al. found that, in Kuala Lumpur, Malaysia, most of participant spent their time on household and occupational activities which are of little value in energy expenditure and those who are obese and have abdominal obesity have low physical activity level (8).

Malaysia has been identified as having the dubious potential to experience an increase level of chronic illnesses due to very high levels of physical inactivity (9). Chin et al. state that, there was an increase in refined carbohydrates, saturated fats and sugar dietary intake in the Malaysia since the last two decade (10). Due to the above situation, the rate of occurrence of chronic diseases such as cardiovascular disease, diabetes mellitus and hypertension are rising, with physical inactivity being linked to an increase in an at least 17 different illnesses on a global scale (9). Long working hours, usually about eight hour per day during weekdays may interfere with the time supposedly allocated for exercise.

Despite the many benefits of regular exercise towards improvement of physical and psychological health, many Malaysian do not indulge in this important part of healthy lifestyle as regularly as recommended in many guidelines (7). This fact is indeed worrying as physical inactivity accounts for a large number of co-morbidities worldwide including causing more than 80% of cardiovascular disease, more than 20% of the cases of diabetes, and cancers of the breast and colon as well as killing about 3.2 million healthy individuals yearly (11). Other than obesity and lack of time for exercises due to long working hours, factors found to be associated with higher level of physical activity include male gender , lower educational background, non-tobacco users, being employed and a younger age group (12,13). In older individuals, independent factors found to be associated with performing physical activity are male gender, younger age bracket, lower psychological distress, a rural residence, being free of diabetes, taking adequate fruit and vegetable intake , better physical functioning and ability to travel independently (14).

As more than 30% of Malaysian adults are still physically inactive, this study aims to determine the level of physical activity and the factors (socio-demographics, environmental and psychosocial) associated with engaging in physical activity among non- academic staff in this faculty to enable appropriate interventions to be done before any complications sets in. Therefore, this study is done to identify whether there is poor level of physical activity among non-academic staff and whether interventions are needed.

MATERIALS AND METHODS

This was a cross sectional study utilizing a validated questionnaire. It was conducted over a period of 2 months in 2016 at Faculty of Medicine and Health Sciences (FMHS), Universiti Putra Malaysia among non-academic staff.

The inclusion criteria was either permanent or contract non-academic staff. Exclusion criteria was staff who are not available during the period of data collection or staff with medical illness which restrict mobility such as rheumatoid arthritis or severe knee osteoarthritis based on their medical records or respondent's self declaration.

The sample size was determined using several variables. The different variables to calculate the sample size were stated as follows: (Lemeshaw formula)
Comparison between secondary educational levels related to physical activity between males and females (15).
P1 = 0.403 (Men) P2 = 0.294 (Women)

$$n=\frac{[1.96\sqrt{2}\,(0.3485)(0.6515)+0.842\sqrt{(0.294)(0.706)+(0.403)(0.597)}]^2}{(0.294-0.403)^2}$$

n = 65 X 2
n = 130 (Expected 10% non-response rate)
n = 130 + (0.1) (130)
n = 143 respondents

This study used stratified random sampling that fulfils the inclusion criteria. A name list of non-academic staffs of FMHS, UPM was obtained from the Deputy Registrar Office. A 143 non-academics staffs was chosen to fulfil the sample size.

The stratification method: The stratification of non-academic staffs according to department.

Deparment	Calculation	Total
Human Anatomy	12/231 X 143 = 7.4	7
Nursing and Rehabilitation	8/231 X 143 = 4.9	5
Community Health	5/231 X 143 = 3.0	3
Microbiology and Parasitology	11/231 X 143 = 6.8	7
Obstetrics and Gynaecology	10/231 X 143 = 6.2	6
Orthopaedic	9/231 X 143 = 5.5	6
Pathology	15/231 X 143 = 9.2	9
Paediatric	8/231 X 143 = 4.9	5
Nutrition and Dietetics	10/231 X 143 = 6.1	6
Radiology	5/231 X 143 = 3.0	3
Medicine	11/231 X 143 = 6.8	7
Family Medicine	5/231 X 143 = 3.0	3
Psychiatry	11/231 X 143 = 6.8	7
Biomedical Sciences	22/231 X 143 = 13.6	14
Surgery	17/231 X 143 = 10.5	11
Deputy Dean's Office	67/231 X 143 = 41.4	41
Medicine Education	1/231 X 143 = 0.6	1
Environmental and Occupational Health	4/231 X 143 = 2.4	2
Total		143

Once selected in this manner, they will be approached and if they agree to participate in this study, informed consent will be taken from them.

This study was conducted using a validated (content and face) self-administered questionnaire. Content validation was done with an expert panel of 5 members consisting of two nursing lecturers, one family medicine specialist, one sport medicine specialist and a statistician. Face validity was done with 10% of the sample size i.e. 38 staffs. Changes recommended have been implemented in the final questionnaire used in this study. Reliability testing was done through Cronbach's Alpha reliability test for each part of the questionnaires The Cronbach's Alpha value of 0.8 are obtained which are considered as reliable.

The questionnaires have been adopted and modified from previous study by Ganasegeran, et al, International Physical Activity Questionnaires- short form and Depression, and Anxiety and Stress Scale (DASS) by Lovibond et al. (16,17,18). In this study, bilingual English and Malay self- administrated questionnaires was used. The questionnaires had two parts, which were Part 1 and Part 2.

Part 1: Consists of Section A and B. Section A includes sociodemographic questions including age, gender, ethnicity, monthly income, level of education and marital status. Section B consists of questions on psychosocial and environmental factors of the respondents that may be associated with physical activity. This includes questions on psychosocial factors (effect on level of physical activity by performing with family, friends and colleagues; presence of stress, anxiety and depression) and environmental factors (gymnasium or fitness centres and recreational park) and its effect on level of physical activity.

Part 2: Consists of the validated International Physical Activity Questionnaires - short form to determine the level of physical activity of the respondents. The dependent variable is level of physical activity and level of physical activity is defined as good or poor based on the following definitions (7):
Good: An individual who performed any combination of walking, moderate- intensity activity, or vigorous-intensity activity in the past seven days with at least a total physical activity score of 600 METs-minutes/week
Poor: An individual who performed any combination of walking, moderate- intensity activity, or vigorous-intensity activity in the past seven days with a total physical activity score of less than 600 METs-minutes/ week.

The IPAQ is the most widely used questionnaire to assess physical activity (19).It has been validated in most of the countries worldwide including Malaysia. There are 2 versions of this questionnaire i.e. short and long form. This study used the IPAQ- short form that consists of 9 item (IPAQ-SF) based on the recall of physical activity done in the last 7 days (20). It reports the activity of 4 intensity levels from including vigorous-intensity aerobic activities, moderate intensity activity such as casual cycling, walking and the least intense, sitting.

The Independent Variables Consists of socio-demographic characteristics such as age, gender, ethnicity, marital status, level of education, monthly income; psychosocial factors i.e. the effect of family, friends, colleagues,; environment factors such as exercisiong at gymnasium and fitness centres, or recreational park and psychological factors such as presence of stress, anxiety, depression.

The DASS is a 42 item self-report scale tht is divided into 3 subscles of depression, anxiety and stress measurement (21,22). Each scales has 14 items set of three self-report scales designed to measure the negative emotional states of depression, anxiety and stress. A shorter version, the DASS21, is available with 7 items per scale. It is a scale that has high internal consistency and discrimination. Each subscales is independent of each other and each item is scored from 0 to 3.The maximal score for each subscale is 21 which is then multiplied by 2 giving a score range from 0-42 (21,22). Scoring is below for each of the following domains of Stress/Depression/Anxiety:
Normal..... 0-10
Mild..... 11-18
Moderate 19-26
Severe..... 27-34
Extremely severe..... 35-42

As DASS 21 score is used widely to to screen for the presence of the emotional states of depression, anxiety and stress in clinical practice, patient who are noted to be in the range of mild and above severity will be advised to seek further consultation with a medical practitioner for confirmation of their diagnosis.

Data analysis was done with Statistical Package for the Social Sciences (SPSS) version 20.0. Descriptive analysis was used to determine data distribution, normality, frequency, percentage, mean and standard deviation. Univariate analysis was done using chi-square or Fisher exact test to determine the association between socio-demographic, psychosocial and environmental factors and the level of physical activity .Factors that had a significant value of ≤ 0.05 in this univariate analysis were entered into the multivariate logistic regression model. A p-value of ≤ 0.05 were considered as statistically significant. Ethical approval for the study was obtained from the Research Committee for Research Involving Human Subjects, Universiti Putra Malaysia (JKEUPM). The conceptual framework used in this study is summarized as in Figure 1.

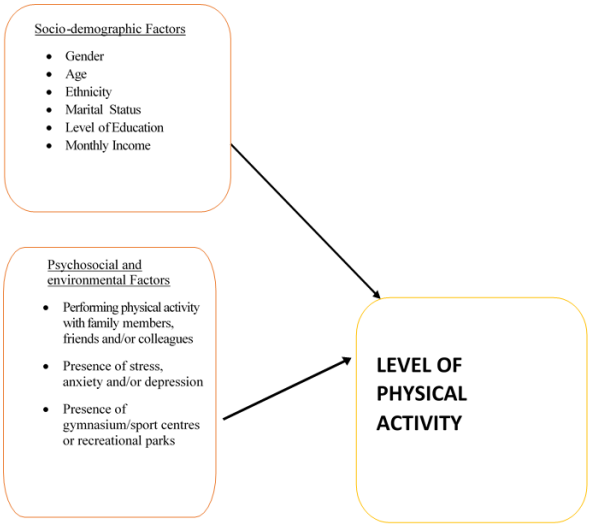

Figure 1: xxxxxxxxxxxx

RESULTS

The response rate for this study was 84% involving 120 respondents. There was no missing data as all respondents answered all questions. In this study, 52 (43%) of the respondents has poor level of physical activity and 68 (57%) of the respondents had good level of physical activity.

Table I show the socio-demographic characteristics of the respondents. The majority of the respondents are aged < 33 years old (72, 60.0%) and women (73, 60%). Majority of the respondents are also Malays (113(94.2%)), single (66 (55%)), had completed their tertiary education (81 (67.5%)) and had a salary of ≤ RM2999 (92 (76.7%)).

Table I: Socio-demographic characteristics of the respondents (N=120)

Variables	N	%	Mean ± SD
Age (years)			33± 8.9
< 33 years old	72	60.0	
≥ 33 years old	48	40.0	
Gender			
Male	50	41.7	
Female	70	58.3	
Race			
Malays	113	94.2	
Non-Malays	7	5.8	
Marital Status			
Single	66	55.0	
Married	54	45.0	
Education Level			
Secondary	39	32.5	
Tertiary	81	67.5	
Salary			
≤ RM2999	92	76.7	
≥ RM3000	28	23.3	

Table II shows the psychosocial and environmental factors of the respondents that may have effect on the level of physical activity. The number of respondents that performed physical activity with their family or friends are similar i.e. with 54 (45.0%) while 66 (55.0%) respondents do not perform physical activity with their family or friends. Out of 120 respondents, 42 (35.0%) answered they perform physical activity with their colleagues while 78 (65.0%) respondents replied that do not perform physical activity with their colleague. Table 2 also shows the practice of the respondents on whether they perform physical activity at gymnasium or sports centres and recreational park. Only 17 (14.2%) respondents performed physical activity at gymnasium or sports centres This study also shows that 45 (37.5%) performed physical activity at recreational park. In this study, 67 (55.8%) respondents were deemed to have stress, 72 (60.0%) anxiety and 13 (10.8 %) depression when looking in relation to psychosocial factors affecting the level of physical activity.

Table II: Psychosocial and environmental factors of the respondents. (N=120)

Psychosocial factors	n	%
Performing physical activity with family		
Yes	54	45.0
No	66	55.0
Performing physical activity with friends		
Yes	54	45.0
No	66	55.0
Performing physical activity with colleague		
Yes	42	35.0
No	78	65.0
Presence of stress		
Yes	67	55.8
No	53	44.2
Presence of anxiety		
Yes	72	60.0
No	48	40.0
Presence of depression		
Yes	13	10.8
No	107	89.2
Environmental factors	**n**	**%**
Performing physical activity at gymnasium / sports centres		
Yes	17	14.2
No	103	85.8
Performing physical activity at recreational park		
Yes	45	37.5
No	75	62.5

Table III shows the association between socio-demographic characteristics, psychosocial and environmental and the level of physical activity Chi-square (χ^2) analysis were used to test the association between participants' socio- demographic factors, psychosocial factors and environmental factors and the levels of physical activity. For socio-demographic factors, results shows that there is no significant

association between race, marital status and salary with level of physical activity. The variables which are found to be significantly associated are age, gender and education level with p value of 0.025, 0.013 and 0.020, respectively. For psychosocial factors, there was no association between performing physical activity with family, friends and/or colleague and presence of stress, anxiety and/or depression with the level of physical activity.

Table III: Association between socio-demographic characteristics, psychosocial, environmental and psychological factors and Level of Physical Activity

Variables	Level of Physical Activity		Statistical Test	
	Poor n (%)	Good n (%)	χ^2	p
Socio-demographic Age				
< 33 years olds	25(34.7)	47(65.3)	5.436	0.025*
≥ 33 years olds	27(56.2)	21(43.8)		
Gender				
Male	15(30.0)	35(70.0)	6.206	0.013*
Female	37(52.9)	33 (47.1)		
Race				
Malays	50(44.2)	63(55.8)	0.660	0.417
Non-Malays	2(28.6)	5(71.4)		
Marital Status				
Single	26(39.4)	40(60.6)	0.927	0.336
Married	26(48.1)	28(51.9)		
Education Level				
Secondary	11(28.2)	28(71.8)	5.385	0.020*
Tertiary	41(50.6)	40(49.4)		
Salary				
≤ RM2999	40(43.5)	52(56.5)	0.003	0.954
≥ RM3000	12(42.9)	16(57.1)		
Psychosocial factors				
Performing physical activity with family				
Yes	22(40.7)	32(59.3)	0.269	0.604
No	30(45.5)	36(54.5)		
Performing physical activity with friends				
Yes	19(35.2)	35(64.8)	2.655	0.103
No	33(50.0)	33(50.0)		
Performing physical activity with colleague				
Yes	14(33.3)	28(66.7)	2.631	0.105
No	38(48.7)	40(51.3)		
Presence of stress				
Yes	30(25.0)	37(30.8)	0.129	0.720
No	22(18.4)	31(25.8)		
Presence of anxiety				
Yes	34(28.3)	38(31.7)	1.109	0.292
No	18(15.0)	30(25.0)		
Presence of depression				
Yes	6(5.0)	7(5.8)	0.047	0.828
No	46(38.4)	61(50.8)		
Environmental factors				
Performing physical activity at gymnasium / sports centres				
Yes	3(17.6)	14(82.4)	5.322	0.021*
No	49(47.6)	54(52.4)		
Performing physical activity at recreational park				
Yes	17(37.8)	28(62.2)	0.905	0.341
No	35(46.7)	40(53.3)		

* Significant at p value< 0.05

As for environmental factors, there was an association between performing physical activity at gymnasium or sports centres (p=0.021) with the level of physical activity. However, there is no association was found between performing physical activity at recreational park with the level of physical activity.

Based on findings of univariate analysis with chi square test, significant variables including younger age group (< 33 years old) , male gender, secondary level of education and performing physical activity at gymnasium/sports centres were entered into the multivariate logistic regression analysis. In multivariate logistic regression analysis, only lower educational level (OR 2.96, 95%CI 4.22-7.19, p=0.016) and performing physical activity at gymnasium (OR 4.66, 95%CI 1.20-18.05, p= 0.026) were associated with engaging with physical activity as shown in Table IV. This means that those with lower educational level i.e. those with secondary level of education are 2.9 times more likely to perform physical activity as compared to those with tertiary education and those that perform physical activity at gymnasium are 4.6 times more likely to engage in physical activity than those that don't performed it in gymnasium. In multivariate analysis, it was also found that age and gender were not associated with performing physical activity.

Table IV: Factors associated with performing physical activity (n=120)

Variable	Odds ratio	95%CI	P value
Age	0.956	0914-1.001	0.053
Gender			
Male	2.214	0.976-5.024	0.057
Female	reference		
Educational level			
Secondary	2.962	1.220-7.189	**0.016***
Tertiary	reference		
Performing physical activity at gymnasium			
Yes	4.657	1.202-18.048	**0.026***
No	reference		

Significant at *p* value < 0.05

DISCUSSION

This study found that majority of the respondents had a good level of physical activity. Factors associated with engaging in physical activity is lower educational level and also performing physical activity at gymnasium/ sport centres. Factors not associated with engagement in physical activity includes socio-demographic factors such as age,gender, ethinicity and marital status, psychosocial factors including performing physical activities with family and collegues and presence of

anxiety, depression and/or stress and environmental factors such as performing physical activity at recreational park.

Majority of respondents engage in physical activity. Even thought lower than the 66.5% contributed by NMHS 2015, it still show the same pattern (5) Lower prevalence in this study could be explained by the fact this study was done in a busy city and therefore there was less time to do exercises due to overwhelming traffic as compared to NHMS 2015 which was done nationwide including in rural areas which is known to have less traffic jams and therefore enable more spare time for exercises. In this study, those with secondary level of education were found to have a good level of physical activity (71.8%) as compared to 49.4% of those with tertiary level of education A study by Teh, et al., found that women with primary educational levels were more active than those with other educational levels with no difference observed in the male resopondents (7).

There is significant association between the level of education with level of physical activity (χ^2= 5.385, p=0.020). In multivariate analysis as well, lower educational level (OR 2.96, 95%CI 4.22-7.19, p=0.016) were associated with engaging with physical activity. As shown in previous studies, individuals who have a lower educational levels and therefore consequently less money at hand, are more likely to engage in heavy labourous jobs causing them to have higher levels of physical activity (7). In contrast, studies in 2015 found that a higher level of education is often accompanied by the need to look presentable and fit and therefore may persuade individuals to perform regular physical activity (23).

This study showed that 14 (82.4%) and 28 (62.2%) respondents respectively, have a good level of physical activity with the availability of gymnasium/sports centers and recreational park respectively near to their housing area which supported by studies done in 2004, where favorable environmental and resources availability such as recreations parks and fitness centers, increase the likelihood of people engaging in regular physical activity (24). There is significant association between availability of gymnasium/ sports centres and level of physical activity (χ^2=5.322; p=0.021), similar with studies done by Prichard et al. where he found that time exercising at a fitness centre increases level of physical activity performed. (25). This association is also seen in multivariate logistic regression where performing physical activity at gymnasium/sport centres (OR 4.66, 95%CI 1.20-18.05, p= 0.026) were associated with engaging with physical activity. However, there is no significant association between the availability of recreational park and the level of physical activity.

This study has found that the respondents aged of < 33 years old has good level of physical activity. The result can be supported by previous study where poor health indicators such as having a cardiovascular , joint or rheumatological condition, arthritis and functional limitations, poor social support, lack of interest and excessive internal fear of falling, may result in lower prevalence of physical activity and thus becomes a barrier in old age to performing regular physical activity, as reported by Teh, et al., and Moschny et al. (7,26).

This study shows that there is an association between age and level of physical activity (χ^2=5.436, p=0.025) On the contrary, the previous study found that the older people were least frequently classified as having an insufficient level of physical activity (15) with most significant lack of physical activity observed in women (7). In this study, men had higher percentage of having good level of physical activity (70.0%) compared to women (47.1%). According to study done by Dan et al. , men are proven to be more physically active than women(27). Similarly, men respondents were significantly more physically active than female according to Wahida et al (28). In this study, there is a significant association between gender and level of physical activity (χ^2=6.2016, p=0.013).The finding of this study is also similar to a study by Azevedo et al., (29), which also showed that men were having a higher level of physical activities. It is also similar to previous study done in 2015, where, analysis performed among active subjects showed that men tended to meet more frequently the criteria for a high level of physical activity as compared to women (23).

Based on the result of this study, 63 (52.5%) of Malays ethnicity has good level of physical activity and 5 (4.2%) of non-Malays ethnicity has good level of physical activity. According to The Third National Health and Morbidity Survey (2008), highest prevalence of physical inactivity was observed among Chinese, followed by Indians, Others Bumiputras (indigenous people) and Malays, thus agreeing with this study's findings (30). This result shows that there is no association between ethnicity and level of physical activity (χ^2= 0.660, p=0.417), however, the finding of this study cannot be compared with previous studies as they found that other indigenous ethnic groups such as Kadazan and Iban and bumiputras from Sabah and Sarawak has higher physical activity as oppose with the study done by Cheah et al. , and in contrast, Teh, et al., found that those who live in Peninsular Malaysia has higher physical activity than those living in Sabah and Sarawak (6,7). In fact, none of the respondents of this study originates from Sabah and Sarawak.

In terms of marital status, there is difference in level of physical activity between those who are single and married. Having poor level of physical activity is seen more in married respondents (48.1%) as compared to single respondents (39.4%). Single respondents have higher likelihood of having good level of physical

activity with 40 (60.0%) followed by 28 (51.9%) among married respondents. Similarly, a study done by Cheah et al.,where it was found that physical activity is performed more by non-married individuals, possibly due to the fact that single individuals due to having more leisure time and less commitment at hand, which may lead to a more positive attitude and practice towards regular physical activity (6). In contrast, Teh, et al found that married women were more involved in performing regular physical activity as compared to unmarried women or widowed/divorced women (6). However, there is no significant association between marital status and level of physical activity (χ^2= 0.927, p=0.336) in this study.

Non-academics staff who reported performing physical activity with family had a good level of physical activity (32(59.3%)) as compared to only (22 (40.7%)) who had a poor level of physical activity. The respondents who do not perform physical activity with family has higher likelihood of having good level of physical activity 36(54.5%). According to Klumb et al., remaining married is of great benefit individual's overall well -being and life expectancy, where the social support can be a significant factor (31). However, according to Fields et al in older adults, losing individuals like their spouse, friends or close relatives are more common, where interpersonal losses are considered particularly stressful and disrupts positive health behaviour as noted by McNeill, L. H., et al (32,33).

Therefore, there is possibility that family can affect the level of physical activity where study in 2004 found that married couple also has greater social leisure such as joining sports clubs due to wide circles of their own friends, spouse friends, parents of their children, relatives and neighbours compared to non-married couples (34). Nevertheless, there is no association found between performing physical activity with family and level of physical activity (χ^2 = 0.269; p= 0.604).

This study also found that performing physical activity with friends and colleagues increase the likelihood of having good level of physical activity. The finding may be supported by previous studies which stated that the presence of supportive spouse, family members and friends are more positively associated with the urge to perform regular physical activity (35). However, there is no significant association between performing physical activity with friends and colleagues and level of physical activity in this study (χ^2 = 0.265; p= 0.103).

Based on the result of the study, we can see that respondents with less predisposition to stress, anxiety and depression had good levels of physical activity. Studies has found that, exercising at 70 per cent maximum heart rate increased feelings of positive well-being as compared to exercise at 40 per cent of maximum heart rate (36). Similarly, study done by Prichard et al. stated that there are evidence of reduction in anxiety, stress and depression states through exercise (37). However, there is no association between stress (χ^2=0.129; p=0.720), anxiety (χ^2=1.109; p= 0.292) and depression (χ^2= 0.047; p=0.828) with the level of physical activity as oppose to the previous large studies where associations were shown between lower physical activity levels and the presence of psychological disorders such as depression and anxiety(38).

This study had a few strengths. This included the fact that it used validated questionnaires such as IPAQ and DASS. Another strength of this study was that it had a high internal consistency thereby increasing the accuracies of its answers. While conducting this study, there are a few limitations encountered by the researcher. The first was that this study were just limited to a staff category of a university faculty and therefore cannot be generalized. Another limitation is that there may be recall bias as respondents may have forgotten the physical activity practices that they performed in the last 7 days in answering the part 2 section of the questionnaire (IPAQ-SF section). The authors have also not looked into the screen/sitting times and nature of the respndent's jobs that could affect the level of physical activity performed.

CONCLUSION

The study has found that approximately 43.3% of non-academic staff have a poor level of physical activity. Factors associated with poor level of physical activity includes higher educational level and not exercising at gymnasium/sports centres. The findings could help the faculty's management to look into this problem and then to plan activities while focusing more on those with higher educational level and those not utilizing sport facilities near their homes.Already in place is existing program for zumba and aerobics for women staffs in this faculty and exercise programmes in many other faculties. In nursing practice, a collaboration between the faculty and nurses should be encouraged. Nurses should become a part of the community to design and implement appropriate measures of physical activity for all ages. This can be achieved by using nursing knowledge, assess the individual ability with their recommended level of physical activity, identify the problems to improve the individual's interest and readiness to change in behaviour. Based on the finding of the result, the university's management should take appropriate measures to increase the level of physical activity. Health education as well as practical session regarding physical activity should be applied widely across the university. The use of stairs should be promoted by making it more safe and attention-grabbing.

Future research should targets interventions in group founds to have lower levels of physical activities and usage of additional questions such as engagement of

any existing program organized by the workplace.

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