ORIGINAL ARTICLE

Physical activity and health status among staffs of Faculty of Health Sciences in UiTM Selangor, Puncak Alam Campus

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Abstract:

Sedentary lifestyle and physical inactivity increased risk of non-communicable diseases hence reducing quality of life. Objective of the study is to determine the association of physical activity and health status among faculty of Health Sciences staff in UiTM Puncak Alam. Data collected using social demographic data. Physical and health status data was using the modified International Physical Activity Questionnaire (IPAQ), and Health Status Questionnaire-12 (HSQ-12). Data was analysed using SPSS version 21.0. Total participants were 142 staff. Male had higher physical activity level ($p = 0.008$) and total health status ($p = 0.025$) compared to female, academic staff had higher physical activity compared to non-academic staff ($p = 0.025$), and overweight participants showed moderate physical activity score followed by normal BMI, obese, and underweight participants ($p = 0.016$). Total health status score with the highest median health status score was among normal BMI participants (median = 643.33, IQR = 175.84). Weak correlation showed between physical activity and health status among participants ($r = 0.101$, $p>0.05$). Physical activity level was not influenced by health status because participants with high physical activity level do not necessarily report a high level of health status.

Keywords: Health status, HSQ-12, IPAQ, physical activity, university staff

1. INTRODUCTION

Physical activity can be defined as the movement produced by skeletal muscle in the body which need energy in order to move [1] and can give health benefit including activity such as doing house chores and sports activities [2]. Physically inactive people with sedentary lifestyle having a higher risk of get coronary heart disease, obesity, hypertension, high blood lipid profile, type 2 diabetes, and some form of cancer [1]. Physical inactivity becomes one of the ten leading risk factors for global mortality with a percentage of 20% to 30% increased risk of mortality [3]. Physical activity levels among communities have decreased because of the rising of technologies and equipment used for daily activities and at work. In academic institution, most of the staff members are not physically active enough [4]. This may be due to the greater part of their time is in workplaces [2] where they do not have enough time to do exercise or any physical activity such as recreational activity. In university settings rather than other worksites, majority of lecturers are less active and their job scope needs less requirement of physical activity which makes them to not involve in regular physical activity [2]. Development of technologies makes people continue with sedentary activities and being an inactive person [1].

Physical activity can be used as main indicator for good health which provided long term effects in preventing future stress episodes [5]. In most universities of the developing countries, sport and exercise facilities are provided for students. Staff members did not use the facilities even though universities had to pay huge medical bills for the staff [4]. Average and light exercise were reported to contribute to stress reduction, high self-esteem, and maintenance of appropriate body weight [6].

The main aim of this research was to determine the association between physical activity and health status among the Faculty of Health Sciences staff in UiTM Puncak Alam. Thus, the objectives of this study were: 1) To determine the engagement of physical activity among the Faculty of Health Sciences staff by gender, job scope, and body mass index (BMI), 2) To determine the health status among Faculty of Health Sciences staff by gender, job scope, and BMI, 3) To determine the correlation between physical

activity and health status among Faculty of Health Sciences staff in UiTM Selangor, Puncak Alam Campus.

2. MATERIALS AND METHODS

This cross sectional study was conducted among staff of Faculty of Health Sciences, Universiti Teknologi MARA, Puncak Alam Campus. The participants were chosen based on the inclusion and exclusion criteria which consist of staff's aged 18-60 years old except for incomplete questionnaires. Participants were recruited from October 2018 to March 2019 by using convenience sampling. Informed consent was obtained from all participants. The participants were asked to provide details on socio-demographic and personal profile such as age, gender, height, weight, smoking status, and type of disease.

International Physical Activity questionnaire (IPAQ) short form was identified to estimate the amount of Physical Activity among the participants. The IPAQ modified or short version was more acceptable to investigators and survey respondents, and there was no difference between the reliability and validity between the short and long IPAQ forms [7]. IPAQ comprises items on vigorous (such as aerobics) and moderate (such as leisure cycling) intensity physical activity, walking and sedentary behavior (sitting), and consists of four questions and is suitable for young and middle-aged adult [8]. IPAQ result can be interpreted using either a continuous or categorical analyses. Since there is a non-normal distribution of energy expenditure in most populations, it is preferable that the continuous indicator introduced as median minutes/week or median MET-minutes/week rather than means [8].

Health Status Questionnaire – 12 (HSQ – 12) is aimed to measure the health states for populations with and without disease or chronic health conditions that consists of eight scales that broadly measure health status which are health perception, physical functioning, role-physical, role-mental, social function, bodily pain, mental health, and energy/fatigue (vitality) [9]. It is a reliable and valid tool which can be summed into two super scales, physical and mental health to get the total health status scale [9]. HSQ-12 consists of 12 items with Likert-type responses as interval data and the item measured from absence of health to the best health which contains between three and six possible responses coded in a range from 0 to 100 by the researcher [9]. Physical and mental health status main scales can be obtained by adding the scales for each factor (range from 0-400) and total health status scale score can be obtained by adding all the eight scales (range from 0-800) [9].

The data entry and descriptive analysis were using Statistical Package for Social Science Software Package (SPSS) version 21.0. The descriptive statistic was used to calculate the mean and standard deviation of the variables. The Kolmogorov-Smirnov test was used to determine whether the data were normally distributed, and the significance of group differences in gender, job scope, and BMI was determined using Mann Whitney test and Kruskal-Wallis test for two groups of independent variables and more than two groups of independent variables respectively with the statistical significance accepted for $p<0.05$. Spearman correlation analysis was used to determine the correlation between Health Status and Physical Activity. IPAQ scoring was used to determine the Physical Activity level among the subject in this study.

3. RESULTS

3.1 Socio-demographic characteristics

A total of 142 respondents participated in this study. A demographic characteristic is shown in Table 1. The age of the respondents ranged from 20-62 years old with an average of 38.80 ± 9.10. The majority of the respondents were female (66.9%). Respondents were divided into two categories which are non-academic and academic staff with the percentage of 50.7% and 49.3% respectively. The BMI values are divided into four parts; underweight, normal, overweight, and obese. Most of the participants were non-smokers 138 (97.2%). Majority of respondents 117 (82.4%) did not have any illnesses. The remaining 20% reported illnesses such as hypertension (7.7%), diabetes (6.3%), asthma (5.6%), and cancer (0.7%). None of the respondents have reported having any heart diseases.

Table 1: Sample descriptions according to demographic and physiological variables presented in means and standard deviation (SD) or frequencies and percentage (%) (n=142)

Characteristics	Mean (SD)	Frequency (%)
Age (years old)	38.80 (9.10)	
0-20		2 (1.4)
21-30		18 (12.7)
31-40		81 (57.0)
41-50		19 (13.4)
51-60		19 (13.4)
≥ 61		3 (2.1)
Gender		
Male		47 (33.1)
Female		95 (66.9)
Work position		
Academic		70 (49.3)
Non-academic		72 (50.7)
BMI		
underweight (<19kg/m2)		15 (10.6)
normal (<25kg/m2)		65 (45.8)
overweight (25-29kg/m2)		42 (29.6)
obese (≥30kg/m2)		20 (14.1)
Smoking status		
Yes		4 (2.8)
No		138 (97.2)
Illness		
Diabetes		9 (6.3)
Hypertension		11 (7.7)
Cardiovascular disease		0 (0.0)
Cancer		1 (0.7)
Asthma		8 (5.6)
None		117 (82.4)

3.2 Descriptive statistics on physical activity and health status

The data on physical activity scores were not normally distributed. The median (IQR) of total Physical Activity score was 803.00 (1890.38) MET-minutes/week. About 42% respondents engaged in low Physical Activity and another 42% were in moderate Physical Activity. Only 17% respondents were into high Physical Activity (Table 2).

Table 2: Physical activity is reported as Metabolic Equivalent of Tasks in (MET-minutes/week) (n=142)

Physical Activity (MET-minutes/week)	Median (IQR)[a]	Frequency (%)
Total physical activity	803.00(1890.38)	
Vigorous	0.00(480.00)	
Moderate	120.00(600.00)	
Walk	313.50(528.00)	
Physical activity level		
Low (0-599)		59(41.55)
Moderate (600-2999)		59(41.55)
High (≥ 3000)		24(16.90)

[a]Data was skewed to the right

Table 3 shows the mean scores of respondents on HSQ-12 according to each domain. Data is presented as mean and standard deviation values (mean (SD)).

Table 3: Health status among participants (n=142)

Health status	Mean (SD)
Domain	
health perception	72.58 (20.38)
physical functioning	78.99 (23.29)
role physical	72.46 (28.43)
role mental	75.56 (25.12)
social functioning	82.64 (21.21)
bodily pain	77.71 (20.44)
mental health	71.48 (16.06)
energy fatigue	67.89 (21.30)
Total health status	599.31 (123.60)
Physical health status	301.74 (67.61)
Mental health status	297.57 (65.79)

3.3 Relationship between gender, job scope, and BMI on physical activity and health status

Mann-Whitney test showed there was no significant difference on high Physical Activity, moderate Physical Activity, and low Physical Activity score between male and female participants, (p=0.682), (p=0.854), and (p=0.124) respectively. There was however, a significant difference of total Physical Activity score between male and female participants (p= 0.008) with male showed higher total Physical Activity score (median=1327.50, IQR=20158.00) compared to female (median=657.00, IQR=1690.50) (Table 4).

Table 4: Effects of gender on the physical activity score among participants

Variable	Male Median(IQR)	Female Median(IQR)	Z statistics[b]	P-value[b]
Low MET	n=12 328.75(398.25)	n=47 198.00(124.50)	-1.538	0.124
Moderate MET	n=25 1356.00(1173.75)	n=34 1294.50(1049.75)	-0.184	0.854
High MET	n=10 4374.00(4800.38)	n=14 4854.00(2211.00)	-0.410	0.682
Total MET	n=47 1327.50(2058.00)	n=95 657.00(1690.50)	-2.671	0.008*

[b]Mann-Whitney test
*Significant difference (p<0.05)

Most non-academic participants were involved with low MET Physical Activity while the academic participants were more involved with moderate to high MET Physical Activity. Significant difference however, was only seen in the total MET Physical Activity (p<0.05) where the academic participants showed more MET Physical Activity compared to the non-academic participants (Table 5).

Table 5: Effects of job scope on the physical activity score

Variable	Academic Median(IQR)	Non-academic Median(IQR)	Z statistics[b]	P-value[b]
Low MET	n=24 246.75(220.88)	n=35 219.00(181.50)	-0.023	0.981
Moderate MET	n=30 1564.50(1100.25)	n=29 1080.00(1013.50)	-1.297	0.195
High MET	n=16 4582.50(1891.00)	n=8 4737.50(6007.50)	-1.551	0.581
Total MET	n=70 1281.00(2545.88)	n=72 667.50(1450.50)	-2.236	0.025*

[b]Mann-Whitney test
*Significant difference (p < 0.05)

Table 6 shows the IQR values for all BMI categories related to their MET Physical Activity. As seen in the table, there was no significant difference in all MET Physical Activity compared in all BMI categories except for the moderate MET Physical Activity ($p<0.05$).

For total health score, male participants showed a more significant value ($p<0.05$) compared to female participants (median=663.33, IQR=166.67; median=595.00, IQR=192.34 respectively) (Table 7).

Table 6: Effects of BMI on the physical activity score

Variable	BMI	n	Median(IQR)	X_2 statistic (df)[c]	P-value[c]
Low MET	Underweight	4	307.50(252.75)	1.164(3)	0.762
	Normal	26	214.50(147.13)		
	Overweight	17	247.50(273.00)		
	Obese	12	232.50(251.63)		
Moderate MET	Underweight	6	699.75(124.50)	10.365(3)	0.016*
	Normal	32	1341.75(1020.38)		
	Overweight	18	1600.50(1597.50)		
	Obese	3	1554.00(0.00)		
High MET	Underweight	5	5598.00(1786.00)	1.541(3)	0.673
	Normal	7	5070.00(7501.00)		
	Overweight	7	4158.00(2110.50)		
	Obese	5	4050.00(3348)		
Total MET	Underweight	15	706.50(4963.00)	1.824(3)	0.610
	Normal	65	885.00(1659.75)		
	Overweight	42	973.50(2369.25)		
	Obese	20	371.25(2988.75)		

[c]Kruskal-Wallis test
*Significant difference ($p < 0.05$)

Table 7: Effect of gender on different health status score

Variable	Male (n=47) Median(IQR)	Female (n=95) Median(IQR)	Z statistics[b]	P-value[b]
Physical HS	343.33(93.30)	293.33(116.67)	-2.167	0.030*
Mental HS	318.33(81.67)	301.67(105.00)	-1.589	0.112
Total HS	663.33(166.67)	595.00(192.34)	-2.235	0.025*

[b]Mann-Whitney test
*Significant difference ($p < 0.05$)

Academic participants showed a better health status compared to the non-academic participants. The difference however was not significant. Non-significant results was also seen when the sub categories of Health Status (physical and mental health) were compared (Table 8).

Total health score for all BMI categories was almost the same to each other. Similarly, when the sub-categories of the Health Status were analysed, there was no difference in the score for all BMI categories (Table 9).

Table 8: Effects of job scope on the health status score

Variable	Academic (n=70) Median(IQR)	Non-academic (n=72) Median(IQR)	Z statistics[b]	P-value[b]
Physical HS	318.33(102.08)	294.17(127.50)	-1.215	0.224
Mental HS	311.665(81.25)	299.165(115.00)	-0.859	0.390
Total HS	634.995(162.92)	590.835(220.00)	-1.151	0.250

[b]Mann-Whitney test

Table 9: Effects of BMI on the health status score

Variable	BMI	N	Median(IQR)	X_2 statistic (df)[c]	P-value[c]
Physical HS	Underweight	15	298.33(125.00)	7.507(3)	0.057
	Normal	65	325.00(125.00)		
	Overweight	42	301.665(98.33)		
	Obese	20	270.835(115.00)		
Mental HS	Underweight	15	280.00(65.00)	6.087(3)	0.107
	Normal	65	318.33(91.67)		
	Overweight	42	309.17(100.00)		
	Obese	20	282.50(105.83)		
Total HS	Underweight	15	553.33(198.33)	7.686(3)	0.053
	Normal	65	643.33(175.84)		
	Overweight	42	620.00(200.83)		
	Obese	20	541.67(207.50)		

[c]Kruskal-Wallis test

3.4 Correlation between physical activity and health status

Physical Activity had a very weak correlation with Health Status (Table 10).

Table 10: Correlation between total health status score and total physical activity score

	Health Status	
	Correlation coefficient (r_s)	P-value[d]
Physical Activity	0.101	0.230

[d]Spearman's rho correlation

4. DISCUSSION

This cross-sectional study determined the correlation between physical activity and health status in adult aged between 18 to 65 years old. The majority of the participants had low and moderate physical activity level. This showed that the staff of the Faculty of Health Sciences, UiTM Selangor, Puncak Alam Campus did not engage much in high physical activity. This result is concurred to a study conducted at a local university in Malaysia which reported that university staff was more motivated to perform moderate physical activity in daily life [10]. A study on the non-academic staff of Universiti Kebangsaan Malaysia (UKM), Kuala Lumpur (KL) showed that the majority of non-academic staff engaged in high physical activity [11]. Low physical activity among participants may be due to mechanization and industrialization [4]. Another reason could be that the exercise and sports facilities in most universities are for students and staff members do not use these facilities [4].

The maximum score of total health status score was 800 while the mean score for the participants was 599.31. The health status score among participants are at moderate level (mean = 599.31, standard deviation = 123.60). This result is similar to a study on the health status among older adults conducted in 2004 which showed similar mean score ranging from 495.70 to 618.70 after considering factors such as age, race, education, smoking, alcohol intake, and obesity. These factors were associated with lower health status [12]. This present study considers age, education, smoking status, and BMI which are nearly similar to the previous study.

Male participants had higher physical activity compared to female participants. This result is similar with previous study that also found that males were significantly more active than female in terms of physical activity level [13–20]. Male showed a higher physical activity outcome due to different male roles in society [21] such as of higher physical load, the volume of physical task, and amount of work in the workplace [22].

Male had higher total health status compared to female. Men and women will have different health outcomes because of differences in perceptions of health and the way they reported their behavior [23]. Women and men have different ways in react with stress where men are more sensitive to economic stressors while women are more sensitive to social stressors [24] and can affect their mental health.

Results from the current study for the non-academic staff showed a lower physical activity than academic staff which is in contrast with findings from a study done on 2015 [11]. Academic staff has a high perception of the need for physical activity for quality living as they are knowledgeable about the benefit of physical activity in promoting better health [2].

There was no difference in terms of health status between the academic and the non-academic staff although academic staffs shows slightly higher health status score compared to non-academic staffs. Different score in health status can be due to job stress as a study done on job stress among academic staff in a university in Klang Valley, Malaysia showed most of the academic staffs have moderate stress while some of them experienced severe stress because of their job [25].

The current study showed that a moderate physical activity can influence BMI. The study also found that overweight participants showed high physical activity score compared with the normal BMI, obese, and underweight staff. This result is similar with a study on physical activity, overweight and obesity at a Syrian University which showed higher BMI participant had low intensity and short period of physical activity and more MET-min/week resulted in lower BMI values [26]. These previous research indicated that higher BMI will result in a lower physical activity level. Environment and contextual factor may be one of the contributions toward the trend of BMI and physical activity among the staff of the Faculty of Health Sciences UiTM Puncak Alam Campus.

With regards to health status score with different BMI, there seemed to be difference detected among the staff of the faculty. However, obesity was reported to be associated with poor self-reported general health and increased bodily pain [27]. In addition, an obese person have impaired social and mental well-being, and health status [28]. Greater satisfaction of individual with their own weight was related to positive health behaviors and can improve their health status across weight status group [29].

Present study showed very weak correlation between physical activity and health status among participants. A study done on 2009 had found that individuals who reported poor health were less active in leisure settings than individuals who reported good health [16]. This results are consistent with a previous study which showed a very weak correlation between physical activity and health-related quality of life [11]. Physical activity did not improve health status in the general population [30]. Even though physical activity was high at the workplace, it did not cause better health status and it may be due to persistent fatigue and chronic changes because of high intensity of workload that is repetitive at the workplace [22].

The current study had limitations which is this study used self-reported activity and questionnaire rather than simultaneously monitoring using objectively measured activity which may lead to underestimation of the physical

activity and health status.

5. CONCLUSION

Physical activity should improve health status however, there are many factors that can contribute to reduced health status which include socioeconomic status and stressful working environment. Staff of Health Sciences Faculty, UiTM Puncak Alam Campus did not engage in high physical activity level. Health status score among participants is in moderate level. A very weak correlation showed between physical activity and health status among participants. The results of this study may provide some indicators as to the health status and physical activity status of the staff of the Faculty of Health Sciences. In future, perhaps, population of study should include all staff at UiTM Puncak Alam. Physical activity level was not influenced by health status because participants with high physical activity level do not necessarily reflect a high level of health status.

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