

ORIGINAL ARTICLE

Motivators and Barriers of Physical Activity among Private Office Workers in Selangor

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ABSTRACT

Introduction: In Malaysia, private office workers tend to be more physically inactive due to work burden. This study aimed to determine physical activity level, motivation factors and barrier towards physical activity among private office workers. **Methods:** A cross sectional study using convenience sampling was conducted at nine private companies in Selangor involving 106 office workers aged 21 to 55 years old. Self-administered questionnaires including Global Physical Activity Questionnaire (GPAQ), Physical Activity and Leisure Motivation Scale (PALMS) and Physical Activity Barrier (PAB) were administered. **Results:** Over half of the respondents (58.5%) were having low physical activity level. The main motivation factors include physical condition, psychological condition and mastery. Meanwhile, tired after work, laziness, lack of discipline, family commitment and adverse weather were the main perceived barriers. A weak positive correlation was found between total motivation score and total physical activity ($r=0.296$; $p=0.002$). In contrast, there was a weak negative correlation between barriers and total physical activity ($r=-0.237$; $p=0.015$). **Conclusion:** The current physical activity level, its main motivation factors and barriers among private office workers were identified, providing an opportunity to create effective setting-based health promotion and intervention. It is also recommended that policy suggestions are made to influence and prepare essential partners (e.g. companies and employees) to promote ways of incorporating physical activity into one's daily routine.

Keywords: Private office workers, Motivation, Barriers, Physical activity

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INTRODUCTION

In Malaysia, the National Health and Morbidity Survey (NHMS) 2015 reported that approximately 33.5% adults were physically inactive, with 38.3% of female and 28.9% of male categorized as inactive from aged 18 years to 59 years old (1). One of the prominent issue related to physical inactivity is the changing in work-related lifestyle by computerization and mechanization which may lead to overweight and obesity problems among working adults (2) mainly in a developing country as Malaysia. A rapid increase in the number of personnel in industry and service sectors as well as the usage of advanced technology in the workplace has raised up concern for the health and well-being of the white-collar employees. A study conducted in Dutch stated that longer time of sitting among office workers spent in sedentary works such as using a desktop computer and working at a desk has contributed to the impact of overweight and obesity (3).

Essentially, evidence showed that the private employees had lower physical activity than public workers (4). Possible reasons might relate to the previous finding reported that private sector workers have higher commitment to works and longer working hours; about a quarter of an hour to five hours more compared to public sector workers (5), thus probably pose greater health risk among this population. Perhaps the observed differences between the sectors are better explained by differences in job content which may be attributable to commercial functions in private sector with a much higher percentage of marketing and sales functions compared to public sectors that has a much higher percentage of administrative functions (5).

Nevertheless, determinants of participation in physical activity are very complex (6). Apparently, positive attitude unaccompanied is not sufficient to increase physical activity because of the limits and other demands in life (7). Time constrains (8,9), occupations, availability of facilities, cultural expectations (10) were reported as the main constrains towards physical activity among middle age and elderly groups. Thus, it is crucial for us to assess the motives and perceived barriers towards physical activity particularly in an understudied population like

private office workers. They are growing in number and serves as an important group for understanding, consequently helping in identifying and developing effective strategies on promoting physical activity for this focus group. As such, the objectives of this study are: to assess physical activity level, motivational factors and barriers of physical activity among private office workers and to evaluate the relationship between motivation and barrier scores with total physical activity.

MATERIALS AND METHODS

A cross-sectional study using convenience sampling was conducted from June 2017 to August 2017. Respondents were private office workers recruited from nine private companies from small and medium enterprises (SMEs) as defined by National SME definition (11) and located in three districts in Selangor (Kuala Langat, Klang and Petaling). These companies involved in manufacturing, consumer goods sector and property development that gave permission to conduct this study. Eligible participants include Malaysian private office workers, specifically white collar characterized by those who work in offices, doing work that needs mental rather than physical effort. They worked in the selected study locations and aged between 18 to 55 years old. Those who have serious medical conditions (e.g. chronic asthma, heart attack, lung disease or cancers) that could prevent them from answering questions or participating in physical activity and exercise were excluded from the study. Permission from the companies and participants were obtained before questionnaires were distributed. After providing written consent, respondents were given instructions to complete the research questionnaire. The time required to complete the all the questionnaires was about 10-15 minutes. The questionnaires were distributed during their office hour or lunch break with the completion being conducted under the supervision of the investigator. The questionnaires were later collected all at once at their office on the day of study visit. Using a sample size calculation for a population proportion, a minimum sample of 104 respondents were required to achieve a 90% confidence level and 5% margin of error, given that 66.5% of Malaysian adults were physically active (1). Considering the limited time and resources, the sample size was pragmatic based on the available number of office workers at the recruitment sites, anticipating a total of 180 office workers from nine companies (based on average employee data estimates; 20 office workers per company). Permission to conduct this study was obtained from Universiti Malaysia Terengganu (UMT) Human Research Ethics Committee (UMT/JKEPM/2017/12).

Self-administered questionnaires administered in English was used in this study consisting of four sections:

Section A - Socio-Demographic and Personal Lifestyle Behaviours

Questions on socio-demographic and the personal

lifestyle behaviours were adapted from previous study (12). Items included gender, age, race, education level, monthly income and job position. Body mass index is calculated from the self-reported weight and height and further classified as underweight ($< 18.5 \text{ kg/m}^2$), normal (18.5 to 24.9 kg/m^2), overweight (25.0 to 29.9 kg/m^2) and obese ($\geq 30.0 \text{ kg/m}^2$) (13). In addition, data on personal lifestyle behaviours were also gathered such as smoking history, alcohol consumption, type of leisure sport involved, perception on self's physical activity, working hours and perception on work-related stress. All these questions were adapted from the study by Tsai (12) assessing the work-related stress among Taiwanese white-collar businessmen and management workers. In particular, perceived work-related stress was assessed based on the following question: "Did you ever experience work-related stress originating from time pressure or the amount of work, or difficulty of the work, or the empathy required in the last 3 months?" which was based on the work-related stress concept adopted in Tsai's study (12).

Section B - Global Physical Activity Questionnaire (GPAQ)

A self-administered Global Physical Activity Questionnaire (GPAQ) Version 2 was used to assess the level of physical activity participation in three domains (i.e. work, transportation and recreational activities), comprising 16 items including one question on sedentary behaviour (14). The data obtained in this section, which is the total time spent in physical activity on different domains was interpreted into metabolic equivalents (MET) and it was used to estimate the total physical activity and further categorised into high, moderate and low level of physical activity based on the GPAQ guidelines (14).

Section C - Physical Activity and Leisure Motivation Scale (PALMS)

PALMS developed by Morris and Rogers (15) was used to assess motivational factors that influence respondents to be involved in physical activity. It consists a total of 40 questions from eight domains which were affiliation, appearance, competitive/ego, enjoyment, mastery, other expectations, physical condition and psychological condition. Each of the domains had five items with five points Likert-scale from 1 (strongly disagree) to 5 (strongly agree) giving a domain score range of 5 – 25 and the total score range of 40-200 (16).

Section D - Physical Activity Barriers (PAB)

Modified PAB questionnaire (17) adapted from (18–20) was used to assess the physical activity barriers. A total of 24 questions from three domains include personal factors (14 items), social factors (5 items) and physical factors (5 items) which were listed with five points Likert-scale responses from 1 (strongly disagree) to 5 (strongly agree). All items were positive statements; higher score indicates higher possibility that the item

was a barrier. The percentage of each barrier was assessed by calculating the total percentage of subjects who had agreed to the statements (subjects who chose 'agree' and 'strongly agree') (17).

The data was analysed using the IBM SPSS Statistic. Descriptive analysis was used for socio-demographic, personal lifestyle as well as the barriers and motivators of physical activity. The data were presented as median, interquartile range and percentages. Spearman correlation was used to determine the relationship between two continuous data (total physical activity and total score of motivators or barrier factors) considering the data was not normally distributed.

RESULTS

A total of 106 private office workers were recruited including 56 females (52.8%) and 50 males (47.2%) (Table I). Majority were young adult, aged 20 to 39 (75.5%), Chinese (82.1%), received tertiary education (74.5%) and had normal BMI (59.4%) with a median of 23.0 kg/m² (IqR = 5.9). Most of them were supervisor/executive/manager (49.1%) posting in financial (22.6%) and marketing area (22.6%). The median working hours and overtime hours were 8 (1) hours and 1 (5) hours respectively. Over half of the respondents perceived that they had work-related stress in past three months (61.3%). Almost half (47.2%) reported to participate in jogging. Interestingly, there were 60.4% of the participants perceived themselves as physically active, but only 57.8% of them were sufficiently active from GPAQ assessment. This indicated that almost half of inactive participants in this study (42.2%) incorrectly perceived themselves as being physically active. Table II depicted the respondents spend the median of 120 minutes/week of total physical activity which mainly involved in sedentary activity (360 minutes/week). Majority had a low level of physical activity (58.5%), yet almost two third perceived themselves as being physically active (60.4%). Consistently, based on the WHO recommendation for an adequate physical activity (at least 600 METs-minutes/week) (14), 50.9% of the respondents did not meet the recommendation indicating that half of private office workers are having a sedentary lifestyle.

Table III shows the median score of eight PALMS' domains. The top three main motivators for physical activity included physical condition (e.g. physical activity keeps me healthy, improves cardiovascular fitness), followed by psychological condition (e.g. physical activity helps in relation, act as a stress release) and mastery. Meanwhile, the main personal perceived barriers are included tired after work (47.2%), followed by laziness (34.9%) and lack of discipline (32.1%) (Table IV). However, the perception that physical activity is not beneficial to health and without encouraging from friends and family were the least frequently reported

Table I: Socio-demographic characteristics and personal lifestyle behaviours

Characteristics	No. of Respondents (n=106)	Percentage (%)	Median (IqR)
Gender			
Female	56	52.8	
Male	50	47.2	
Age (years)			
Young adults (21-39 years old)	80	75.5	30 (15)
Middle aged adults (40-55 years old)	26	24.5	
Body Mass Index (BMI) kgm²			
Underweight	10	9.4	23.0(5.9)
Normal weight	63	59.4	
Overweight	28	26.4	
Obese	5	4.7	
Race			
Chinese	87	82.1	
Malay	15	14.2	
Indian	4	3.8	
Education level			
Secondary education	27	25.5	
Tertiary education	79	74.5	
Monthly Household Income			
Less than RM3900	72	67.9	
RM3901 – RM8300	34	32.1	
Functional area			
Financial and Account	24	22.6	
Sales and Marketing	24	22.6	
Production and Operation	17	16.0	
Others	15	14.2	
Administration	11	10.4	
Information Technology	7	6.6	
Human Resource	6	5.7	
Research and Development	2	2.0	
Job Position			
Supervisor/Executive/Manager	52	49.1	
Admin/Clerk	17	16.0	
Assistant officer/Assistant manager	14	13.2	
Intern/Entry Level	9	8.5	
Senior Manager	7	6.6	
Others	7	6.6	
Smoking history			
Non-smoker	87	82.1	
Current smoker	10	9.4	
Former smoker	9	8.5	
Alcohol consumption			
Non- drinker	72	67.9	
Only once a week	25	23.6	
More than once a week	9	8.5	
*Leisure sport			
Jogging	50	47.2	
Badminton	34	32.1	
Gym	24	22.6	
Swimming	15	14.2	
Cycling	12	11.3	
Others	10	9.4	
Working hours			8(1)
Overtime hours			1(5)
Operation hours			
Morning shift	101	95.3	
Night shift	2	1.9	
Others	3	2.8	
Perceived physically active			
Yes	64	60.4	
No	42	39.6	
Work-related stress			
Yes	65	61.3	
No	41	38.7	

*- can tick more than 1

Table II: Assessment of physical activity by GPAQ

Characteristics	Number of Respondents (n=106)	Percentage (%)	Median (IqR)
Total Physical Activity (min/week)			120 (577.5)
Work			0 (7.5)
Travel			0 (75)
Recreational activity			30 (187.5)
Sedentary			360 (300)
Total Physical Activity (MET/min per week)			540 (2910)
Work			0 (30)
Travel			0 (300)
Recreational activity			240 (1230)
Physical activity level			
High	29	27.4	
Moderate	15	14.2	
Low	62	58.5	
Total Physical Activity (MET/min per week)			
Do not meet WHO's recommendation	54	50.9	
Meet WHO's recommendation	52	49.1	

Table III: Median scores of PALMS' domains

Domains	Median (IqR)
Mastery	18.0 (4)
Enjoyment	18.0 (5)
Physical condition	20.0 (5)
Psychological condition	19.0 (5)
Appearance	18.0 (5)
Other expectations	15.5 (4)
Affiliation	17.0 (4)
Competition/Ego	15.0 (3)
Total score	136.5 (27)

*Score range 5-25; higher score indicates higher motivation

barriers (5.7% and 6.6% respectively). For social environmental barrier, the most frequent perceived barrier was the strong family responsibility (27.4%). In physical environmental barrier, the highest percentage of perceived barrier is due to the weather condition (27.4%) followed by the lack of availability of facilities in residential areas (26.4%).

As shown in Table V, a weak positively correlation between total motivation score and total physical activity ($r= 0.296$; $p=0.002$) were documented indicating that the private office workers tend to do more physical activity if they had higher motivation. In contrast, a significant but weak negatively correlation between total barriers score and total physical activity ($r=-0.237$; $p=0.015$) were presented, showing that the private office workers that perceived more barriers tend to engage less in physical activity.

DISCUSSION

Low physical activity level was prominent among private

Table IV: Barrier items for each domain and percentage of respondents who agreed to the statements (n=106)

Domains/ Items	Percentage (%)
Personal barriers	
I don't have extra energy to do physical activity after finishing my work.	47.2
I feel sick and uncomfortable physically while exercising.	15.1
I have health problems which prevent me from being physically active.	11.3
Physical activity is difficult and tiring.	21.7
I look funny and feel ashamed when doing physical activities.	7.5
I'm not interested in doing exercise or physical activities.	16.0
I don't get pleasure from physical activities or exercise.	13.2
I think other recreational activities with friends or family members are more fun than exercise or physical activities.	23.6
I think physical activity is not beneficial to my health.	5.7
I'm afraid of injury and fear for my safety when exercising.	9.4
I'm too lazy to do physical activities.	34.9
Intensity of exercise required to get health benefits are too high for me.	16.0
I think I'm not talented in doing physical activities.	15.1
I'm lack of self-discipline/initiative in performing physical activities.	32.1
My body shape doesn't allow me to do physical activities.	8.5
Social Environment	
My family members or friends don't encourage me to do physical activities.	6.6
I don't have friends to do physical activities together.	17.9
I don't have free time to exercise or do physical activities because of my work.	25.5
I have to take care of my children or family members.	27.4
Physical Environment	
There are no facilities or places to do physical activities in my residential area.	26.4
Facilities or sports area are too far and I don't have any transportation.	13.2
I don't know how to use sports equipment or specialties in doing physical activities.	17.0
The hot weather or rainy days prevent me to do physical activities.	27.4
I don't have extra money to go to the sports facilities such as gymnasium or to buy sports equipment and clothes.	21.7

Note: The percentage of each barrier was determined by calculating the percentage of subjects who had agreed to the statements (subjects who chose 'agree' and 'strongly agree')

Table V: Relationship between motivation score and barriers with total physical activity

	Median (IqR)	Spearman Correlation, r	p-value
Total physical activity (MET/min)	540 (2910)	-	-
^b Total motivation scores	136.5 (27)	0.296	0.002
^c Total barrier scores	62.5 (21)	-0.237	0.015

^a $p<0.05$ indicated significant by Spearman's correlation.

^bScore range: 40-200, higher score indicates higher motivation.

^cScore range: 24-120, higher score indicates more barrier.

office workers. Half of them were having a sedentary lifestyle yet almost two third perceived themselves as being physically active. Almost half of inactive participants in this study also incorrectly perceived

themselves as being physically active. A recent review identified that white collar workers tend to have a greater risk of low occupational physical activity and high in sedentary time (21). In doing physical activity, private office workers frequently engaged in recreational activity by spending a median time of 30 minutes per week, mostly participating in leisure sports. However, the median time spend for activities related to work and transportation was almost zero minute reasonably explained by the nature office workers that involved only light physical effort while sitting on the desk and commonly reached the working place by cars rather than bicycles or walk. Moreover, a study done by Parry & Straker (22) assessing the sedentary behaviour with accelerometer among office worker (n=50) in Perth, Australia found that people who were sedentary at work tended to also be more sedentary and have less light activity outside of work hours. Essentially, the use of prompts, such as signs and posters at points of decision were particularly helpful for changing establish health habits (23). Thus, office-based exercise promotion programs emphasizing adequate level of physical activity couple with posters displaying the beneficial effects of physical active towards health (such as use of walking meetings and staircases) in the workplace could be promoted as one of the ways to encourage desk-based employees to involve in more physical activities during their work day.

Other possible reason for having low physical activity might relate to stress experienced by this group of workers as over half of them reported had work-related stress in past three months potentially associated with work burdens being in financial, sales and marketing area which involved nearly 50% of the study respondents. A recent meta-analysis involving 168 studies conducted on the effect of stress on physical activity and exercise demonstrated that majority of studies reported stress impairs efforts to be physically active (24), hence addressing the importance of this issue to be apprehended when promoting physical activity among private office workers.

In addition, physical condition was the strongest motive among private office workers. This coincides with a recent Malaysian research done in Kedah among young to middle-aged adults (n=388) documenting that most of the respondents believed physical activity helps to improve their health and fitness (25). The current findings showed the participants not only believe that physical activity could improve the fitness but also a strong motive to enhance them to be more physically active. Besides, the psychological benefit of physical activity was also an important motivator for private office workers to participate in physical activity. A meta-analysis evaluating the effect of physical activity on depression and anxiety for non-clinical adult population showed that physical activity could reduce depressive and anxiety symptoms in this population (26). This

finding was particularly useful in developing effective strategies among this working class group by promoting the psychological benefits of physical activity in stress-relief.

During the early stages of exercise, it is frequently dominated by extrinsic motives whereby an activity was done to attain rewards or outcomes such as improving physical and psychological condition, yet the intrinsic motives are significant for the maintenance phase (27,28). Mastery was an example of intrinsic motive and served as one of strong motives for private office worker to carry out physical activity. This finding was consistent with another study done in Malaysia reported that the key discriminating motive for racquet sport was mastery (16). In parallel, racquet sport like badminton, which was reported to be the second favourite leisure sport among participants after jogging was also a skilful sport involving mastery act. Perhaps, workplace intervention could also include sport tournaments so that it could be very conducive for active staff participations, and reducing overall sedentary exposure in corporate environment.

On the other hand, the top three personal perceived barriers included tired after work, laziness and lack of discipline. A qualitative research exploring physical activity barrier in the workplace among 16 office-based job workers aged from 22 to 51 years old in the United Kingdom stated that most respondents perceived lack of time and lack of energy as they preferred to go home to relax rather than make time and find the energy for physical activity (29). Furthermore, the most frequent perceived social environment barrier was strong family responsibility. Malaysia's national cultural values is relatively high in collectivism; frequently associated with strong family values and concept of filial piety (30). Therefore, it is not surprising that family responsibilities can also act as a strong barrier among the private office workers in Malaysia. To reduce family commitments, child care and elderly care centres should be made more available in Malaysia (31). In physical environmental barrier, the main perceived barrier was due to the weather condition followed by the lack of availability of sport facilities. These findings were congruent with a previous research (32) among young Malaysian (n=2894) aged 15 to 30 years old reported that common barriers for physical activity included time constraints, no interest, bad weather, health reason and lack of facilities. As such, lack of accessible indoor exercise facilities at worksites in Malaysia should be continuously addressed considering lack of physical activity culture in the workplace and limited employer support could impair workplace health intervention (27).

While motives can significantly increase the participation in physical activity among private office workers, those who have more perceived barrier tend to engage less in physical activity. A pilot study by Zambri et al. (33)

found a positive relationship between overall motives and physical activity levels among 40 women civil servants aged from 18 to 58 years old in Putrajaya. Finding from a systematic meta-analysis also reported that beliefs about the capabilities, motivation and goals were among the strongest variables associated with physical activity maintenance (34). Perceived barriers act as a significant aspect in participating physical activity in many studies (17,35,36). In a similar note, a recent local study conducted in Klang Valley among Malaysian men (n=730) reported that the perception that other recreational activities with family and friends are more fun was the most frequently reported barrier, followed by weather, lack of discipline, lack of free time, lack of money, and lack of friends (17). Thus, significant motives and barriers including personal, social and environmental factors should be addressed more rigorously by the policy makers to create a shift in physical activity participation.

Several limitations should be considered when interpreting our study findings. One possible restriction might be caused by limited sample size and recruitment from only three districts in Selangor using non-random sampling which might therefore limit the generalizability of the findings to the broader population. Other than that, the anthropometry data, such as body weight and height of the current study were self-reported considering a busy office environment as well as to increase study participants and minimize the disturbance during their working hours. Available evidences among Malaysian adolescents (37) and Japanese workplace population (38) showed self-reported weight and height were reliable and consistent with direct measurement, particularly valuable for surveillance studies when direct measurements were not feasible. However, the introduction of additional objective measures in a larger sample to provide more comprehensive baseline data supplemented with biomarker measurements to help in the validation of self-reported data would be beneficial for future trials. Despite the potential limitations of the focus group design, this study revealed valuable data on current level of physical activity, motivating factors and barriers to engage in physical activity among private office cohort.

CONCLUSIONS

In conclusion, low level of physical activity was identified among private office workers. The top three motivation factors were physical condition, psychological condition and mastery. Meanwhile, tiredness after work, laziness, lack of discipline, family commitment and adverse weather were the main perceived barriers among private office workers. The present study also showed that private office workers tend to do more physical activity if they had higher motivation but those who perceived more barriers tend to engage less in physical activity. This valuable information could be used for a directed

public education in a practical manner that can help optimize health benefits and sustain overall community well-being. Integrated and identified regulations should be fostered in future interventions and policy to influence and prepare essential partners (e.g. companies and employees) to promote ways of incorporating physical activity into one's daily routine.

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