IJPHCS
Open Access: e-Journal

International Journal of Public Health and Clinical Sciences
Vol. 1:No. 1
September/October 2014

PERCEPTIONS ON BENEFITS AND BARRIERS TO EXERCISE AMONG GOVERNMENT SERVANTS AND THE ASSOCIATED FACTORS

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Abstract:

Introduction:

Physical inactivity or lack of exercise has been acknowledged as a global health issue that may contribute to the development of non-communicable disease. Malaysia showed a high prevalence of physical inactivity. This situation is worrisome as 1.4 million of the population comprises of government servants**.** This study was aimed to determine the perceptions on benefits and barriers to exercise among government servants of a ministry in Putrajaya and the associated factors.

Methodology:

A cross sectional study was carried out at Ministry of Education, Putrajaya from April to July 2014. A total of 173 respondents (selected using two stage cluster sampling) completed the Exercise Benefit/Barrier Scale (EBBS) questionnaire.

Results:

Median *perceived benefit* score of exercise showed significant association with gender and educational level, where U value=2028.5, p=0.001 ($p<0.05$) and $X^2(2)=7.525$, p=0.023 ($p<0.05$) respectively. Meanwhile, analysis showed statistically significant association between parity and current health status with *perceived barrier* score of exercise, where $X^2(2)=7.064$, p=0.029 ($p<0.05$) and $X^2(1)=3.293$, p=0.048 ($p<0.05$) respectively. Pairwise comparison between parity (none) and parity (more than 3) with perceived barrier score showed a significant difference where U value=442.0 and p=0.006 ($p<0.017$).

Conclusion:

The findings indicate there were significant associations between gender and educational level with perceived benefit to exercise and significant associations between parity and current health status with perceived barrier to exercise. Hence, policy makers should consider these factors when planning to develop interventions to improve the participation in exercise.

Key words: *exercise, perceived benefit, perceived barrier, government servants*

1.0 Introduction:

Physical activity or exercise is defined as "any body movement that works muscles and requires more energy than resting" (National Heart Lung and Blood Institute, 2012) .There were many recommendations for regular physical activity (Garber et al., 2011; U.S. Department of Health and Human Services, 2008). Regular participation in physical activity has been shown that it can improve overall health, mental health, and reduce chronic disease risk (Physical Activity Guidelines Advisory Committee, 2008; Blumenthal, 2007; World Health Organization (WHO), 2010). Physical inactivity contributes 6% of the behavioral risk factors that lead to non-communicable diseases which non-communicable diseases are the biggest cause of global death (WHO, 2010). Meanwhile, Malaysia showed high (60.5%) prevalence of physically inactivity (WHO, 2010). This condition is worrisome as 1.4 million of population comprised of government servants by the year 2013. The ratio of government servant to total population was alike one government servant serving 20 citizens (1: 20) (Department of Statistic Malaysia, 2013). Hence, this study was aimed to determine the perception on benefits and barriers to exericse among goverment servants of a ministry in Putrajaya and the association between baseline characteristics with perceived benefits and barriers to exercise.

2.0 Methods:

2.1 Study design

This cross sectional study was carried out from April to July 2014. Ministry of Education in Putrajaya was randomly selected. All eligible government servants who worked in this ministry were included in this study.

2.2 Subjects

The exclusion criteria of subjects were (1) subjects who worked at the Ministry of Health and the Ministry of Youth and Sport; and (2) subjects who has mobility impairment.

2.3 Study instrument

A self administered questionnaire was used. The questionnaire consisted of two parts, the first was to obtain baseline characteristics: age, gender, ethnicity, income, level of education, job position, parity, current health status, and availability of exercise /recreational facilities.The second part was to measure perception on benefits and barriers to exercise. This part was adapted from the *Exercise Benefits/Barriers Scale (EBBS),* which consisted of 43 items (29 items on Benefit Scale and 14 items on Barrier Scale). All questions were presented in both English and Bahasa Malaysia using back to back translation by Persatuan Penterjemah Malaysia. Internal consistency, validity and test-retest reliability were conducted on all items. The Cronbach's alpha values for total items, benefit items and barrier items were 0.954, 0.954 and 0.66, respectively. The test-retest reliability for each domain were 0.89, 0.89 and 0.77, respectively (Sechrist, Walker, & Pender, 1987). Each item was scored on a Likert scale ranging from 1 to 4, indicating 'strongly agree, 'agree', 'disagree' and 'strongly disagree'. EBBS total scores range from 43 to 172, with higher scores reflecting more favorable perception of exercise relative to perceived benefits. Benefit scores range from 29 to 116 and barrier score range from 14 to 56, with higher scores reflecting greater benefit or barrier to exercise, respectively.

2.4 Statistical analysis

Statistical analysis was performed using IBM SPSS version 21.0 for Windows. Chi square test was performed to determine the association between baseline characteristics with perceived benefit and barrier to exercise. The results were considered statistically significant when p-value <0.05. Mann-Whitney and Kruskal-Wallis tests were used to compare medians of different parameters. For the new adjusted alpha value, the results were considered statistically significant when p-value <0.017.

3.0 Results:

There were 173 respondents.

3.1 Baseline characteristics of respondents

Table 1: Baseline characteristics of respondents (N=173)

	Frequency (n)	Percentage (%)
Age group (years)[a]	32.0 (IQR= 10.00)	
20-29	50	28.9
30-39	85	49.1
40-49	22	12.7
50-59	16	9.2
Gender[a]		
Male	47	27.2
Female	126	72.8
Ethnicity[a]		
Malay	169	97.7
Chinese	3	1.7
Indian	1	0.6
Income[b]		
≤ RM 1999	2	1.2
RM 2000-RM 5000	140	80.9
RM 5001-RM 7000	19	11.0
RM 7001-RM 10000	12	6.9
Educational level[b]		
Primary	2	1.2
Secondary	64	37.0
Tertiary	107	61.8
***Job position[b]**		
Officer	46	26.6
Assistant officer	18	10.4
Support staff	109	63.0
Current health status[c]		
With medical condition	34	19.7
Without medical condition	139	80.3
****Parity[c]**		
0	40	31.7
1	21	16.7
2	30	23.8
3	19	15.1
4	13	10.3
5	2	1.6
6	1	0.8

Exercise facilities availability[c]		
Yes	126	72.8
No	47	27.2

[a]Socio-demograhic characteristics
[b]Socio-economic characteristics
[c]Other important characteristics
** for officer (grade ≥ 41), assistant officer (grade 29-40), and support staff (grade ≤ 28)*
***only applicable for female (n=126)*

Table 1 shows the baseline characteristics of the respondents. For socio-demographic characteristics, the respondents' age ranged from 20 years to 59 years old. The median age of the respondents was 32.0 years old (IQR=10.00). Among 173 respondents, there were 27 males (27.2%) and 126 females (72.8%). Majority of the respondents were Malays (97.7%). For socio-economic characteristics, majority of the respondents earned between RM 2000 and RM 5000 (80.9%). There were 107 respondents who have achieved tertiary educational level (61.8%). Most of the respondents were working as support staff (63.0%). There were 34 respondents (19.7%) with one or more medical problems such as diabetes, hypertension, arthritis and other medical conditions. Parity was only applicable for female respondents. Among 126 female respondents, 40 (31.7%) of them did not have any children. Among all the respondents, 126 respondents (72.8%) agreed that there were exercise facilities available for them to exercise either at workplace or at home.

3.2 Perceptions on benefits and barriers of exercise

Table 2: EBBS score based on median and interquartile range

EBBS Score	Median (IQR)
Total	129.0 (17.00)
Perceived benefit	87.0 (11.00)
Perceived barrier	28.0 (6.00)

Note: EBBS total scores range from 43 to 172, with higher scores reflecting more favorable perception of exercise relative to perceived barriers. Benefit scores range from 29 to 116 and barrier scores range from 14 to 56, with higher scores reflecting greater benefit or barrier, respectively.

Table 2 shows the score of Exercise Benefits/Barrier Score (EBBS) of the respondents. The median for total EBBS score was 129.0 (IQR=17.00) with the maximum score being 171.0 and the minimum score 103.0 from the respondents. The highest score on the Benefit scale was 116.0 and the lowest score was 65.0 with the median score of 87.0 (IQR=11.00). For the Barrier scale, the maximum score was 42.0 and the minimum score was 14.0. The median score for the Barrier scale was 28.0 (IQR=6.00). Since we used 50% of the total score as a cut off point for Benefit and Barrier scale, thus most of the respondents agreed that they perceived benefits based on the median score and the perceived barriers was indifferent based on the median score.

Table 3: Top 5 perceived benefits and perceived barriers of exercise among the respondents

	Frequency (n)	Percentage (%)
Perceived benefits of exercise		
1. Exercise decreases feelings of stress and tension for me.	61	35.3
2. Exercise improves my mental health.	60	34.7
3. Exercising increases my level of physical fitness.	56	32.4
4. I will prevent heart attacks by exercising.	55	31.8
5. Exercising will keep me from having high blood pressure.	48	27.7
Perceived barriers of exercise		
1. There are too few places for me to exercise.	8	4.6
2. Places for me to exercise are too far away.	8	4.6
3. Exercise tires me.	6	3.5
4. Exercise facilities do not have convenient schedules for me.	5	2.9
5. It costs too much to exercise.	3	1.7

Table 3 shows the top 5 perceived benefits and perceived barrier statements that were most frequently chosen by the respondents. 61 respondents (35.3%) strongly agreed that exercise can decrease their feelings of stress and tension with the highest frequency among those five perceived benefits that have been listed. 8 respondents (4.6%) strongly agreed that there were too few places for them to exercise as the highest perceived barriers of exercise compared to another four perceived barriers that have been stated.

3.3 Associations between baseline characteristics of respondents with perceived benefits of exercise

The bivariate analyses of the associations between baseline characteristics with perceived benefits of exercise were conducted using chi-square test. But from the analysis, no measures of association are computed because perceived benefit is constant where 100% of respondents share the view that exercise will bring benefits.

Table 4: Difference in perceived benefit score of exercise between genders

	Median (IQR)		Mann-Whitney U value	P-value
Genders	**Male**	**Female**		
Perceived benefit score	94.0 (18.00)	87.0 (9.10)	2028.500	*0.001

$\alpha=0.05$, if $p<0.05$, there is significant result.

Table 4 showed the difference in perceived benefit score of exercise between genders using Mann-Whitney U test. There was significant difference in the median perceived benefit score between male and female (U=2028.500, $p<0.05$).

Table 5: Difference in perceived benefit score of exercise between educational levels

	Median (IQR)			df	*X^2 value	P-value
Educational level	**Primary**	**Secondary**	**Tertiary**			
Perceived benefit score	111.5 (0.00)	86.5 (8.60)	88.0 (13.00)	2	7.525	**0.023

** X^2 value is based on Kruskal-Wallis test*
***α=0.05, if p<0.05, there is significant result*

Table 5 shows the difference in perceived benefit score of exercise between educational levels using Kruskal-Wallis test. Kruskal-Wallis test showed that the perceived benefit score of exercise were significant different between educational levels (X^2=7.525, $p<0.05$). However, Mann-Whitney U test showed none of the pairs had significant difference in median perceived benefit score of exercise. Other than that, there was no significant difference in median perceived benefit score of exercise between age groups, ethnicity, current health status, income, job positions and exercise facilities availability shown by using Kruskal-Wallis and Mann-Whitney test.

3.4 Associations between baseline characteristics of respondents with perceived barriers of exercise

Table 6: Association between baseline characteristics with perceived barriers of exercise

	Number of subjects (n)	Perceived barriers Yes n (%)	Perceived barriers No n (%)	*df*	X^2	P-value
Age group						
20-29	50	17 (34.0)	33 (66.0)	1	1.916	0.590
30-39	85	31 (36.5)	54 (63.5)			
40-49	22	10 (45.5)	12 (54.5)			
50-59	16	8 (50.0)	8 (50.0)			
Gender						
Male	47	31 (66.0)	16 (34.0)	1	0.461	0.497
Female	126	76 (60.3)	50 (39.7)			
Ethnicity						
Malay	169	104 (61.5)	65 (38.5)	1		1.000
Non malay	4	3 (75.0)	1 (25.0)			
Parity						
No	40	29 (72.5)	11 (27.5)	2	7.064	0.029
1-2	51	32 (62.7)	19 (37.3)			
More than 3	35	15 (42.9)	20 (57.1)			
****Current health status**						
With medical condition	139	91 (65.5)	48 (34.5)	1	3.293	0.048
Without medical condition	34	18 (52.9)	16 (47.1)			
Income						
≤ RM5000	142	89 (65.1)	1 (34.9)	2	0.230	0.891
RM 5001-RM 7000	19	11 (57.9)	8 (42.1)			
RM 7001-RM 10000	12	7 (58.3)	5 (41.7)			
Educational level						
Primary	2	1 (50.0)	1 (50.0)	2	0.307	0.858
Secondary	64	41 (64.1)	23 (35.9)			
Tertiary	107	65 (60.7)	42 (39.3)			

Job position								
Officer	46	29	(63.0)	17	(37.0)	2	0.283	0.868
Assistant Officer	18	12	(60.7)	6	(33.3)			
Support staff	109	66	(60.6)	43	(39.4)			
Exercise facilities availability								
Yes	126	80	(72.8)	46	(27.2)	1	0.530	0.467
No	47	27	(63.5)	20	(36.5)			

***With medical condition indicate presence of one or more medical conditions which include diabetes, hypertension, arthritis and others. Without medical condition indicate healthy condition.*

The results of bivariate analysis of the association between gender, ethnicity, parity, health status, income, educational level, job position and recreational facilities with perceived barrier of exercise are shown in Table 6. From the analysis, only parity and health status are found to be statistically significantly associated with perceived barrier.

Table 7: Difference in median perceived barrier score of exercise between groups of parity

	Median (IQR)			df	*X^2 value	P-value
Parity	**None**	**1-2**	**More than 3**			
Perceived barrier score	29.5 (4.80)	29.0 (6.00)	27.0 (6.00)	2	7.846	**0.020

** X^2 value is based on Kruskal-Wallis test*
***α=0.05, if p<0.05, there is significant result.*

Table 8: Pair wise comparisons of parity with perceived barriers of exercise

Pair	**Median (IQR)		Mann-Whitney U value	*P-value
1st	**None**	**1-2**		
	29.5 (4.80)	29.0 (6.00)	889.500	0.295
2nd	**None**	**More than 3**		
	29.5 (4.80)	27.0 (6.00)	442.000	*0.006
3rd	**1-2**	**More than 3**		
	29.0 (6.00)	27.0 (6.00)	674.500	0.055

** adjusted α=0.017, if p<0.017, the result is significant*
***median perceived barrier score of exercise for each category*

Table 7 showed the difference in median perceived barrier score of exercise between groups of parity using Kruskal-Wallis test and Table 8 showed the pair wise comparisons of groups of parity with perceived barriers of exercise using Mann-Whitney U test. Kruskal-Wallis test showed that the median perceived barrier score of exercise were significantly different between different groups of parity (X^2=7.846, $p<0.05$). By using Mann-Whitney U test, the result shows that there was a significant difference in median perceived barrier score of exercise between those women who have no children with those women who have more than 3 children (U=442.000, $p<0.017$). There was no significant difference in median perceived barrier score of exercise between age, gender, ethnicity, current health status, income, highest educational level, job position and exercise facilities shown by using Kruskal-Wallis and Mann-Whitney test.

4.0 Discussion:

The overall prevalence of the government servants who worked in the Ministry of Education who perceived exercise as beneficial in Putrajaya was 100%. This prevalence was very much higher compared to the research reported by Lee, Wilbur, Chae, Lee, & Lee, (2014) which was just 85%. This may be due to Lee et al., (2014) mainly focus on migrant workers in which among them only 63% finish their secondary level education, whereas in our research, 98.8% of them had finished their secondary level education. Through the difference in educational level, it can be shown that respondents with higher educational level tend to have higher perceived benefits score as supported by Giuli, Papa, Mocchegiani, & Marcellini, (2012). On the other hand for Barrier scale, the prevalence of our respondents who perceived exercise as a barrier was 61.8%. This value appeared to be lower compared to a research done in Kuang, Selangor which was 78%. This may due to the difference in age group of the respondents being studied, whereby this study were conducted among elderly individuals aged 60 years or more (Justine, Azizan, Hassan, Salleh, & Manaf, 2013). On the contrary, only 9.2% of our respondents were older than 50 years old. This is supported by the fact that physical activity levels decline in the older age group (Belcher et al., 2010).

In our study, age was not significantly associated with the perceived barrier of exercise. We believed that our result is different from other studies due to our respondents are coming from the same working environment and share almost the same working hours which is supported by Chrisman (2013) which reported that people sharing the similar job and stays for a long period in an environment where the people surrounding him seem to be inactive tend to face similar barrier in exercising. Our results also show that there was no significant association between gender and the perceived barriers of exercise. Both male and female were having the same perception on the barriers toward exercise. Nonetheless, in other research, there was significant association between gender with perceived barriers to exercise or physical activity (Azevedo et al., 2007). Meanwhile, research done by Spittaels et al., (2012) revealed a linear relationship in men, namely higher percentages in sedentary behaviour and lower percentages in physical activity with increasing age. Significant difference in physical activity among ethnic groups have been found in other study (Saffer, Dave, & Grossman, 2011). However in our study, there was no significant association between ethnicity and perceived barriers to exercise. This may be due to small proportion of Chinese (1.7%) and Indian (0.6%) when compared to Malay (97.7%). This was supported by the study reported by Department of Statistics Malaysia that 77.4% of the total government servants were Malay (Department of Statistic Malaysia, 2013).

For socio-economic factors, there was no association between educational level and perceived barrier on exercise. However, a research done in Klang Valley, Malaysia, showed that men with lower educational level were more likely to perceive more barriers to physical activities than men with higher educational level (Ibrahim, Karim, Oon, & Ngah, 2013). On the other hand, a research in Japan found out that highly educated Japanese men perceived more barriers compared to less educated men (Ishii et al., 2008). In our study, the failure of existence of significant association is may be due to high proportion of respodents have secondary level of education (98.8%) with 61.8% of them passing tertiary level. Our study also found that the income level was not significantly associated with perceived barrier to exercise. However, a previous study found that youth from lower income neighborhood and household were likely to report less physical activity (Romero, 2005). In addition, Ibrahim et al., (2013) found out that monthly household income was associated with having physical

environment barriers. We believe this due to inadequate varieties of our sample units. We also found that there was no significant association between job position and the perceived barriers on exercise. However, previous research showed that increase in the percent of individuals employed in service occupations resulted in increase of physical inactivity (Church et al., 2011) and the lower the job position, the lesser their income and they had lack of money to buy sports equipment and to go to sports facilities (Reichert, Barros, Domingues, & Hallal, 2007).

This study shows there was a significant association between the current health status with perceived barriers to exercise. Our findings were strongly supported by Craike, Hose, Courneya, Harrison, & Livingston (2013) where most participants reported that the intensity and/or frequency of physical activity had reduced since they were diagnosed with multiple myeloma. Meanwhile, other research showed that higher levels of fatigue were associated with lower levels of physical activity for patients with multiple myeloma (Jones et al., 2004). However, a previous research done in Jordan among dialysis patient showed no correlation between their health condition and perceived exercise barriers (Darawad & Khalil, 2013). In this case, we believe that the perceived barriers of someone on the exercise not only depend on the type of their disease, but also the severity, duration of the diseases and type of treatment received (Craike et al., 2010; Darawad & Khalil, Barfield & Malone, 2013). Secondly, we found that exercise facilities availability was not significantly associated with perceived barriers to exercise. This was not consistent with a research done in Hong Kong (Lee, 2012). Meanwhile in Malaysia, most neighborhoods did not have accessible recreation facilities, such as walking and cycling paths (Poh et al., 2010). At the same time, previous research found that rural adults are less physically active than urban and suburban residents (Patterson, Moore, Probst, & Shinogle, 2004; Whaley & Haley, 2008). Lastly, we found that there was a significant association (p=0.029) between parity with perceived barriers to exercise. From the finding, the more the children the female respondents had, the lesser the perceived barrier score. Female respondents with more children are more inclined towards doing exercise. We believe that the existence of low barrier score among them is may be due to the mindset of desire to derive benefits from doing exercise especially when it is related to pregnancy. Previous research strongly showed that exercise plays a role in reducing the risk of pregnancy complications and ensure good health of infants (Oken et al., 2006; Ruchat et al., 2012; Melzer, Schutz, Boulvain, & Kayser, 2010). Besides, a research done in United States showed, unmarried female with no children reported significantly less physical activity compared to married mother (Dlugonski & Motl, 2013).

5.0 Conclusion and recommendation:

Gender and educational level were proven to be associated with the perceived benefits to exercise. Meanwhile, parity and current health status were proven to be associated with perceived barriers to exercise. Hence, policy makers should consider these factors when developing appropriate intervention programmes to increase the participation of the staff members.

Ethical

Ethical forms was sent to Ethics Committee of the University Research Involving Humans UPM (JKEUPM).

Declaration of conflict of interest

We authors of the article declare that there is no conflict of interest regarding publication of this article.

Acknowledgement

The authors would like to express their gratitude to UPM (supervisor and lecturers) and all participants (staff of the Ministry of Education, Putrajaya) for their willingness and cooperation to participate in this study.

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