Archives of Hygiene Sciences
Qom University of Medical Sciences

Autumn 2021. Volume 10. Number 4

Research Paper:
Physical Activity in Staff: Perceived Benefits, Barriers, and Self-efficacy

Soudabeh Yarmohammadi[1], Zahed Rezaei[2], Hamed Yarmohammadi[3], Vahid Ranaei[4], Tayebeh Marashi[1*]

1. School of Public Health and Safety, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
2. Social Determinants of Health Research Center, Gonabad University of Medical Science, Gonabad, Iran.
3. Student Research Committee, Shiraz University of Medical sciences, Shiraz, Iran.
4. Social Determinants in Health Promotion Research Center Hormozgan Health Institute, Hormozgan University of Medical Sciences, Bandar Abbas, Iran.

Use your device to scan and read the article online

Please cite this article as Yarmohammadi S, Rezaei Z, Yarmohammadi H, Ranaei V, Marashi T. Physical Activity in Staff: Perceived Benefits, Barriers, and Self-efficacy. Archives of Hygiene Sciences. 2021; 10(4):289-298. http://dx.doi.org/10.32598/AHS.10.4.281.1

http://dx.doi.org/10.32598/AHS.10.4.281.1

Article info:
Received: 28 Jun 2020
Accepted: 19 Jun 2021
Publish: 01 Oct 2021

Keywords:
Benefits, Barriers, Self-Efficacy, Exercise, Staff

ABSTRACT

Background & Aims of the Study: A major factor affecting health is regular physical activity. Physical activity reduces the risk of infectious diseases. The current study aimed to investigate the Perceived benefits, barriers, and self-efficacy of physical activity of the administrative staff of Shahid Beheshti University of Medical Sciences in 2018.

Materials and Methods: In this descriptive-analytical study, a sample of 300 employees of the administrative staff of Shahid Beheshti University of Medical Sciences in Tehran City, Iran, was selected by a convenience sampling method. The study variables included demographic information, perceived benefits and barriers, and self-efficacy physical activity. SPSS v. 16 was used to analyze the obtained data using the Chi-squared test, Mann-Whitney U test, Kruskal-Wallis test, and Spearman correlation coefficient.

Results: The collected results indicated a significant relationship between personal ($P<0.03$) and interpersonal ($P<0.001$) benefits and gender. Moreover, among the barriers, only environmental barriers had a significant relationship with gender ($P<0.03$). A significant association was observed between benefits and barriers and self-efficacy ($P<0.01$). The most common (environmental) barriers were the lack of sports space for men (51.6%) and women (62.9%), and being away from sports spaces for men (41.5%) and women (49.4%); the (personal) barriers were time-consuming for men (38.5%), women (43%). The most common benefits were better sleep for men (96.9%) and improved appearance for women (95.3%). The most general self-efficacy was exercising alone in men (61.5%) and women (56.5%).

Conclusion: The staff expressed common barriers to physical activity. These barriers should be considered in designing health care policies and interventions such as providing sports facilities to promote physical activity.

*** Corresponding Author:**
Tayebeh Marashi, PhD.
Address: *School of Public Health and Safety, Shahid Beheshti University of Medical Sciences, Tehran, Iran.*
Phone: *+98 (916) 1133675*
E-mail: *tayebehmarashi2019@gmail.com*

Archives of Hygiene Sciences
Qom University of Medical Sciences

1. Introduction

Inactivity is used to describe the activity of low energy expenditure. It is typically characterized by sitting, occurring in occupations or transport, at home, and during leisure time [1]. Lack of physical activity is the fourth most common cause of global mortality and causes approximately 21%-25% of breast and colon cancers, 27% of diabetes, and nearly 30% of ischemic heart diseases [2].

In 2008, the World Health Organization (WHO) estimated that around 31% of the population aged 15 years and older (28% men and 34% women) had insufficient physical activity [3]; also, one in 4 adults worldwide has inadequate physical activity [4]. According to the WHO reports, the highest rate of physical inactivity belongs to the United States and Eastern Mediterranean region. In both these areas, nearly 50% of females were insufficiently active, while males' prevalence was 36% in Eastern Mediterranean and 40% in the USA. The southeast Asian suggested the lowest frequency (19% for women and15% for men) [1]. Physical Activity Guidelines for Americans: specific exercise fosters average growth and development and can make people feel better, sleep better, and function better [5]. Physical activity is any bodily movement caused by skeletal muscles requiring energy [6].

Several studies in Israel and Netherlands indicate ongoing relationships between regular physical activity and reduced risk of death. Studies have consistently reported that physical activity reduces stress, anxiety, and depression; physical activity is generally associated with increased mental health and is recognized as a cure for anxiety and depression. Cross-sectional studies of physical activity have shown that aerobic exercise and muscle strength are positively correlated with bone density [5].

Individuals spend a lot of their time at work. The workplace requires a collaborative culture to encourage physical activity during and after working hours [6]. The benefits of physical activity at the workplace include improved health and fitness, improved efficiency and morale; improved job satisfaction and teamwork spirit; reduced staff absence and financial turnover, and reduced cost of incurred damages [7]. Evidence suggests that exercise may be associated with work productivity and lead to decreased rates of work absenteeism [8].

A factor that can motivate, feel, and effort to behave is self-efficacy [9]. Bandura describes self-efficacy as a belief in a person's ability to organize and execute a series of actions needed to achieve the goal [10]. Low self-efficacy destroys motivation, lowers desires, intervenes in cognitive skills, and leaves undesirable effects on physical health [9]. Self-Efficacy is a strong predictor of health behaviors, including physical activity behaviors [11]. However, low perceived self-efficacy for physical activity can be a barrier to engaging in physical activity programs. Two other positive and negative cognitive factors for physical activity are perceived benefits and obstacles resulting from performing or not performing physical activity [12]. A study states that the barriers include a lack of social support, such as not having an athlete spouse and not encouraging others [13].

Physical activity is a complex and multidimensional behavior [14], which is influenced by the intrapersonal, cultural, socio-economic, and physical environment [15, 16]; thus, this study used the socio-ecological model described by Mc Leroy et al., which includes intrapersonal, interpersonal and collective levels [17]. This is a framework for combining factors affecting physical activity to examine the benefits and barriers of staff physical activity.

Accordingly, enough has been mentioned about the importance of staff physical activity. According to the authors, we found no study examining the personal, interpersonal in detail. Environmental barriers and benefits of staff physical activity. Therefore, this study aimed to identify the essential benefits, perceived barriers, and self-efficacy for physical activity of the administrative staff of Shahid Beheshti University of Medical Sciences. The present study will provide valuable results to propose a proper and practical solution for increasing physical activity among employed women and men.

2. Materials and Methods

The research population of this descriptive-analytic comprised a staff of Shahid Beheshti University of Medical Sciences of Tehran City, Iran, in 2018. In this study, using the sample size population was 300 staff were considered. The sampling technique was randomized.

Shahid Beheshti University of Medical Sciences has 12 schools. One of them is outside of Tehran; thus, we randomly selected 5 out of the remaining 11 schools, and 60 employees from each school randomly completed the questionnaire. The inclusion criteria were the staff of Shahid Beheshti University of Medical Sciences, lack of disability. The exclusion criteria were unwilling to take part in the research. Data collection was performed between June to September 2018.

The tool used in the research was a self-report questionnaire for which the participants were given an adequate explanation of the research objectives and its process before filling in. The questionnaire consisted of three parts. The first part was related to demographic information (age, gender, marital status, level of education, work record). The second part was related to physical activity's perceived benefits and barriers, and we used the Benefits/Barriers scale questionnaire. Moreover, the third part was about self-efficacy questions that we used the exercise self-efficacy scale developed by Sechrist and associates.

The perceived benefits and barriers section had 43 questions. Accordingly, 29 were related to perceived benefits (26 personal benefits, 3 interpersonal benefits), and 14 questions were related to perceived barriers (6 items on personal barriers, 6 items on interpersonal barriers, 2 items on environmental barriers).

Each perceived benefits question had four strongly agree to disagree choices, scaled from 4 to 1 strongly. The minimum score for the perceived benefits of sports was 29, and the maximum score was 116. Furthermore, in the case of perceived barriers, each question had four choices of disagree entirely to agree completely. The scoring was reversed from 4 to 1, with a minimum score of 14 and a maximum score of 56. The higher the scores, the greater the perceived benefits and barriers of sport. Besides, to determine self-efficacy, 8 questions were prepared based on the Likert-type scale. The questions in this section had five choices from not correct at all to perfectly accurate, which scored from 1 to 5. The minimum self-efficacy score in sport was 8, and the maximum score was 40; a higher score indicates more self-efficacy [18].

To prepare the Persian version of the questionnaire, the original English version was translated into Persian. A specialist helped us with this. Then, the Persian version was again translated to English, where more common Persian expressions were used with few differences.

For the content validity of the questionnaire, 10 personal experts on health education and promotion investigated it. The CVR score for each of the 43 perceived benefits and barriers items and 8 self-efficacy items were more significant than the table Lavage number (0.62). The results of the CVI calculation showed that 39 items perceived barriers and benefits, and 8 items had self-efficacy higher than 0.79, so they were considered appropriate. The remaining 4 items had a CVI score between 0.7 and 0.75, which must be revised. The reforms were made, it was re-examined and was able to attract the opinion of experts. The questionnaire was filled by 30 staff (other than the study participants) to determine reliability. The obtained Cronbach's alpha for perceived barriers and benefits was 0.75, and for self-efficacy, it equaled 0.78.

Ethical considerations

The researcher considered issues in ethical considerations. At first, the University received a license and a referral for the administrative departments. The research units were sure about the confidentiality of the specifications and the data they obtained. They were justified in terms of the research purposes and the data gathering. They were licensed to enter and leave the study. The data were analyzed by SPSS v. 16 using descriptive and analytical tests, such as Chi-squared test, Mann-Whitney U test, Kruskal-Wallis test, and Spearman correlation coefficient at a significance level of 0.05.

3. Results

The obtained results indicated that the Mean±SD age of the explored men and women was 40.18±8.89 and 38.86±7.82 years, respectively. Besides, 91(30.3%) participants were single, 196(65.3%) were married, and 13(4.3%) were divorced/widowed. Furthermore, 130(43.3%) participants were men, and 170(56.7%) were women. 41(13.7%) participants had primary and secondary education, and 40(13.3%) had diplomas, 102(34.0%) had an associate degree, 52(17.3%) had a bachelor's degree, and 65(21.7%) had a master and higher degree. The Mean±SD work experience of the professors who participated in the study was 13.00±9.02 years.

Given that the employed structures (benefits, perceived barriers, & self-efficacy) were not typical, to estimate the difference in the mean value of the systems (benefits, perceived barriers, and self-efficacy) and between different levels of education, gender, marital status, and work experience, Kruskal-Wallis test used. This test indicated significant differences between none of the structures -perceived benefits and barriers, and self-efficacy- and different levels of education, gender, marital status, and work experience (P>0.05).

In the present study, agree and completely agree responses to perceived benefits and barriers are integrated to identify the most common benefits and barriers. According to obtained results, the most common (environmental) barriers are lack of sport spaces for men (51.6%) and women (62.9%), being far from sports spaces for men (41.5%) and women (49.4%), and personal barrier of time-consuming for men (38.5%) and women (43%).

Table 1. Mean±SD values of perceived benefits of staff of Shahid Beheshti University of Medical Sciences per gender

Benefit Items	Mean±SD		P
	Women	Men	
Perceived personal benefits	86.32±12.17	88.96±12.13	0.05
Enjoying sport	3.44±0.68	3.58±0.60	0.07
Reduced stress and mental stress	3.37±0.66	3.57±0.58	0.006
Improved mental health	3.42±0.62	3.51±0.65	0.13
Prevention of heart attacks	3.32±0.61	3.43±0.69	0.04
Increased muscle strength	3.35±0.63	3.49±0.65	0.03
Creation of a sense of personal success	3.29±0.70	3.47±0.62	0.02
Feeling relaxed	3.36±0.65	3.52±0.58	0.04
Prevention of high blood pressure	3.11±0.72	3.28±0.77	0.02
Increased physical fitness level	3.36±0.64	3.48±0.58	0.10
Improved muscle strength and performance	3.39±0.65	3.49±0.61	0.16
Improved cardiovascular function	3.36±0.59	3.43±0.62	0.26
Improved health feeling	3.36±0.62	3.44±0.62	0.23
Increased endurance and power	3.35±0.66	3.45±0.62	0.19
Improved body flexibility	3.38±0.61	3.45±0.63	0.29
Improved behavior	3.39±0.66	3.38±0.68	0.96
Improved sleeping	3.31±0.65	3.45±0.58	0.06
Increased longevity	3.22±0.68	3.35±0.69	0.10
Decreased fatigue	3.05±0.79	3.16±0.73	0.27
Increased physical tolerance	3.29±0.63	3.42±0.56	0.10
Increased self confidence	3.23±0.72	3.36±0.69	0.10
Increased mental awareness	3.90±0.81	3.74±0.85	0.12
Performing normal activities without fatigue	3.13±0.71	3.27±0.68	0.08
Improved quality of work	3.22±0.66	3.37±0.63	0.04
Good entertainment	3.18±0.71	3.32±0.67	0.08
Improved overall body function	3.39±0.60	3.31±0.69	0.37
Improved appearance	3.49±0.60	3.47±0.62	0.75
Perceived interpersonal benefits	8.97±1.78	9.73±1.82	<0.01
I'm in touch with my friends	3.05±0.84	3.28±0.75	0.02
Meeting new people	3.01±0.72	3.23±0.71	0.009
Increased acceptance by others	2.92±0.77	3.23±0.73	0.001

Table 2. Mean±SD values of perceived barrier items among Shahid Beheshti Medical University staff per gender

Interest Items	Mean±SD		P
	Women	Men	
Perceived personal barriers	16.63±3.23	17.24±3.07	0.09
Being time consuming	2.53±0.77	2.69±0.70	0.12
Being boring	2.64±0.84	2.69±0.80	0.65
Being embarrassed of exercising	3.38±0.72	3.36±0.77	0.98
Being costly	2.65±0.80	2.81±0.81	0.07
Causes fatigue	2.69±0.80	2.75±0.80	0.54
Difficulty of exercise	2.74±0.83	2.95±0.79	0.01
Perceived interpersonal barriers	17.44±33.3	17.21±3.32	0.5
Not being encouraged by important peoples of life	2.81±0.79	2.68±0.82	0.17
It takes much time of familial communication	2.85±0.73	2.87±0.78	0.63
People wearing sportswear look funny	3.24±0.78	3.22±0.70	0.5
Family members do not encourage me	2.90±0.81	2.74±0.85	0.12
It takes so much time to do my responsibilities towards my family	2.75±0.72	2.98±0.77	0.01
Not being encouraged by their spouse	2.90±0.81	2.74±0.85	0.12
Perceived environmental barriers	4.67±1.46	5.03±1.51	0.03
Far sports spaces	2.44±0.92	2.58±0.91	0.17
Few sports spaces	2.24±0.83	2.45±0.89	0.03

Archives of Hygiene Sciences
Qom University of Medical Sciences

The most common (personal) benefits for men were better sleep (96.9%), improved physical tolerance (96.2%), feeling relaxed, improved body fitness, improved muscle strength, and performance (95.4%), and for women were improved appearance (95.3%), enjoyment (94.8%), improved physical fitness (94.8%), and improved heart function (94.2%). The most common factors of self-efficacy were ability to exercise alone for men (61.5%) and women (56.5%), exercising even if they lacked skill for men (53.1%), and exercising even if they do not have a good day for women (49.4%).

In personal benefits, there was a significant difference between male and female staff respecting enjoyment, stress reduction, heart attack prevention, increased muscle strength, sense of personal success, feeling relaxed, prevention of increased blood pressure, and improved quality of work. Additionally, in interpersonal benefits, there was a significant difference in communication with friends, meeting new individuals, increased acceptance by others based on gender (Table 1). There was no significant gender-wise difference for most of the barriers (personal, interpersonal, and environmental). However, there was a significant difference between male and female respondents for personal barriers of difficulty of exercise ($P<0.01$), interpersonal bar riers of taking so much time of conducting my responsibility towards my family ($P<0.01$), and environmental barriers of few sports spaces ($P<0.03$) (Table 2).

As per Table 3, the Spearman correlation test indicated a significant correlation between all the elements, except interpersonal barriers and self-efficacy ($P<0.05$). Moreover, there was a stronger correlation between personal barriers and self-efficacy than other elements. With increased self-efficacy score, personal barriers score increases, as well. Here, the point to be taken into account is that, in the barriers analysis of the present study, most scores are assigned to "fully disagree" and "disagree" (Table 3).

Table 3. Correlation between personal and interpersonal benefits, personal and interpersonal barriers, and environmental barriers and self-efficacy

Characteristic	Self-efficacy	Personal Benefits	Interpersonal Benefits	Personal Barriers	Interpersonal Barriers	Environmental Barriers
Self-efficacy	1					
Personal benefits	0.401**	1				
Interpersonal benefits	0.317**	0.746**	1			
Personal barriers	0.479**	0.427**	0.322**	1		
Interpersonal barriers	0.098	0.153**	0.033	0.367**	1	
Environmental barriers	0.228**	0.124*	0.130*	0.354**	0.352**	1

*P<0.01; ** P<0.05.

As per Table 4, the Mean±SD values of perceived benefits, perceived barriers, and perceived self-efficacy were 96.13±77.74, 39.6±8.35, and 24.7±23.77, respectively. Furthermore, the mean score values of the research variables are depicted per gender. For comparison purposes, the top scores of all items are considered to be 5 (Figure 1).

4. Discussion

This study aimed to identify the most essential perceived benefits and barriers and self-efficacy for physical activity of female and male staff of Shahid Beheshti University of Medical Sciences in Tehran. Moreover, the relationship between demographic variables with perceived benefits, barriers, and physical activity self-efficacy was investigated. This study indicated no significant relationship between the demographic factors and the three structures.

In the present study, there was a significant gender-wise difference regarding personal barriers of difficulty of the exercise, interpersonal barriers it takes much time of doing my responsibility towards my family, and environmental barriers lack sports spaces. Barriers to the difficulty of exercise for staff may have many reasons, such as being busy with the occupation and having a specific illness, including personal, interpersonal, and environmental barriers. Australia has provided strategies for these barriers in the workplace, such as individual or group counseling for personal and interpersonal barriers. Organizations can also provide a favorable physical environment to support staff's physical activity, such as flexibility exercised during working hours [1]. Additionally, employers can provide supports, such as: walking with colleagues instead of using the internet or email at rest, using stairs instead of elevators, using rest hours as opportunities for activity, parking the car in the farthest parking lot, walking or cycling all or part of the way to work, walking when going to lunch [19].

In the present study, barriers to family responsibility for staff may have many reasons (e.g., taking care of children & sick people at home). In the study by Macniven et al., family responsibility was the barrier to physical activity in the elderly [20].

Arzu et al. explored students and concluded that external barriers are more important than internal barriers. The most common barriers included the lack of time due to occupation and lack of time due to having responsibilities towards family [12].

Table 4. Possible range, observed range, and Mean±SD of the research variables

Characteristic	Possible Range	Observable Range	Mean±SD
Perceived benefits	29-116	49-116	96.13±77.74
Perceived barriers	14-56	15-56	39.6 ±8.35
Perceived self-efficacy	8-40	8-40	24.7±23.77

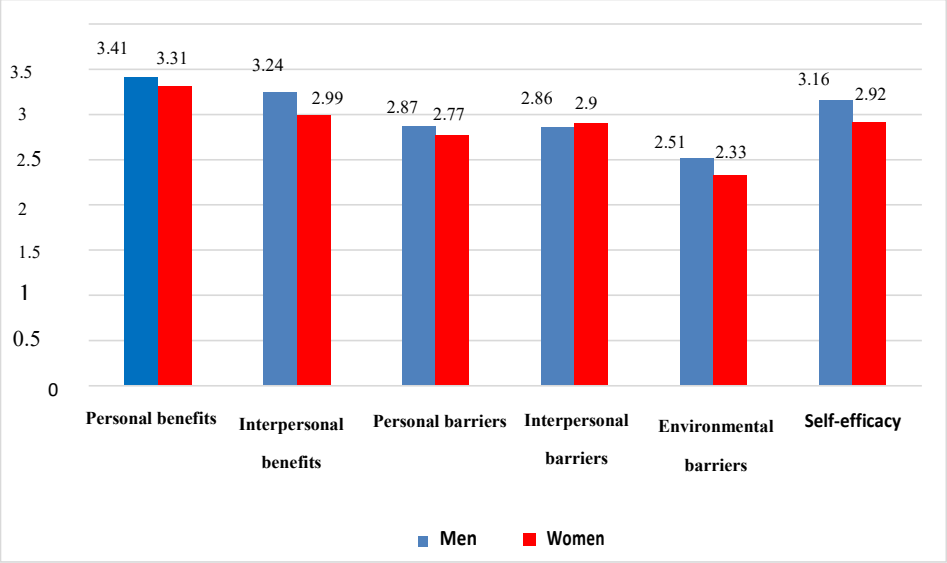

Figure 1. Mean scores of research variables per gender

Archives of Hygiene Sciences
Qom University of Medical Sciences

Lack of sports spaces was an environmental barrier for staff. In research by Edmunds and associates. Based on the present study and other studies on different strata, we can conclude that the lack of athletic facilities is one of the most critical barriers to physical activity in different strata [21]. Policies and long-term investment in physical activity either in or outside of the workplace are necessary, including paying for fitness facilities, holding classes, counseling or training, offering interest-free loans to staff for purchasing bicycles and sports equipment, encouraging, providing facilities for children care and other family-based facilities required during physical activity [7]. Besides, in the study by Hohepa et al., the lack of facilities and access to them is regarded among environmental barriers associated with exercise [22].

In the present study, the main benefits of physical activity for women were improved appearance, enjoyment, increased physical fitness, improved cardiac function, and the benefits of the essential sports for men were better sleeping, improved physical fitness, feeling relaxed, improved physical fitness, improved muscle strength, and performance.

In the study by Tergerson et al., i.e., conducted on students, the reported benefits of exercise among women were maintaining the appearance [23]. Among men, it was being strong [24]. Lazarević et al., The results revealed that students are moderately exercised, have moderately high self-esteem and physical self-efficacy [25]. In the study by Baert et al., enjoyment was reported as an incentive for physical activity in the elders [26]; certain feelings, which increase the sense of pleasure during physical activity in the elders, much depend on the individual preferences (physical activity exercises in a group or enjoying landscapes). Given the above information, it is an excellent opportunity for trained health professionals to be familiar with the benefits of physical activity for men and women to attract women and men to physical activity [26].

In the present study, the most common self-efficacy Structure for both genders. Men and women outlined the ability to exercise alone, exercise even if they lack skill, and exercise even if they do not have a good day.

Self-efficacy falls into three parts in the study by Rodgers et al., as follows: work self-efficacy, adaptation, and planning. Two of the most different self-efficacy items between men and women were the order of regular exercise (planning self-efficacy) and exercise when you feel you don't have time (adaptation self-efficacy), i.e., consistent with other researches and indicated that the factors related to planning might be the main barrier to regular exercise [27].

It was revealed that women's self-efficacy is high regarding the psychological aspect. Concurrently, compared to men, they have low self-efficacy regarding the physical part, which might be due to the culture of our country that women are expected to be more emotional, and men are expected to be stronger. Requires consideration during early age when women's self-efficacy concerning strength must be enhanced. In the present study, there was a significant correlation between all elements of barriers and benefits, except for interpersonal barriers, with self-efficacy, and there was a stronger correlation

between personal barriers and self-efficacy. Accordingly to Zelle et al., fear of motion was associated with lower daily physical activity. Data analysis indicated that a large part (73%) of the effect of fear of motion on physical activity was explained by low physical self-efficacy [28]. Bandura (1986) mentioned that individuals underestimate their abilities (low self-efficacy) because of disordered mental patterns and stress responses that create barriers to their acts [29].

Besides, we found a strong positive correlation between internal barriers (especially internal personal barriers) and self-efficacy. Individuals with high self-efficacy are more committed to their performance. Individuals' perceptions of their efficacy influence the types of anticipatory scenarios they construct and reiterate. Those with an increased sense of efficacy visualize success scenarios that provide definite guides for performance. Those who judge themselves as inefficacious are more inclined to imagine failure scenarios that undermine performance by dwelling on how things will go incorrect [30].

McAuley et al. examined long-term self-efficacy in elders. Accordingly, they observed that the effect of self-efficacy was confirmed on long-term sports partnerships [31]. Also, Maglione et al. examined students and revealed a robust statistical relationship between self-efficacy and physical activity [32]. The limitation of this study was using a questionnaire for collecting information and self-report, which some staff might dishonestly or inaccurately complete. Another limitation of this study was that only official staff completed the questionnaire. We can suggest that future staff use non-official staff and compare the two groups regarding benefits, barriers, and perceived self-efficacy.

5. Conclusion

The present research results indicated that barriers, such as the difficulty of the exercise, responsibility towards family and lack of sports spaces and factors perceived self-efficacy, such as the ability to exercise alone, exercise even if they lack skill, and exercise even if they do not have a good day strengthens physical activity in staffs. Therefore, personal, interpersonal, and environmental barriers can play a role in regular physical inactivity. Thus, it should be considered by the officials in future planning.

Ethical Considerations

Compliance with ethical guidelines

The participants were informed of the purpose of the research and its implementation stages. Written consent has been obtained from the subjects. They were also assured about the confidentiality of their information. They were free to leave the study whenever they wished, and if desired, the research results would be available to them. The Helsinki Convention was also observed.

Funding

This research did not receive any grant from funding agencies in the public, commercial, or non-profit sectors.

Authors' contributions

Conceptualization and supervision: Soudabeh Yarmohammadi and Taybeh Marashi; Methodology: Soudabeh Yarmohammadi and Zahed Rezaei; Data collection: Soudabeh Yarmohammadi; Data analysis: Zahed Rezaei; Investigation: Vahid Ranaei and Hamed Yarmohammadi; Writing-original draft, writing - review-editing: All authors; Funding acquisition and resources: Soudabeh Yarmohammadi and Taybeh Marashi.

Conflict of interest

The authors declared no conflicts of interest.

Acknowledgments

The authors wish to thank the security, officials, and staff of Shahid Beheshti University of Medical Sciences for their cooperation in conducting this research.

References

[1] Straker L, Dunstan D, Gilson N, Healy G. Sedentary work. Evidence on an emergent work health and safety issue. safeworkaustraliagovau. 2016. https://espace.library.uq.edu.au/view/UQ:382931

[2] Ball K. People, places…and other people? Integrating understanding of intrapersonal, social and environmental determinants of physical activity. Journal of Science and Medicine in Sport. 2006; 9(5):367-70. [DOI:10.1016/j.jsams.2006.06.010] [PMID]

[3] World Health Organization (WHO). Physical inactivity: A global public health problem [Internet]. 2010 [Updated 2010]. Available from: https://www.who.int/health-topics/physical-activity

[4] World Health Organization (WHO). Physical Activity [Internet]. 2020 [Updated 26 Nov 2020]. Available from: https://www.who.int/news-room/fact-sheets/detail/physical-activity

[5] Piercy KL, Troiano RP, Ballard RM, Carlson SA, Fulton JE, Galuska DA, et al. The physical activity guidelines for Americans. JAMA. 2018; 320(19):2020-8. [DOI:10.1001/jama.2018.14854] [PMID]

[6] Butte NF, Ekelund U, Westerterp KR. Assessing physical activity using wearable monitors: Measures of physical activity. Medicine & Science in Sports & Exercise. 2012; 44(1 Suppl 1):S5-12. [DOI:10.1249/MSS.0b013e3182399c0e] [PMID]

[7] Northwestern Health Unit (NWHU). Promoting physical activity at work: A toolkit for workplaces [Internet]. 2014. Available from: https://www.nwhu.on.ca/ourservices/WorkplaceHealth/Documents/PA%20Resource%20Kit%20for%20Workplaces%20May%202014.pdf

[8] Amlani NM, Munir F. Does physical activity have an impact on sickness absence? A review. Sports Medicine. 2014; 44(7):887-907. [DOI:10.1007/s40279-014-0171-0] [PMID]

[9] Bandura A. Self-efficacy. The Corsini Encyclopedia of Psychology. 2010; 1-3. [DOI:10.1002/9780470479216.corpsy0836]

[10] Bandura A. Self-efficacy mechanism in human agency. American Psychologist. 1982; 37(2):122-47. [DOI:10.1037/0003-066X.37.2.122.]

[11] Crain AL, Martinson BC, Sherwood NE, O'Connor PJ. The long and winding road to physical activity maintenance. American Journal of Health Behavior. 2010; 34(6):764-75. [DOI:10.5993/AJHB.34.6.11.] [PMID] [PMCID]

[12] Arzu D, Tuzun EH, Eker L. Perceived barriers to physical activity in university students. Journal of Sports Science & Medicine. 2006; 5(4):615-20. [PMID] [PMCID]

[13] Yarmohammadi S, Mozafar Saadati H, Ghaffari M, Ramezankhani A. A systematic review of barriers and motivators to physical activity in elderly adults in Iran and worldwide. Epidemiology and Health. 2019; 41:e2019049. [DOI:10.4178/epih.e2019049] [PMID] [PMCID]

[14] Parra-Medina D, Hilfinger Messias DK. Promotion of physical activity among Mexican-origin women in Texas and South Carolina: An examination of social, cultural, economic, and environmental factors. Quest. 2011; 63(1):100-17. [DOI:10.1080/00336297.2011.10483668.] [PMID] [PMCID]

[15] McEachan RRC, Lawton RJ, Jackson C, Conner M, Lunt J. Evidence, theory and context: Using intervention mapping to develop a worksite physical activity intervention. BMC Public Health. 2008; 8:326. [DOI:10.1186/1471-2458-8-326.] [PMID] [PMCID]

[16] Naito M, Nakayama T, Okamura T, Miura K, Yanagita M, Fujieda Y, et al. Effect of a 4-year workplace-based physical activity intervention program on the blood lipid profiles of participating employees: the high-risk and population strategy for occupational health promotion (HIPOP-OHP) study. Atherosclerosis. 2008; 197(2):784-90. [DOI:10.1016/j.atherosclerosis.2007.07.026] [PMID]

[17] McLeroy KR, Bibeau D, Steckler A, Glanz K. An ecological perspective on health promotion programs. Health Education Quarterly. 1988; 15(4):351-77. [DOI:10.1177/109019818801500401.] [PMID]

[18] Nooijen CF, Post MW, Spijkerman D, Bergen MP, Stam HJ, van den Berg-Emons RJ. Exercise self-efficacy in persons with spinal cord injury: Psychometric properties of the Dutch translation of the exercise self-efficacy scale. Journal of Rehabilitation Medicine. 2013; 45(4):347-50. [DOI:10.2340/16501977-1112] [PMID]

[19] Dishman RK, Oldenburg B, O'Neal H, Shephard RJ. Worksite physical activity interventions. American Journal of Preventive Medicine. 1998; 15(4):344-61. [DOI:10.1016/S0749-3797(98)00077-4.] [PMID]

[20] Macniven R, Pye V, Merom D, Milat A, Monger C, Bauman A, et al. Barriers and enablers to physical activity among older Australians who want to increase their physical activity levels. Journal of Physical Activity and Health. 2014; 11(7):1420-9. [DOI:10.1123/jpah.2012-0096] [PMID]

[21] Edmunds S, Hurst L, Harvey K. Physical activity barriers in the workplace: An exploration of factors contributing to non-participation in a UK workplace physical activity intervention. International Journal of Workplace Health Management. 2013; 6(3):227-40. [DOI:10.1108/IJWHM-11-2010-0040]

[22] Hohepa M, Schofield G, Kolt GS. Physical activity: What do high school students think? Journal of Adolescent Health. 2006; 39(3):328-36. [DOI:10.1016/j.jadohealth.2005.12.024.] [PMID]

[23] Vartanian LR, Wharton CM, Green EB. Appearance vs. health motives for exercise and for weight loss. Psychology of Sport and Exercise. 2012; 13(3):251-6. [DOI:10.1016/j.psychsport.2011.12.005.]

[24] Tergerson JL, King KA. Do perceived cues, benefits, and barriers to physical activity differ between male and female adolescents? The Journal of School Health. 2002; 72(9):374-80. [DOI:10.1111/j.1746-1561.2002.tb03562.x.] [PMID]

[25] Lazarević LB, Lazarević D, Orlić A. Predictors of students' self-esteem: The importance of body self-perception and exercise. Psihološka istraživanja. 2017; 20(2):239-54 [DOI:10.5937/PsIstra1702239L]

[26] Baert V, Gorus E, Mets T, Geerts C, Bautmans I. Motivators and barriers for physical activity in the oldest old: A systematic review. Ageing Research Reviews. 2011; 10(4):464-74. [DOI:10.1016/j.arr.2011.04.001] [PMID]

[27] Rodgers WM, Sullivan MJ. Task, coping, and scheduling self-efficacy in relation to frequency of physical activity. Journal of Applied Social Psychology. 2001; 31(4):741-53. [DOI:10.1111/j.1559-1816.2001.tb01411.x]

[28] Zelle DM, Corpeleijn E, Klaassen G, Schutte E, Navis G, Bakker SJ. Fear of movement and low self-efficacy are important barriers in physical activity after renal transplantation. PloS One. 2016; 11(2):e0147609. [DOI:10.1371/journal.pone.0147609.] [PMID] [PMCID]

[29] Bandura A. Perceived self-efficacy in cognitive development and functioning. Educational Psychologist. 1993; 28(2):117-48. [DOI:10.1207/s15326985ep2802_3.]

[30] Bandura A. Perceived self-efficacy in the exercise of personal agency. Journal of Applied Sport Psychology. 1990; 2(2):128-63. [DOI:10.1080/10413209008406426.]

[31] McAuley E, Jerome GJ, Elavsky S, Marquez DX, Ramsey SN. Predicting long-term maintenance of physical activity in older adults. Preventive Medicine. 2003; 37(2):110-8. [PMID] [DOI:10.1016/S0091-7435(03)00089-6.]

[32] Maglione JL, Hayman LL. Correlates of physical activity in low income college students. Research in Nursing & Health. 2009; 32(6):634-46. [DOI:10.1002/nur.20353.] [PMID]