Physical activity and its related factors among female employees: applying BASNEF model

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Abstract

The present study is a cross sectional study conducted on 268 employed women in Hamadan university of medical sciences. Census sampling was applied through visiting the various faculties of the medical sciences university in Hamadan. The data were gathered by means of a questionnaire which was divided into three sections: demographic information, BASNEF model constructs and standard International Physical Activity Questionnaire. Then data were analyzed by using statistical tests such as Chi-square,T-test and logistic regression analysis in SPSS software version 16. According to the results, 189 participants (70.5%) had light physical activity, 60 participants (22.4%) had moderate physical activity and 19 participants (7.1%) had severe physical activity. There was a significant relationship between marital status and doing physical activities. Among the BASNEF model constructs, attitude and enabling factors were found to be the most important predicting factors in doing the physical activity. Since enabling and attitude factors are the predicting factors in performing the physical activity, it seems that providing facilities and exercise equipment and offering educational programs for employed women could improve their physical activity performance.

Keywords: Activity, Physical, Relate

Introduction

Nowadays healthcare professionals believe that healthy lifestyle is one of the most important factors that influence human health [1]. Unhealthy dietary patterns, low physical activity and sedentary life are the causes of overweight and obesity which are risk factors for non-communicable diseases such as hypertension, type 2 diabetes and cardiovascular diseases [2]. Studies have shown that by 2016, the mortality rate from cardiovascular diseases in women will be increased by 28% [3]. Cardiovascular diseases are currently the most important cause of death in women [4]. According to the World Health Organization's (WHO) annual report, annually 1.9 million deaths worldwide occur as a result of inactivity [5] and it shows that the risk of cardiovascular diseases in people who do not have the minimum recommended physical activity will be increased up to 1.5 times [6]. According to the annual report of the World Health Organization (WHO), the prevalence of inactivity in urban and rural areas among men and women aged 15 to 64 was 5.67%

and women had less mobility in comparison with men [7]. Iran, as many other developing countries, has faced the epidemic of obesity and its complications [8]. Nowadays most jobs are sedentary and the physical activity not only improves employees' performance and health, but also increases the quality of services and minimizes the damages and consequently results in job satisfaction. The most vulnerable groups at risk are women such that research has revealed that the time women spend on leisure time and physical activities is less than the time spent on work activities and housekeeping [10,12]. Sixty percent of the world's populations do not perform the minimum recommended amount of moderate-intensity physical activity [6]. Annual Report of the World Health Organization has stated that 30 minutes of daily moderate-intensity physical activity such as fast walking has many effects on people's health [9]. Physical activity is effective in all physical, social and psychological dimensions [10], which results in improvement of mental health and quality of life [11]. Public sports development and providing the required basis to attract the people of all ages reduces the costs of insurance companies and families in addition to reducing most illnesses. It will not only lead to individual and community health promotion but also increase life expectancy and prevent from ovarian, endometrial, breast, colon and rectal cancers [12]. Studies have shown that one of the determining factors for physical activity are individual barriers [13] and in contrast, the ability to overcome the barriers for physical activity has a positive and significant association with increased physical activity [14]. Furthermore, physical activity is related to provision of a suitable place for exercising, and availability of equipment and a vehicle to attend the training sessions [15]. One of the models to study and identify behavior and to cause new behaviors in the society is BASNEF model which is a combination of PRECEDE and behavioral intention models and has various constructs such as beliefs, attitudes, subjective norms and enabling factors and its efficiency has been proven in various studies [16]. Given the importance of identifying the predicting factors

of physical activity in women who work, the present research aimed at determining the regular physical activities of employed women and its effective factors. The study was held in the educational complex of Hamadan University of Medical Sciences according to BASNEF model.

Method

The present study is a descriptive-analytical study conducted on 268 employed women who work in Hamadan University of Medical Sciences. Data collection tool in this research consisted of three parts. Part one included demographics, including 11 items such as age, work experience, education, employment status, underlying diseases, marital status, number of children, membership in a sports club and its history, having exercise facilities at home and performing regular physical activities at least three times per week and each lasting for 30 minutes. Part two: To measure BASNEF model constructs, the researcher designed the questionnaire using similar studies [7,17]. Content validity of the questionnaire was approved by the Health Education Specialists reviews. The reliability was measured using a pilot study on 30 employed women using Cronbach's alpha test. The attitude included 9 items (alpha coefficient of 0.85). For instance "regular physical activities helps me to be happier" was measured by a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Subjective norms included 6 items (alpha coefficient of 0.88). For instance "my best colleague thinks that I should have regular physical activities" was measured by a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Enabling factors included 11 items (alpha coefficient of 0.94). For instance "I am too busy to exercise" was measured by a 3-point scale (yes, to some extent, no). Behavioral intentions included 2 items (alpha coefficient of 0/ 87). For instance "I intend to have a regular physical activity of at least 3 times a week during the upcoming next month" which was measured by a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree).

Part three: in order to measure the amount of physical activity the standard International Physical Activity Questionnaire (IPAQ) [12] was used. The questionnaire includes questions that assess physical activity and classifies it in three categories: light, moderate, and severe. The questionnaire is used by WHO in order to measure the amount of physical activity and has been used in various researches and its reliability and validity are confirmed [7]. This questionnaire measures the physical activity in the past 7 days and based on the final scores the severity of the exercises in the past 7 days is determined. According to this, activities such aerobics, high speed cycling, mountain climbing and basketball which requires more than 6 calories per minute are considered as severe physical activities and activities such as volleyball and badminton and room cleaning as well as walking which require 3 to 6 calories per minute are considered as moderate physical activities. Meanwhile each activity that takes less than 10 minutes is omitted. The amount of energy expenditure per week was calculated based on IPAQ instructions. If the total amount of energy expenditure per week is less than 600 m/kg/hr, the intensity of physical activity is light and if it is between 600 to 3000 m/kg/hr, it is moderate, and if it is above 3000 m/kg/hr, it is categorized as severe [13]. The researcher submitted the questionnaires to the female employees working in different faculties of Hamadan University of Medical Sciences and collected them on another session. The participants were briefed on the process of the research, the confidentiality of their information, and the objectives of the research, and they voluntarily participated. Among the 300 women working in the educational complex of Hamadan University of Medical Sciences, 14 people did not fill the questionnaire completely and 18 people were unwilling to fill it and they were excluded. Ultimately the collected data were entered to SPSS-16 software and analyzed by statistical tests such as chi-square, t-test and logistic regression.

Result

Among the 268 participants in the present study, 209 participants (78%) were married, 59 participants (22%) were single and among the married group 88 participants (32.8%) did not have a child and 121 participants (66%) had a child. There was a significant relationship between marital status and regular physical activity (P value= 0.025).

Among the 268 participants, 189 participants (70.5%) had light physical activity, 60 participants (22.4%) had moderate physical activity and 19 participants (7.1%) had severe physical activity (Table 1).

Table 1 *Relative and absolute frequency distribution of physical activity among employed*

	Physical activity variables under question	Physical activity			P-value
		Light	Moderate	Severe	
Marital status	Single	36	13	10	P-value=0.003
	Married	153	47	9	x^2=11.3
Education	Diploma and associate degree	91	18	4	
	Bachelors degree	90	41	x^2= 15.3	P-value =0.02
	Masters degree and above	8	1	1	
	Professional Doctorate	86	45	1	
Working situation	Conditional job	8	1	0	
	Contractual	47	17	x^2=21.1	P-value = 0.002
	Official	38	14	5	
	Contract	96	28	1	
Disease	Yes	5	1	1	P-value =0.4
	No	184	59	x^2= 4.2	
Having the sporty	Yes	119	28	14	P-value =0.04
	No	70	32	x^2= 6.6	

Table 2 shows the relationship between demographic variables and physical activity. As it can be observed, there was a significant relationship between age , working experience, employment status, membership in a sport club, marital status, having kids and having exercise facilities at home with the physical activity (P value 0.03). Yet there was not any significant relationship between the underlying diseases and the number of kids with having regular physical activity.

Table 2 *Determining the relationship between background variables and doing physical activity*

Physical activity status	Frequency	Percentage
Light	189	70.5
Moderate	60	22.4
Severe	19	7.1
Total	268	100

Women

Table 2 shows the relationship between demographic variables and physical activity. As it can be observed, there was a significant relationship between age , working experience, employment status, membership in a sport club, marital status, having kids and having exercise facilities at home with the physical activity (P value 0.03). Yet there was not any significant relationship between the underlying diseases and the number of kids with having regular physical activity.

Table 3 *Determining the relationship between age and physical activity*

Age Physical activity		Between 20 to 30	30 to 40 years old	Above 40 years old
Physical activity	Light	69	80	40
	Moderate	11	26	23
	Severe	5	12	2

x2=14.5   P–value = 0.025

Furthermore, 161 participants (60.1%) had one exercise facility at home and 107 participants (39.9%) did not have any exercise facilities at home. There was a significant relationship between having an exercise facility and doing regular physical activities (P-values=0.04). Regarding the enabling factor construct, time, adequate skill in doing the physical activity, good place and good equipment were reported

more in comparison with the other factors and the enabling factor had a significant relationship with the physical activity (P value 0.02).

Moreover, the priorities of following significant others in employed women's lives are as follows: colleagues, spouse, family and the related office authorities. Yet, there was no significant relationship between this construct and performing regular physical activities.

Logistic regression analysis revealed that the enabling factor construct and the attitudes toward the behavior construct were the most important predictors of performing regular physical activities among the employed women (Table 4).

Table 4 *Logistic regression analysis for BASNEF model variables as the behavior predictor (doing physical activity)*

Level	Variables	β	B(SE)	Wald	OR	P-value
Third	Enabling factor	-0.112	0.031	12.144	0.894	0.000
	Attitude	0.195	0.05	0.195	1.215	0.000
	Constant	-1.034	0.44	-1.035	0.355	0.019

Discussion

The purpose of the present research was to determine the factors that affect regular physical activities and to investigate its status in employed women by means of using BASNEF model. Based on the results, more than 74% of people have low or moderate awareness about doing physical activities and merely 26% were well aware. Consequently, implementation of educational interventions with the aim of boosting the awareness on physical activities benefits is essential. The results reveal that 93% of the staff had positive attitudes toward the physical activity and their willingness to do so and only 7% of them had negative attitudes, which might be attributed to insufficient knowledge on the benefits of doing physical activities or to participants' past experiences. However, generally more than 83% of employed women were willing to perform physical activities. The lack of enabling factors such as facilities, exercise equipment, lack of having trainers and lack of time could be the reasons for not doing regular

physical activities. Therefore, the planning authorities should take proper measures into consideration and make the required measures to overcome this. Moreover, only 39% of employed women did moderate and severe physical activity and among them only 10% had regular physical activity and the majority of the people under study were inactive. These results were in line with Emdadi et al. research [20] and were different from those of Nikpoor et al. who reported the inactive women as 77.66% [21]. This incompatibility is due to the age differences of the two studies as for the present study the age range is less than the mentioned research. In a study in Hong Kong, the percentage of inactive women was 51% and the incompatibility of its results with the present study is due to cultural and ethnic differences between the two societies [22]. Inactivity in women is a risk factor for various diseases such as heart diseases and osteoporosis which are life-threatening. This low physical activity and the high prevalence of inactivity could be a warning to draw the health authorities' attention to the issue so that they would investigate the barriers to performing physical activities in this vulnerable group and would take serious actions to resolve it. In addition, women's health community will improve by highlighting the mentioned concern in health planning, adopting appropriate strategies to improve women's performance, and promoting them to do physical activities. Most of the female employees in the present study (87%) were over 30 years old age. The education level and doing physical activities had a significant relationship in this study which is also in line with Sanaee Nasab and Nikpoor study [21,23]. Investigations on the underlying variables revealed that there is a significant relationship between age, marital status and doing the physical activities. This was not compatible with Sanaee Nasab et al. study but by Nikpoor and Sharafzadegan's research [21,23]. However this was not in line with the study being conducted in Chicago [24] and this could be the result of prominent role of family in Iran in which a woman as a mother and wife does a lot of efforts

and chores and consequently will have more physical activity in comparison with a single person, yet this should be modified to a regular physical activity. Time, skills, equipment and the availability of facilities are the foremost enabling factors for doing physical activities according to the participants and this finding is in line with Sanaee Nasab et al. and Moeini et al. [23,25]. According to the WHO references, the most important barriers to increasing the physical activities were the lack of awareness about the benefits of physical activity, lack of sufficient information about levels and ranges of physical activity, lack of supporting obligations, lack of intersectoral collaboration, Lack of access to sports facilities, economic pressures, time limit and cultural problems regarding physical activities for women which are consistent with the most important enabling factors in the present study [26]. The present study is limited in the aspects such as collecting data by means of questionnaire and self report in which the participants might not have shown their real information and did not answer the questionnaire honestly. Furthermore, in the present research, the employed women in various faculties of Hamadan University of Medical Sciences are investigated and it is suggested that further studies focus on the information of various women in society so that a more thorough analysis could be presented on healthy behaviors.

Conclusion
Recognizing the effective factors on performing regular physical activities according to health education models paves the way for better interventions to improve the awareness and to motivate the employed women to do regular physical activities. Recognizing the most important enabling factors would be beneficial in converting the intentions into doing regular physical activity behavior in women.

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Contributions
Study design: MM, OM
Data collection and analysis: ON, KV, GHR
Manuscript preparation: MB, OM

Conflict of interest
"The authors declare that they have no competing interest"

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