Women Physical Activity and its Effective Factors Using a Social-Ecological Model

Abbasgholizadeh Nategh[1], Abazari Malek[1], Hazrati Sadegh[2], Adham Davoud[1]*

[1]Department of Public Health, School of Public Health, Ardabil University of Medical Sciences, Ardabil, Iran; [2]Department of Occupational Health, School of Health, Ardabil University of Medical Sciences, Ardabil, Iran

Corresponding author:
Adham Davoud,
Department of Public Health, School
of Public Health, Ardabil University
of Medical Sciences, Ardabil, Iran,
Tel: +984533512004;
Fax: +984533512004;
E-mail: adhamdavoud82@gmail.com

Abstract

Background: Physical activity is a health indicator that prevents many health problems as obesity and cardiovascular disease. The social-ecological model (SEM), is a suitable model for design and implementation to promotion of health programs. The aim of this study is a survey of physical activity and effective factors in women on the basis of social-ecological model (SEM) in Ardabil city in 2014. **Patients/Methods:** This study was a cross-sectional and 500 women randomly selected. Data Collection tools are demographic information questionnaire, IPAQ questionnaire and social-ecological model (SEM) constructs which was completed self-report method. Data were analyzed for Pearson correlation test in SPSS22. **Results:** The average age of women are 28/62 years. Their physical activity levels of approximately 984 ± 48 minutes per week Physical activity level were respectively light physical activity (37%), moderate physical activity (60%) and intensive physical activity (2%). The highest physical activity is belonged to walking and moderate physical activity is in home. The results of Pearson correlation test showed that relationship between physical activity and health belief model, self-efficacy and interpersonal relationship. **Conclusions:** Given that physical activity in women in our study is low. We can encourage people to be physically active and to emphasize different aspects of benefits of physical activity the promotion of the women health. This information can also be used to design educational programs to promote physical activity.

Keywords: Physical activity; Social ecology; Women; Ardabil

Introduction

Physical activity is the first health indicator in the community from the perspective of the world health organization.[1] Regular physical activity reduces risk factors affecting human health for example: obesity, cardiovascular disease, stroke, type 2 diabetes, colon and breast cancer, osteoporosis and back pain.[2] It is also causes mental health and self-esteem.[3] According to the program of healthy people, all people must have at least 30 minutes of moderate physical activity daily.[4] According to a report of WHO, 17% of adults have no physical activity and in active communities 60% of them do not achieve the minimum recommended range of physical activity. The Results of three studies done in 1995-2002 showed that 70-80% of Iranian people are sedentary.[5] Another study performed in Yazd city in 2006 showed that only 15% of men and women had sufficient mobility and 65.8% have no physical activity.[6] According to a review by the WHO, physical activity is a difficult choice for people because of the lack of awareness about the benefits, levels and limits of physical activity, lack of support, non-cooperation, not having adequate sports facilities, economic weakness time limitations and traditions for women's sports, population density, insecurity, air pollution, and shortage of parks.[7] Physical activity can be done in various forms such as Job-related physical activity, Physical activity during the move and arriving to the office but the most important being the physical activity in leisure times.[8,9] At the moment due to changes in life style and work pattern: the job-related physical activity was decreased, thus efforts to promote physical activity in leisure time have a great impact on increasing physical activity.[10] The suitable model for designing and implementation to promotion of health programs recommendation is social-ecological model (SEM).[11,12] Steckel identified the nuclear of this hypothesis and Glanz confirmed it. These hypothesis components include: individual, social environment, physical environment and policy.[13] According to a study Sajeb and et al., the prevalence of inactivity in women of 15-64 age groups was 67.3%. Due to physiological conditions (Pregnancy, Breastfeeding and Menopause) women have more chance than men to be at the risk of diseases associated with inactivity.[2] The aims of this study are to survey physical activity and its effective factors in women's according to the social-ecological model (SEM) and proper planning to increase physical activity of women based on the obtained results.

Material and Methods

This is a descriptive and analytical study which performed on 500 women covered by Ardabil city health centers in 2014. According to a previous study and an estimation of 87% inactivity among the elderly, using a confidence level of 95% (d = 0.05, P= 0.87, z = 1.96) the sample size was calculated to be 261 according to the Cochran formula. It was increased to 2 folds due to cluster sampling, and finally 500 individuals

were investigated. The sample was selected using multi-stage cluster sampling method from 8 Health Centers. The inclusion criteria to this study are having records in the health center, lack of physical disability and limited movement and no disease limiting the physical activity. Exclusion criteria were also individuals disliking to continue to participate in the scheme and not complete the questionnaire. The questionnaire has three parts. The first part including demographic information (e.g., age, number of children, height, weight, BMI, Marital status and education). The second part are International Physical Activity Questionnaire (IPAQ) containing 12 questions measuring physical activity in four field; 3 questions related to leisure and sports, 3 questions related to work-home, 2 questions related to daily work and time spent in a sitting position for 2 question. The questionnaire surveys the intense, moderate and walking physical activity of individuals in last 7 days. After scoring the level of physical activity was calculated and classified. Total of the physical activity in last 7 days measured for metabolic equivalent of task (minutes/week). [14] In this study the physical activity categorized into three groups: 1-walking 2- intense physical activity in which the person breathe faster than normal (e.g., running, riding bike, aerobics, Football, Heavy load carrying, Plow the land, Climbing stairs and …). 3-moderate physical activity: Activities that a person breathe a few faster than normal (e.g. biking and swimming at medium speed, tennis, volleyball, sweeping, light load carrying, cleaning glass…). The Iranian version of IPAQ is a standard questionnaire; the mean of CVI and CVR for this questionnaire have been reported as 0.85 and 0.77 respectively, and its Cronbach's Alpha coefficient as 0.7. [15] Social-ecological model (SEM) includes benefits and perceived barriers to physical activity, self-efficacy physical activity, and perceived social support for physical activity and physical environment for physical activity. The perceived benefits were studied with 29 questions and with 4-level Likert scale (strongly agree, agree, disagree, and strongly disagree). The internal consistency of this method was 0.9 by using Cronbach's alpha coefficient. [16] Perceived obstacles with 14 questions and self-efficacy whit 18 questions were studied using 4-level Likert scale and Cronbach's α coefficients were 0.9 and 0.69 respectively. Perceived social support studied with 5 questions in 5-levels Likert scale (Never, rarely, sometimes, often, and always)and Cronbach's α coefficients were 0.72. [17] The physical environment studied with 8 questions in 5-levels Likert scale (strongly agree, agree, no opinion, disagree, strongly disagree) and Cronbach's α coefficients were 0. 74. [18] After completing the questionnaire, data were encoded and analyzed by SPSS22. Descriptive and univariate statistics were used for analysis (e.g., Frequency, frequency percentage, mean and standard deviation and Pearson correlation).

Results

Total of 500 women aged 14-60 years studied and average (SD) age were 28.62 (7.71) years. 155 women were under diploma education (31%), 194 were diploma education (39%), and 151 had college education (30%). 490 (98%) women were married. 125 (25%) individuals had no child and 208 (41%) of women have one child. In this study, only 4.2 percent of women had more than three children. The average (SD) of BMI were 21/02 (3/41) ranging from 16.94 to 42.91.63.6%of women had BMI in the range of 18/5-25, 6/9% of women had body mass index

less than 18/5, and 12/2% of women had body mass index greater than 30. Spearman correlation coefficients for age and body mass index were 3.0, which indicate with increased age increasing body mass index [Table 1].

Table 1: Frequency (%) of age and body mass index in women referred to Ardabil health centers.

BMI Age	<16.5	16.5-18.5	18.5-25	25-30	>30
<20	8 (15.1)	13 (24.5)	29 (54.7)	2 (3.8)	1 (1.9)
20-25	16 (10.9)	34 (23.1)	88 (59.9)	8 (5.4)	1 (0.7)
25-30	4 (3.3)	18 (15)	83 (69.2)	13 (10.8)	2 (1.7)
30-3.5	3 (3.2)	15 (16.1)	61 (65.6)	11 (11.8)	3 (3.2)
>35	3 (3.8)	5 (6.3)	52 (65.8)	18 (22.8)	1 (1.3)
Total	34 (6.9)	85 (17.3)	313 (63.9)	52 (10.6)	8 (1.6)

Result based on IPAQ questionnaire, showed that the subjects spent on average (SD) 2041 (991) minutes per week in a sitting position. Most time spent in a sitting position on Friday with 313 minutes, and least time spent in a sitting position on Saturday with 289 minutes. The differences between average time spent in a sitting position for different days of the week were not statistically significant (P-value=0/237). Only 13.6 percent of women said they had regular walking program in all days of the week in their leisure time, and 69% of women had no walking program during the week in their leisure time. Other people have had at least one day a week walking program. Average time spent per week for physical activity is given in Table 2.

Table 2: The mean and SD time spent for different physical activity (Minutes per week).

Types of Physical activity		Mean (SD)
Recreation, Sport and Physical activity at Leisure	walking	77 ± 10
	Intense physical activity	9 ± 2
	Moderate physical activity	22 ± 3
Home working, Home maintenance work and Family Care	Intense physical activities in the garden or yard	43 ± 7
	Moderate physical activities in the garden or yard	104 ± 9
	Moderate physical activity inside the home	418 ± 22
Physical activity commute	Using of motor vehicles	130 ± 10
	Walking from one place to another	80 ± 5
Physical activity forrelated work- daily	Intense physical activity	43.01 ± 13
	Moderate physical activity	35 ± 4
	walking	22 ± 5.02

The results of this study showed that the average (SD) scores for perceived barriers to physical activity are 26/87 (4/5) (with a range 14-42), perceived benefits 56/02 (8/05) (31-81),Self-efficacy 27/08 (8/95) (10-54), physical environment 19/35 (7/1) (9-32) and support of friends and family 7/7 (5/01) (1-20). To investigate the relationships between physical activity and the variety of factors affecting the physical activity we used Pearson correlation test at the significant level of 0.05. The results of correlation test showed that between age and walking and intense physical activity is a significant connection (P<0/05). There is a significant correlation between the numbers of children and moderate physical activity (P<0/05). But there was no correlation between BMI and walking, intense, and moderate physical activity; and correlation between perceived barriers and physical activity for walking, intense and moderate physical activity were insignificant (P>0/05). The correlations between

perceived benefits for walking, intense physical activity and Self-efficacy for walking are activity, and correlation between Support of friends and family for walking and intense physical activity are significant (P<0/05) [Table 3].

Table 3. The (P-value) and (r) for model constructs and other variables.

Variables	Walking		Intense physical activity		Moderate physical activity	
	P. value	r	P. value	r	P. value	R
Perceived barriers	0.000	0.001	0.000	-0.016	0.000	-0.008
Perceived benefits	0.000	0.000**	0.010	0.000**	0.000	0.040
Self-efficacy	0.000	0.000**	0.079	0.080	0.000	0.004
Physical environment	0.035	0.095 *	0.000	0.085	0.014	0.000 *
Support of friends and family	0.000	0.000**	0.024	0.000 *	0.074	0.080
BMI	0.000	0.026	0.000	0.009	0.000	0.013
Age	0.033	0.095 *	0.000	-0.004	0.008	0.000 **
Number of children	0.000	0.043	0.000	0.044	0.000	0.000 **

*P<0.05 - ** P<0.01

Discussion

The aim of this study was determination of the status of physical activity and the relationships between factors affecting the physical activity and type of physical activity in women referred to health centers in Ardabil. In our study the mean score of physical activity for women based on IPAQ questionnaire are 984 ± 48 min/week that was assessed as an average level. 37% of the physical activity level for women in this study classified as light physical activity (less than 600 min/week), 60% moderate physical activity (600-3000 mean/week) and 2% intense physical activity. Amount of physical activity in this study was lower than the average Physical Activity of Female Health Volunteers in Rasht city and the moderate physical activity were 61.4% that the level of activity was consistent with our study. [14] In this study, 69 percent of the women in the study did not have any plan for regular activities during the week and were sedentary. However, this issue in a study in Yazd was 4/54%. [6] In this study, older women were more sedentary than the younger ones, but there was no association between age and physical activity. this subject were inconsistent with other studies. [19,20] A study in Canada showed that Physical activity decreased with increasing age. [21] In this study, no significant association was found between BMI and physical activity, but in study of Sanayi and et al. this variable had a significant relationship. [20] The lack of correlation between age and BMI and physical activity levels could be because of low physical activity at all age levels. In this study, women who had a child (or single) were more physically active than women without children. The results of this study showed that from between social-ecological model constructs, the Perceived barriers had no relationship with physical activity. The Perceived benefits construct had relationships with walking and moderate physical activity that in line with the results reported by Tamimi et al. [3] But Norozi did not find direct effect and the impact on self-efficacy has an indirect effect on physical activity. [20] In this study Self-efficacy model with walking and moderate physical activity and Support of friends and family forwalking and

intense physical activity had significant correlations (P<0.05) that are confirmed by other studies [3,14,22] but in norozi study observed no relationship between support of friends and family and physical activity in diabetic women.

Conclusion

Given that physical activity in women in our study was low, we suggest encouraging people to be physically active and to emphasize on different aspects of benefits of physical activity in promotion of the women health. This information can also be used to design educational programs to promote physical activity.

Acknowledgments

Conflict of Interest

All authors disclose that there was no conflict of interest.

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