Physical Activity Levels and Anthropometric Indices in Middle-Aged Women

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ABSTRACT

Introduction: physical inactivity and sedentary behaviors are the fourth leading cause of death in the world and the cause of non-communicable diseases. This study was done to determine the level of physical activity and anthropometric indices among middle-aged women. Method: This cross-sectional study was conducted on 110 middle-aged women in 2018. Cases were selected randomly through cluster sampling method. Data were collected based on a self-reported questionnaire containing demographic information (age, education, occupation, socioeconomic status, marital status, and number of children) and the international physical activity questionnaire. Data were analyzed by SPSS 23 and Kolmogorov-Smirnov and Spearman's correlation tests. A P-value less than 0.01 was considered as significant and p-value less than 0.05 was also synchronous.
Results: among the participants, 34.5% were inactive and 54.5% had poor activity. Moderate activity amount was 7.3% and vigorous activity was 3.6% that was the minimum amount. Physical activity levels of menopause and premenopausal women showed a difference (p=0.001). Women with less BMI were more active. This confirms the relationship between BMI and PA. Conclusion: physical activity should be improved among middle-aged women who need positive effects of physical activity to increase health and well-being.

Key Words: Anthropometric, Indices, Middle-Aged Women.

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INTRODUCTION

Today, physical inactivity and sedentary behaviors are the fourth leading cause of death in the world and the cause of non-communicable diseases such as obesity, diabetes, heart disease, depression, and some cancers [1-5]. Physical activity (PA) plays a very effective role in the health of people and prevention of non-communicable diseases [6]. Along with these effects, PA has been very effective in promoting the health of women, especially the middle-aged women [7]. Women aged 40-60 years old are considered to be middle-aged [8]. PA can help middle-aged women to control the symptoms of menopause, wellbeing, fitness, and prevention of osteoporosis and some cancers [9].

The statistics revealed by the World Health Organization (WHO) shows that the insufficient PA of women in Iran is lower than men (both sexes: 33.5%, men over 18 years old: 24.1% and women over 18 years old: 41.6%) [10]. It seems that middle-aged women have less PA than other ages. They face physical problems due to aging, menopause, and diseases such as musculoskeletal problems as joint pain, menopausal problems as hot flashes, mental problems as mild depression and loneliness, non-communicable diseases as hypertension

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and diabetes [11].

Regular PA controls cardiovascular diseases, diabetes, and blood lipids and prevents osteoporosis. PA has a beneficial effect on maintaining muscle and reducing abdominal fat, stimulating muscle and preventing muscle mass loss [12]. WHO recommends the middle-aged women should do moderate PA for at least 150 minutes a week, intensive PA 75 minutes per week. The duration of PA should be at least 10 minutes long [13]. Lak of PA has clearly been shown to be a risk factor for cardiovascular diseases and other conditions [14]. Less active and less fit people have a greater risk of developing high blood pressure and may increase the risk of certain cancers [15, 16].

Studies show that physically active people are less likely to develop coronary heart diseases than those who are inactive [17]. The study of Fox presented that lack of PA can add to the feeling of anxiety and depression [18]. Thune et al. suggested that physical inactivity may increase the risk of certain cancers [16]. Physically active overweight or obese people significantly reduced their risk for diseases with regular PA [19]. Middle-aged women who are physically active can reduce their risk for falls and improve their ability to do daily activities [20]. WHO recommended inactive people should start with small amounts of PA and gradually increase duration, frequency, and intensity over time. It has developed a new global action plan to help countries scale up policy actions to promote physical activity. It responds to the requests by countries for updated guidance, and a framework of effective and feasible policy actions to increase physical activity at all levels [21]. Measurements of anthropometric indices (BMI, WC, HC, WHR, and WHtR) are non-invasive, inexpensive and easily conducted in a common healthy examination [22]. This study measures the levels of PA and anthropometric indices of studying middle-aged women.

METHOD

All of the Participants recruited randomly through cluster sampling method from 3 clinics across Ahvaz city, covering urban areas completed. Participants aged between 40 and 60 years old. Data were collected from multiple sources at various time points during January-February, 2018. It was decided that the best method to adopt for this investigation was to use IPAQ questionnaires and measuring anthropometric indices. The IPAQ is an internationally accepted and validated questionnaire that is used to measure physical activity. The validity of IPAQ has been tested in over 12 countries for reliability and it had been found to be reliable and valid [23]. Three specific types of activity are mentioned in short form of IPAQ: vigorous-intensity activities, moderate-intensity activities and walking. High, moderate and low are three classifications for those who completed this questionnaire. It is possible to measure by metabolic equivalents of tasks (MET). The MET is a physiological measure expressing the energy cost of physical activities. One MET is equivalent to the rate of energy produced per unit surface area of an average person seated at rest and is equal to 3.5 ml of $o_{2/kg/min}$. The ethical approval for the study was obtained from the Ethics Review Committee of Ahvaz Jundishapur University of Medical Sciences.

The initial sample consisted of 130 middle-aged women, of whom 20 did not complete all of the questions. Baseline demographic information of participants was gathered. The inclusion criteria were being middle-aged and volunteer. To control bias, measurements were carried out by another person. For the purpose of PA measurement, participants were asked to visit the health center to full IPAQ and demographic questionnaire and measuring anthropometric indices. We talked with the participants about how to answer the questions and give them enough time.

Data management and analysis was performed using SPSS 23 (2016). Descriptive statistics frequencies were used for qualitative measurements. Summary statistics of mean, median, standard deviation and percentiles were used for quantitative measurements. The association between measures was assessed using the correlation test and t-test. In this study, there are several sources of error. The main error was a small sample size. Another error is information related to the memory of participants.

RESULTS

110 participants of the population completed and returned the question. To assess PA level, IPAQ questionnaire was used. All participants were between 40 to 60 years old, of whom 105 participants (95.5%) were married and 5 participants (4.5%) were single. The number of postmenopausal women was 70 (63.6%) and 40 women (36.4%) were pre-menopausal. Anthropometric indices of all participants are presented in table 1 and PA levels are shown in table 2.

It can be seen from the data in table 2 that most middle-aged women have low PA. It is apparent from this table that the level of PA needs special attention among middle-aged women. Of the total participants, 38 participants (34.5%) were inactive. 60 participants (54.5%) belonged to the low activity group, 8 (7.3%) was moderately active and 4 (3.6%) had a vigorous intensity activity. Physical activity levels of menopause and premenopausal women showed a difference (p=0.001). There was a significant association between BMI and PA levels (r=0.14, p= 0.001); however, there was not a

significant association between literacy (r=0.15, p=0.09) and age (r=0.04, p=0.65) with PA levels (table 3).

There was a direct and strong relationship between BMI and body mass percentage (r=0.74, p=0.001), waist size (r=0.72, p=0.001) and hip circumference (r= 0.78, p=0.001). BMI did not have any relationship with amount of energy expenditure in last week (r=-0.04, p=0.66), time of physical activity in last week (r=-0.15, p=0.11), age (r=0.05, p=0.54) and waist to hip ratio (r=0.16, p=.08). Correlation analysis was used to show the relationship between variables and PA levels. T-test was used to analyze and compare data. This result is significant at the level of p=0.5%.

Table 1: Anthropometric indices of all participants

Variables	Minimum	Maximum	Mean(SD)
age	40	60	51.7(5.9)
weight	51	120	77.6(12.5)
height	145	178	159.7(6.2)
BMI	20.27	45.8	30.5(4.8)
WC	67	125	94.7(10.2)
HC	88	136	110(10)
WHR	0.7	1	0.85(0.06)
Body fat percentage	24.3	49.6	40.3(5.2)
Energy expenditure	0	2456	183(239)
Time of PA (minute)	0	240	36.2(38)

Table 2: PA levels

Levels of PA	Frequency(percent)
No activity	38(34.5%)
Low-intensity activity	60(54.5%)
Moderate-intensity activity	8(7.3%)
Vigorous-intensity activity	4(3.6%)

Table 3. Comparison of the variables. This result is significant at the level of p=0.5%.

	PA	BMI
WC	R=-0.06, p=0.47	R=0.72 P=0.001
HC	R=0.01 P=0.89	R=0.78 P=0.001
WHR	R=0.15 P=0.1	R=0.16 P=0.08
Body fat percentage	R=-0.09 P=0.3	R=0.74 P=0.001
age	R=0.04 P=0.65	R=0.05 P=0.54
Menopause status	P=0.001	
Energy expenditure		R=-0.04 P=0.66
Marital status	R=0.01 P=0.91	
literacy	R=0.15 P=0.09	

DISCUSSION

This research offers important insights into the physical activity levels of middle-aged women in Ahvaz. The results of this study indicate that 34.5% of middle-aged women have an inactive life and 54.5% of whom have low activity in week. According to WHO guidelines, everybody should consume 1000MET/s/week energy for cardiovascular benefits and 89% of the participants did not meet this minimum standard for cardiovascular benefits. WHO recommends middle-aged women should do a moderate PA for at least 150 minutes a week, an intensive PA 75 minutes per week.

This study produced results which reject the findings of a great deal of the previous works in this field. In Another study conducted by Jalili et al. in Iran, 27.5% of the middle-aged women had a low activity level [24]. The findings of the current study are contradictory with those of the study done by Rava and Pihlak in Europe (2017) who found 17.28% of old women have low activity [25]. It seems possible that these results are due to the increased technology and machining, insufficient education to promote health in middle-aged women in the health centers, lack of proper places for activity and cultural issues in this region.

However, with a small sample size, caution must be applied. The main limitation of the study is the self-reported nature of the level of physical activity that results in unrealistic results for interpretation. The application of the short form of IPAQ instead of the long form could have entered to limited evaluation of physical activity.

Therefore, it is likely that such relationships exist between menopause and PA. Menopause women had less activity. Menopause problems can justify this difference such as lumbar and leg and joint pain, depression and being alone. It was a significant association between BMI and PA level. Women with less BMI were more active. This confirms the relationship between BMI and PA. Education, age and marriage had no significant relationship with the level of PA. Further research should

be done to investigate the reasons for low activity of middle-aged women.

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