

Health-Related Quality of Life in Iranian Women with Different Levels of Physical Activity

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Abstract

Purpose: One of the most significant current discussions is the effect of different levels of physical activity on health-related quality of life (HRQOL), but there have been no studies in Iran which investigate this issue. The aim of this study was to investigate the relationship between the level of physical activity and HRQOL in Iranian women.

Methods: This was an analytical cross-sectional study conducted from October 2010 to January 2011 in Karaj's gymnasiums. We selected gymnasiums using simple randomized sampling. The validated Persian short form 36-item HRQOL questionnaire version 2.0 (SF-36 v2) and the short form of the International Physical Activity Questionnaire were used for data collection. Based on IPAQ, participants were classified into two groups: one with a high level of physical activity (N=240) and another with a moderate level (N = 120).

Results: The group with a high level of physical activity had significantly higher vitality scores ($P=0.01$) and lower role limitation-physical scores ($P=0.02$) than the group with a moderate level. The high level of physical activity was associated with considerably higher scores in general health (73.94 ± 0.99 vs. 70.82 ± 1.33) ($P=0.06$) and mental well-being (73.94 ± 1.18 vs. 70.88 ± 1.82) ($P=0.1$) domains than moderate level.

Conclusions: It seems that the high level of physical activity, compared with the moderate level, tends to have positive association with more domains of SF-36 v2.

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INTRODUCTION

Health promotion and protection through healthy nutrition and physical activity is the overall goal of the global strategy of the World Health Organization. One of the main objectives of this strategy is developing, strengthening, and implementing global, regional, and national policies as well as plans for increasing physical activity^[1].

The American College of Sports Medicine and the American Heart Association recommend that all healthy adults (aged 18 to 65) participate in moderate-intensity physical activity for a minimum of 30 minutes five days per week or vigorous-intensity physical activity for a minimum of 20 minutes three days per

week or the combination of them. Because of the dose-response relationship between physical activity and health, further benefits may be acquired by increasing the minimum amounts of recommended physical activity^[2].

There is a linear relationship between physical activity and health status^[3]. For instance a moderate increase in physical activity results in health advantages^[4].

Cross-sectional studies show a consistent positive association between physical activity level and HRQOL. Randomized controlled trials and cohort studies tend to show this association, but limited evidence has prevented a decisive statement about the essence of this association^[5].

Factors affecting the level of physical activity or HRQOL should be considered during the investigation of the relationship between the level of physical activity and HRQOL. For example an inverse relationship between age and the level of physical activity has been shown [6]. And the findings of a study on 18-year-old to 30-year-old adults show that marital status is inversely related with moderate-to-vigorous physical activity (MVPA) and unemployed adults have greater MVPA [7].

Region, gender, current job, age, current marital status, highest level of education and total income of family per month affect at least one dimension of SF-36 [8]. Unemployment and lower income are predictors for poor HRQOL [9].

Populations may benefit from the evaluation and promotion of exercise and physical activity through a better quality of life and health effects [10].

The investigation of the relationship between the level of physical activity and HRQOL within different populations, with regard to factors affecting this relationship, is an important issue for health policy making. In our country there have been no studies examining this relationship. Considering the minimum physical activity recommended for promotion and maintaining adult health by ACSM and AHA, we decided to study on people with at least a moderate level of physical activity (based on categorical scoring protocol of IPAQ) and because the women's health is an important factor for family and social health improvement, we decided to conduct our study on women. The aim of this study was to investigate the relationship between the level of physical activity and HRQOL in women.

METHODS AND SUBJECTS

This was an analytical cross-sectional study. The target population included women who were exercising in gymnasiums. Data were collected from October 2010 to January 2011 in Karaj. Fourteen gymnasiums (of seventeen gymnasiums) were selected using simple

randomized sampling; we then selected participants who had inclusion criteria using systematic randomized sampling in each gymnasium.

The inclusion criteria were as follows: performing moderate-intensity exercises for a minimum of 30 min, 3 days a week, being literate and being 18–65 years old. The exclusion criteria included having a low level of physical activity. Informed consents have been obtained from participants and the questionnaires were filled out by themselves after they agreed to participate in study. Ultimately, 360 people participated in this study (of whom forty-eight, were coaches). We used the self-administered short form of the International Physical Activity Questionnaire to determine the level of physical activity. This questionnaire was designed to assess physical activity and its validity and reliability have been demonstrated [11]. The data were rated according to the IPAQ scoring protocol [12] with one exception; If in one or more intensity categories, time but not days of physical activity were reported or vice versa, that subject was recoded as having spent zero time in that intensity category. IPAQ categorical scoring protocol classifies the level of physical activity into three levels: mild, moderate, and high [12]. This categorical scoring protocol was used to classify participants into two groups: one with a high level of physical activity (N=240) and another with a moderate level (N=120). We used a validated and reliable self-administered Persian short form 36-item HRQOL questionnaire version 2.0 (SF-36 v2) [13] to assess HRQOL. The utility of this questionnaire has been approved for general and specific populations [14]. The SF-36 v2 questionnaire has eight domains (general health, vitality, physical functioning, social functioning, bodily pain, mental well-being, role limitation-physical, and role limitation-mental). If at least half of the items of each of the eight domains were filled out by participants (“half item rule”), their scores were calculated. The scores of the domains were in the range of 0 to 100, and higher scores represented better perceived HRQOL. Socio-demographic data were extracted from socio-demographic forms.

Data were analyzed using SPSS version 16 (SPSS Inc. Chicago, IL, USA). The *t*-test and chi square were conducted on the data. Statistical significance was set at $P=0.05$.

Table 1: Socio-demographic characteristics of participants

Characteristic		Physical Activity Level		OR (95%CI)	P value
		Moderate N (%)	High N (%)		
Marital status	Married	80 (66.7)	147 (61.2)	0.79 (0.49-1.25)	0.3
	Single	40 (33.3)	93 (38.8)		
Having children	Yes	62 (51.7)	111 (46.2)	1.24 (0.8-1.92)	0.3
	No	58 (48.3)	129 (53.8)		
Employment status	Employed	18 (15.5)	63 (26.8)	0.5 (0.28-0.89)	0.02*
	Unemployed	98 (84.5)	172 (73.2)		
University education	Yes	41 (35.3)	99 (42.5)	0.74 (0.46-1.17)	0.2
	No	75 (64.7)	134 (57.5)		

* Significant at level <0.05 / OR: Odds Ratio; CI: Confidence Interval

This research was approved by the Tehran University of Medical Sciences.

RESULTS

Descriptive statistics were calculated for the participants (Table 1). The mean (SD) age in the group with a high level of physical activity was 29.1 (9.12) years, and that in the group with a moderate level was 30.5 (9.72) years ($P=0.2$).

In the group with a high level of physical activity, the vitality domain scores were significantly higher ($P=0.01$) and the role limitation-physical domain scores were significantly lower ($P=0.02$) than those in the group with a moderate level (Table 2). Employment status was associated with the level of physical activity, but vitality ($P=0.7$) and role limitation-physical ($P=0.3$) domain scores are not significantly different between employed and unemployed women.

DISCUSSION

The current investigation was designed to examine the relationship between the level of physical activity and HRQOL in Iranian women who exercise in gymnasiums. Our findings show that high level of physical activity in comparison with a moderate level is significantly related to higher vitality scores and lower role limitation-physical scores. Our findings also show considerable higher scores of general health and mental well-being domains in women with a high level of physical activity than in women with a moderate level, although these differences are not statistically significant.

The 3-year follow-up of a study in France showed an increase in leisure time physical activity associated with higher scores of physical functioning, mental health, and vitality domains of HRQOL in men and women as well as the social functioning domain only in women [15]. In one uncontrolled clinical trial that was conducted by Kalling et al between 2001–2003, after a

Table 2: Mean and standard error of SF-36v2 domains scores

SF-36 Domains	Level of physical activity		P-value
	High	Moderate	
General health	73.94 (0.99)	70.82 (1.33)	0.06
Mental wellbeing	73.94 (1.18)	70.88 (1.82)	0.1
Vitality	72.03 (1.10)	66.94 (1.69)	0.01*
Physical functioning	84.62 (1.22)	83.90 (1.75)	0.7
Bodily pain	73.34 (1.37)	74.29 (1.86)	0.7
Role limitation-mental	66.97 (1.59)	69.06 (2.36)	0.4
Social functioning	76.51 (1.27)	76.45 (1.91)	1
Role limitation-physical	64.85 (1.49)	70.72 (2.07)	0.02*

* Significant at level <0.05 / SF-36v2: 36-item HRQOL questionnaire version 2.0

prescription of physical activity, the intended-to-treat analysis revealed a significant increase in the level of self-reported physical activity and the scores of all domains of SF-36 except for physical functioning, which was borderline ($P=0.053$)^[16]. Wollin et al assessed 40-year-old to 67-year-old American women and showed that in women who increased their physical activity, scores of HRQOL improved^[17]. In a cohort study on the Spanish, Sanchez-Villegas et al investigated the association between change in leisure time physical activity level and HRQOL and showed that an increase in leisure time physical activity during an 8-year follow-up was associated with better scores of SF-36 domains, particularly the mental domains^[18]. Since these studies show the impact of increasing the level of physical activity on HRQOL, we used them for comparison with our study findings.

The baseline levels of physical activity between population participated in our study (the minimum level of physical activity in our study was moderate) and those who participated in these studies are different and this may be one reason for the difference found in our findings in comparison with the findings of these studies. Different socio-demographic characteristics and baseline health status between populations may be another reason for this difference. Moreover, the lower role limitation-physical scores in women with a high level of physical activity compared with women with a moderate level may be due to possibly increased rate of injury in this group, but further studies are needed to investigate the cause of this significant negative relationship. The current study had some limitations. One of them was related to the cross-sectional design of our study and this results in making the determinations of cause and effect impossible. In this study the level of physical activity was estimated using the self-reported questionnaire and there may be an inaccurate estimation of the physical activity level and recall bias. This is another limitation of this study.

Since more convenient access to the group with a high level of physical activity could be obtained by referring to gymnasiums, we restricted our study to these places. Therefore the baseline characteristics of participations may possibly be biased, and this leads to the result that the findings under such a setting may not be sufficiently generalizable to all women and this issue makes another limitation of the current study. The last limitation was disregarding other covariates such as outcome, chronic disease, and chronic condition that can affect the relationship between physical activity and HRQOL.

CONCLUSION

It seems that the high level of physical activity tends to have positive association with more domains of SF-36 v2, in comparison with the moderate level. Findings of this study enlighten the need for future studies to clarify the relationship between the level of physical activity and HRQOL more accurately, using larger sample size. Ultimately, we suggest conducting this study among different populations and different groups such as men and other age groups (children and elderly). Further studies are also recommended to examine the causal relationship between physical activity level and HRQOL, using longitudinal designs.

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Conflict of Interests: None

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