

# Relationship between physical activity and quality of life in pregnant women

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## ABSTRACT

**Background:** Physical activity is one of the important factors in predicting the quality of life, which varies between different cultures and countries. The aim of this study was to determine the relationship between physical activity and the quality of life in pregnant women.

**Materials and Methods:** This cross-sectional study was carried on 380 pregnant women who were admitted to Isfahan healthcare centers and Shahid Beheshti Hospital, by using the two-stage sampling method (cluster convenience) in 2013. Demographic/pregnancy characteristics, physical activity (36Q) and prenatal quality of life questionnaires (26Q) were completed by the participants. The statistical analyses were performed with various statistical tests such as Student's *t*-test, one-way analysis of variance (ANOVA), Pearson correlation coefficient, linear regression, and SPSS statistical software version 16.

**Results:** The findings showed that 91.6% of the subjects were 20–35 years old, 69% had a gestational age of 29–37 weeks, 60% had their first pregnancy, 98% had poor physical activities, and 43% had a good quality of life. There was also a negative correlation between physical activity and social support ( $P = 0.04$ ,  $r = -0.11$ ).

**Conclusions:** As the results show high percentage of poor physical activity and quality of life, and also the relationship between these variables, more attention should be dedicated to this problem. Furthermore, structured programs and educational approaches are also needed for pregnant women.

**Key words:** Physical activity, pregnancy, quality of life

## INTRODUCTION

Pregnancy is one of the most important stages of a woman's life. For most women, this is a period of joy, but it is often a stressful period associated with physiological and mental changes.<sup>[1]</sup> These changes could have a significant impact on the severity of physical activities for women, given that lifestyle coupled with lack of exercise has been causing health problems in many countries.<sup>[2]</sup> Proper and adequate physical activity during pregnancy has a major impact on mother's health and fetal growth. Recent studies have shown that following an appropriate exercise program with moderate intensity by women with normal pregnancies has led to improvement in maternal health without harming the developing fetus. However,

unfortunately, pregnant women usually choose sedentary lifestyle.<sup>[3]</sup> Regular physical activities in the first 6 months of pregnancy can decrease the incidence of cesarean section in pregnant women.<sup>[4]</sup> Shortening of the second stage and quick and easy delivery are the effects of physical activities with appropriate intensity during pregnancy.<sup>[5]</sup> Among the other effects of physical activity in pregnancy are: It creates a sense of well-being, increased self-esteem, improved body image, reduced anxiety and depression, and quick and easy adjustment to pregnancy-induced changes.<sup>[6]</sup> In the study of Ziaee, the results showed that 61% of pregnant women had physical activities.<sup>[7]</sup> Meanwhile, the study of Esmailzadeh showed that 70% of pregnant women did not have any physical activity.<sup>[8]</sup> Physical activity is one of the important factors affecting the quality of life. Currently, it is increasingly specified that evaluation and measurement of quality of life provides essential information in connection with the description of health status in different populations.<sup>[9]</sup> Quality of life includes different dimensions such as health, physical comfort, mental and social dimensions. Each one has two subjective and objective measurable aspects. However, the visual aspect is important in describing the individual health, but the subjective expectations and perceptions indicate the real experienced life quality. Quality of life during pregnancy is measurable. This measurement is important in planning for the care of mothers and

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babies and also in understanding the need of care by governmental policymakers and healthcare organizations. Results of the studies of Kasik-Miller and Hueston showed that physical problems were observed during pregnancy, such as more body aches, poor physical functioning, and more functional limitations, whereas specific psychological issues were not reported.<sup>[1,10]</sup> Many studies have focused on the investigation of the benefits of physical activity on the promotion of health and quality of life in different diseases such as cardiovascular diseases, osteoporosis, kidney diseases, and liver diseases.<sup>[11]</sup> It seems that reviewing the relationship between physical activity and its impact on the development of positive perceptions of life and promoting the quality of life in non-patient population has received less attention. Physical activity and quality of life in different societies and cultures have different incidences and this issue that pregnancy is the important stage of women's lives; therefore, paying more attention to this period has been one of the top priorities of World Health Organization (WHO). Until now, such a study has not been carried out in Iran. Therefore, this study was conducted with the aim of determination of the relationship between physical activity and quality of life in pregnant women who were admitted to Isfahan urban health centers and Shahid Beheshti Hospital in 2013.

## MATERIALS AND METHODS

This cross-correlation study was performed on 380 pregnant women in Isfahan in 2013 after obtaining approval from the ethics committee of the university and the letter of introduction from the Isfahan Faculty of Nursing and Midwifery for presenting to the authorities of health centers and the desired hospital.

Subsequently, the researcher referred to each of the selected hospitals and health care centers, introduced herself, and stated the objectives of the study. She identified eligible individuals based on a checklist of inclusion criteria. After providing written consents, the subjects completed tools. The sample size was calculated by using Cochran's formula. The estimated variance was calculated as the highest with  $S = 0.5$  and the calculations were based on a confidence level of 0.95, error of 0.05,  $t = 1.96$ , and  $d = 0.5$ . Based on the above data and the statistical population size (80,000 people), by using Cochran's formula, finally, the analysis was performed on 380 subjects. In order to perform sampling, from each of the health centers (1 and 2) and Shahid Beheshti Hospital, the sample was selected as a cluster and then from each cluster, by using a table of random numbers, the required samples were selected by convenience sampling method randomly and proportional to the center's population (120 from each of the health centers and 140

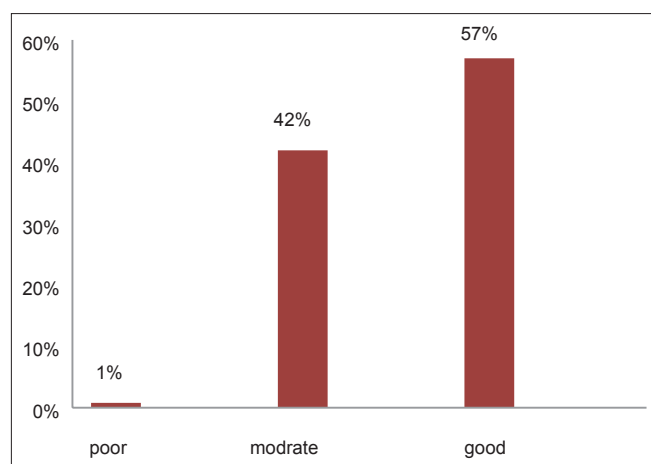
from Beheshti Hospital). The eligible subjects who met the inclusion criteria completed the demographic/pregnancy, physical activity, and quality of life questionnaires. Exclusion criteria were: Disorders of pregnancy such as cerclage surgery (closure of the cervix), history of premature rupture, history of preterm delivery, repeated bleeding in the second quarter, placenta previa, intrauterine growth restriction, high blood pressure during pregnancy, cardiovascular, lung, and epilepsy diseases, type I diabetes, double and multiple pregnancies, no adequate weight gain during pregnancy, and the risk of medical illness. The physical activity during pregnancy questionnaire was designed by Chyns Taber in 2004 and contained 36 questions with six values and seven dimensions. The questionnaire dimensions included: Sedentary activities (5 questions), low intensity (9 questions), moderate intensity (13 questions), high intensity (2 questions), activities related to housing (12 questions), activities related to job (5 questions), and activities related to exercises (9 questions). In order to calculate each of these dimensions in this questionnaire, the total time spent for each of the activities was multiplied by the total intensity of that activity. To facilitate grading, a score of 2 was considered for low-intensity activity, 3 for moderate-intensity activity, and a score of 4 for high-intensity activity. For easier evaluation and interpretation, the total score in this questionnaire was converted to 100. Thus, scoring was done in the following way: For the option of none, the score of zero was considered; a score of 0.25 was given for the option of less than half an hour per week or daily, score of 0.75 for the option of half an hour up to 1 h, score of 1.5 for the option of 1–2 h, score of 2.5 for the option of 2–3 h, and a score of 3.5 for the option of more than 3 h. Therefore, with a maximum of 3.5 and a minimum of zero, the severity of each activity was calculated as the maximum calculated score minus the minimum score multiplied by 100 and divided by the sum of scores, and the score was converted to 100.<sup>[12]</sup> Quality of life questionnaire included 26 questions based on a 5-point Likert's scale, scored from 1 (very bad) to 5 (excellent). It included the four dimensions of physical (7 items), mental (6 items), social (3 items), and environmental (8 items), and two questions related to general quality. Cut-off point of this tool is 19, with a total score from 26 to 130.<sup>[13]</sup> The validity of these questionnaires was determined by content validity, demographic/pregnancy questionnaire, physical activity questionnaire, and the Persian version of quality of life. This tool was created by reading the most recent books and articles on the theme of study. Then, it was provided to a number of scholars and professors for evaluation. The World Health Organization's Quality of Life (QOL) questionnaire was designed in 1996. Reliability of this questionnaire was reported as 0.81. The reliability of its dimensions was as follows: Physical

health (0.85), mental health (0.84), social support (0.65), and environmental health (0.73).<sup>[13]</sup> The validity of physical activity during pregnancy questionnaire was reported as 0.78. The reliability of its dimensions included: Sedentary activities (0.79), low-intensity activity (0.78), moderate-intensity activity (0.82), high-intensity activity (0.81), housing-related activities (0.860), job-related activities (0.93), and exercise-related activities (0.83).<sup>[14]</sup> Based on the checklist and in order to select the required number of subjects, the researcher chose the eligible individuals satisfying the inclusion criteria. Informed consent forms were placed at their disposal. Then, they were asked to complete the questionnaires through interviews (by the researcher). All these steps took only up to 15 min. Inclusion criteria included giving informed consent to participate in the study, being Iranian, resident of Isfahan city, and having a gestational age of 28 weeks and above. The collected data were analyzed by using SPSS statistical software (version 11.5 SPSS Inc., Chicago, IL, USA), Student's *t*-test, one-way analysis of variance (ANOVA), Chi-square test, correlation coefficient, and linear regression model.

## RESULTS

The following results were obtained: 91.6% of the studied subjects ( $n = 348$ ) were 20–35 years old; 59% ( $n = 224$ ) had a gestational age of 29–37 weeks; for 60% ( $n = 228$ ), it was their first pregnancy; 45.3% ( $n = 172$ ) had a diploma level of education; and 45% ( $n = 370$ ) were in moderate and good economic situation. In addition, the results showed that most of the subjects had mild physical activity [Table 1].

Figure 1 shows that most of the studied pregnant women reported good overall quality of life scores.



**Figure 1:** Frequency distribution of the studied pregnant women based on the overall level of quality of life

Among the dimensions of quality of life, the highest mean scores were related to social and environmental dimensions [Table 2].

Table 3 shows that most of the pregnant women had good quality of life in the social dimension.

The results of Pearson correlation coefficient test showed that there was a negative correlation between physical activity and the dimension and overall score of life quality, only in the social dimension. By increasing the social dimension's quality of life score, the physical activity was decreased ( $P = 0.04$ ,  $r = -0.11$ ). Physical, mental, and environmental dimensions had no correlation with physical activity score ( $P = 0.22$ ,  $P = 0.63$ ,  $P = 0.11$ ).

## DISCUSSION

The results of the present study showed that approximately 98% of the pregnant women had mild physical activities. In the studies conducted in America and Canada, the results showed that only 3–15% of women had physical activity with energy consumption during pregnancy.<sup>[15–17]</sup> However, according to the European and American guidelines, the

**Table 1:** Frequency distribution of the studied subjects based on the intensity of physical activity

Intensity of activity	<i>n</i>	%
Mild (0-33)	375	98.7
Medium (34-66)	5	1.3
Severe (67-100)	0	0
Total	380	100

**Table 2:** Mean, SD, and minimum and maximum of the four dimensions of quality of life in the pregnant women

Dimensions of quality of life	<i>n</i>	Minimum	Maximum	Mean	Standard deviation
Physical	380	5.71	20	14.29	2.4
Mental	380	6.67	19.33	13.97	2.6
Social	380	6	20	19.95	2.4
Environmental	380	9	19.5	14.99	2
Overall score	380	8.83	19.03	14.32	1.9

SD: Standard deviation

**Table 3:** Frequency distribution of the studied pregnant women based on the levels of four dimensions of quality of life

Dimensions of quality of life	<i>n</i> (%)			
	Physical	Mental	Social	Environmental
Poor	9 (2.4)	19 (5)	1 (0.3)	13 (3.4)
Medium	193 (50.8)	187 (49.2)	160 (42.1)	220 (57.9)
Good	178 (46.3)	174 (45.8)	219 (57.6)	147 (38.7)

minimum duration of moderate-intensity physical activity during pregnancy should be approximately 150 min per week. Evidences have indicated that moderate-intensity physical activity can be effective on the health of pregnant women,<sup>[18]</sup> whereas most of the pregnant women in this study had mild physical activity. The study of Domingues and Barros showed that only 10.5% of pregnant women in the first trimester, 8.5% in the second trimester, and 6.5% in the third trimester had physical activities.<sup>[19]</sup> The results of Donahue *et al.*'s study showed that most of the pregnant women in the USA had not achieved the recommended amount of physical activity (30 min of moderate-intensity activity per week).<sup>[20]</sup> However, differences in culture and society can be effective on the amount and the model of physical activity, but it was observed that the pregnant women in this study and pregnant women in the study of Donahue *et al.* had not enough physical activity. Special circumstances of pregnancy and pregnant women's tendency for taking more care of themselves could be the possible reason for this issue. Studies of Haakstad<sup>[21]</sup> and de Sales Tavares<sup>[22]</sup> demonstrated that physical activity of women during pregnancy showed a significant decrease compared with that before pregnancy. The results of the present study show that the mean score of quality of life was approximately 14 in pregnant women. It was almost the same value as reported in the study of Mirmohammadaliei *et al.* that was conducted in Tehran.<sup>[2]</sup> Moreover, in the present study, only 43% of women had a good quality of life, whereas the study of Azizi *et al.* (2011) in Kermanshah indicated that 27.5% of pregnant women had a good quality of life.<sup>[23]</sup> The study of Abbaszadeh in Kashan also revealed that the highest quality of life score was obtained from mental and social support dimensions of pregnant women, which was roughly in line with the present study wherein higher scores were obtained by the participants in physical and social dimensions.<sup>[24]</sup> Social support from family and friends can be effective on the physical activity levels among pregnant women, whether through direct contact or by telephone. Thus, increasing the social support will increase the amount and intensity of physical activity of pregnant women. In the present study, there was a relationship between physical activities of pregnant women and only one of the important aspects of quality of life (social support). But unlike other studies, this kind of relationship was indirect and by increasing social support, physical activity was reduced. Different types of social support in different cultures and communities can be cited as one among the reasons for the indirect nature of this relationship. In the Iranian community, women will be faced with excessive consideration of their family or husband in perinatal period. This issue makes the pregnant women unable to do many things, even when having pregnancy complications such as nausea, vomiting, or back

pain. In addition, considering that most of the women in today's society tend not to become pregnant, pregnancy is regarded as a crucial and dangerous phenomenon that has an adverse impact on women's perspectives, especially on the families. Therefore, pregnant women are exposed to many dangers and try to gain social support from others. The limitations of this study are: (1) Despite the assurances of the researcher about the confidentiality of information, the participants did not want to answer correctly and (2) individual, personal, genetic, and cultural differences among the participants had an impact on the intensity of physical activity and quality of life. This issue was relatively controlled by using random sampling method and also taking into consideration two public health centers in Isfahan. Therefore, it is recommended to conduct more researches by the future researchers to investigate other relevant factors related to physical activity and quality of life in pregnant women. It is essential to pay more attention to promotion of physical activity, quality of life during pregnancy, and emphasize on the important role of culture in the societies in promoting physical exercises and improving quality of life. Therefore, it is recommended to carry out further researches in this field in different societies.

## CONCLUSIONS

Results showed that there was a relationship between physical activity and social support, one of the four dimensions of quality of life. In our society, there has been less interest to the concept of quality of life and the factors affecting it, including physical activity. Recognizing these factors will help the community healthcare providers to organize activities for health promotion, physical activity, and promotion of quality of life. Midwives, as one of the primary healthcare practitioners, have an important role in order to achieve the objective of health for everyone, especially pregnant women.

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