

Physical Activity during Pregnancy and its Relationship with the Functional Status of Primiparous Women Six Weeks after Childbirth: A Cohort Study

MOJGAN MIRGHAFOURVAND¹, SAKINEH MOHAMMAD-ALIZADEH-CHARANDABI², MOHAMMAD ASGHARI JAFARABADI³,
SEDIGHEH SOLTANPOUR⁴, VIDA AGHAMIRI⁵, MARZIEH BAGHERINIA⁶

ABSTRACT

Introduction: The transition to motherhood is a major life event that affects all aspects of psychosocial functioning.

Aim: The aim of this study was to determine the relationship between physical activity during pregnancy and postpartum functional status.

Materials and Methods: This cohort study was carried out on 165 Iranian women 18-35 years old referred to health centers of Tehran from April 2013 to March 2014. Pregnant women were selected by proportional distribution to each center. International Physical Activity Questionnaire (IPAQ) was completed by pregnant women in 28-34 weeks and they were categorized into two groups; low (68 patients), and moderate and high (97 cases) groups, according to the physical activity level. Follow-up in both groups continued until 6 weeks postpartum and Inventory of Functional Status after Childbirth (IFSAC) was completed at the

end of six week postpartum period. Independent-t test was used for data analysis.

Results: No statistically significant difference was observed between the two groups in terms of sociodemographic characteristics ($p>0.05$). In the low physical activity group, the mean (standard deviation) of the total score of physical activity was 1680.9 (2204.7), and in the moderate and high group, it was 3182.6 (3946.5). Two groups were not significantly different in terms of the mean score of functional status ($p=0.279$).

Conclusion: The results of the present study showed that physical activity during the third trimester of pregnancy has no significant effects on functional status after childbirth in primiparous women. Appropriate strategies should be adopted to encourage women to participate in physical activities so as to promote maternal and neonatal health during pregnancy and after childbirth.

Keywords: Functional status, Physical activity, Postpartum period, Pregnancy

INTRODUCTION

As the most significant life-changing event in a woman's life, pregnancy and motherhood can reduce certain health-promoting behaviours, such as physical activity [1]. Physical activity refers to any bodily movement performed by the skeletal muscles that requires energy and involves any type of exercise or lifestyle-related activity. Physical inactivity or the lack of regular exercise is the fourth main cause of death across the world that accounts for 6% of all deaths [2]. Regular exercise plays a great part in physical and psychological health, while physical inactivity, especially in pregnant women, causes health problems [3].

Regular physical activity has been recommended both during pregnancy and after childbirth in order to promote the health of the mother, fetus and newborn [4]. Given the increase in mental and physical needs during pregnancy, pregnant women are particularly prone to reduced physical activity [1]. Physical activity before and during pregnancy has protective effects against pre-eclampsia [5], gestational diabetes [6] and mood disorders [7]. Borodulin K et al., examined the amount, intensity, duration, frequency and types of physical activity at weeks 17-22 and 27-30 weeks of pregnancy in 1482 pregnant women and reported that domestic and household activities and entertainment and leisure time activities make up a great portion of pregnant women's physical activity [8]. In a review study on physical activity during pregnancy, Schlussek MM et al., revealed that light- to moderate-intensity activities in women during pregnancy have a positive effect on maternal and neonatal outcomes [9]. Postpartum recovery may involve physical and psychological

aspects [10]. It is important to achieve optimal performance during the postpartum period for both mothers and babies to regain and maintain optimal health [11].

Functional status is defined as "a multidimensional concept encompassing the mother's readiness to assume infant care responsibilities and resume self care, household, social and community, and occupational activities" [12]. Women assume many roles in their lifetime, with motherhood being among the most difficult and time-consuming [13]. The maternal role may require the mother to reorganize her life and reassign priorities to handle these responsibilities [14]. Evaluating functional status can be effective for investigating postpartum depression in women [15]. A study by Barkin JL et al., aimed to assess the functional status of women with low income levels, and revealed that a high level of postpartum depression was associated with a decline in women's functional status [16]. A study by Mirghafourvand M et al., in Iran reported a relationship between functional status in postpartum women and maternal self-efficacy for baby care [17].

Given the importance of improving postpartum functional status in women for the mother and the newborn [18] and that the services provided for mothers after childbirth are mainly concerned with physical care [19], identifying the factors that accelerate the improvement of functional status in women can be helpful. Moreover, improving physical activity is a strategy that can be effective in promoting women's health after childbirth [20]. Physical activity can also reduce the symptoms of depression after childbirth, improve mood disorder and increase the level of energy and endurance both

during pregnancy and after childbirth [21]. Physical activities can be helpful in fighting the physical and mental problems prevailing after childbirth as well [22]. Given the short and long-term benefits of physical activity on health, examining behaviours related to physical activity during pregnancy and after childbirth is essential [23,24]. The present study was conducted to determine the relationship between physical activity during pregnancy and postpartum functional status.

MATERIALS AND METHODS

Study Population

This cohort study was carried out on two groups of primigravid pregnant women with low-intensity physical activity (n=68) and moderate or high-intensity physical activity (n=97) presenting to healthcare centers affiliated to Tehran, Shahid Beheshti and Iran universities of medical sciences at six municipal districts of Tehran, Iran, from April 2013 to March 2014. Inclusion criteria for this study were primigravid women, age 18–35 years, singleton pregnancy, gestational age 28–34 weeks, residing in Tehran and willing to participate in the study. Women with medical complications during pregnancy or during the postpartum period were excluded from this study.

The sample size was calculated as 66 based on a study conducted by MacDonald IB on the relationship between physical activity and postpartum functional status with an odds ratio of 3.2, a confidence interval of 95% and a test power of 80% using G-Power software [20]. The effect size also had to be calculated because of the cluster sampling used, and its minimum recommended value was 2; the sample size needed for the study was calculated as 132, but was increased to 165 to account for a 25% potential sample loss. The final sample size in each group was calculated after the pilot study on fifty pregnant women. Since almost 14% of the participants had light physical activity in the pilot study, and since this study examines three levels of physical activity, and given the objectives of the study, i.e., comparing light physical activity with moderate and vigorous physical activity, and in order to maintain balance among the samples in the two groups, and to reach the required test power, sampling continued until 55 cases of light-intensity physical activity ($165/3=55$) were selected, which was increased to 68 to take account of a potential attrition of 25%.

Sampling

Sampling began when the study proposal was approved and an ethics code was obtained from the Ethics Committee of Tabriz University of Medical sciences (ethical code: 91232). Two-stage cluster sampling was performed for selecting pregnant women from the healthcare centers present in six areas of Tehran, the capital of Iran. The total number of centers in these six areas was 88. First, one fourth of centers (n=22) were selected randomly through website of www.random.org. Sampling was conducted in health centers in Tehran (capital of Iran) that covered at least 12 eligible women. Moreover, these centers were covered by the Tehran University of Medical Sciences and Iran University of Medical Sciences. The number of women during the third trimester of pregnancy (28–34 weeks) selected from each health-care center was stratified according to the sample size to be included in the study. The names of eligible women were listed, and they were numbered. The final participants to be included in the study were randomly selected based on random number generator via website of www.random.org for each health center. At the next stage, the researcher contacted the selected women and assessed the inclusion and exclusion criteria by which those women having eligible criteria were invited to cooperate in the study. In addition, they were provided with the researcher's telephone number for coordinating when to be present in the health centers. Information about the study, methodology and confidentiality matters was provided to participants by researcher.

After presenting to the health centers in the first visit, the participants were asked whether or not their physical activity in the current week had been the same as that during other weeks. If yes, they were fully briefed on the study objectives, value, results and methods and the confidentiality of the data, and if agreeing to participate in the research, they submitted their informed consent form and filled out the physical activity questionnaire. In case the required sample size for each group was not reached at this stage, the process continued by random sampling (exactly as in the first step) until the required sample size was reached. The women were then ultimately placed in the two groups (n=68 for low physical activity and n=97 for moderate and high physical activity). The research samples were followed up until week 6 postpartum and completed the functional status questionnaire in a face-to-face visit with the researchers at the end of sixth week.

Data Collections

Data were collected using demographic, functional status, and International Physical Activity Questionnaires. The two mentioned questionnaires are standard measures and the psychometric properties of them have been confirmed in Iran. Moreover, all mentioned questionnaires were completed in Persian language.

The researcher-designed socio-demographic questionnaire included items on maternal age, mother's body mass index (the first trimester's weight of participants based on their prenatal care records), mother's education, mother's occupation, income, family member, infant feeding and home status.

The International Physical Activity Questionnaire (IPAQ) developed in 1998 in Geneva measures physical activity status. The validity and reliability of this tool have been confirmed in 12 countries. This questionnaire has also been used in many studies conducted in Iran and its validity and reliability have been confirmed [25]. One study reported the reliability of the questionnaire as 0.86, which is favorable [26]. The present study used a short version of the IPAQ, which contains seven items (two on intense physical activities, two on moderate physical activities and two on light physical activities plus one item on physical activity in the sitting position). To assess physical activity levels, the participants were asked to recall the number of minutes during the previous week they engaged in physical activity in each of five categories: 1) household; 2) occupational; 3) self-powered transportation; 4) leisure-time; and 5) sedentary. The items asked about the frequency of physical activity over the last seven days, and any activity lasting less than ten minutes was excluded. The IPAQ was scored according to the following method. Persons who do not meet the requirements of moderate activity level are classified as low physical activity level. Individuals are classified as moderately physically active if they either engage in at least 5–6 days/week of moderate-intensity activity and/or, walk for at least 30 minutes/day, or engage in a combination of activities during the week to achieve a minimum of 600 MET-minutes/week, or engage in 3 or more days of vigorous-intensity activity for at least 20 minutes per day. Individuals are classified as highly physically active if they engage in vigorous-intensity activity on at least 3-days/week and reach a minimum of 1500-MET minutes/week, or if they engage in 7-days of combined activity resulting in a minimum of 3000-MET-minutes/week [27]. The questionnaire was validated in Iran by Moghaddam MB et al., and its Cronbach's alpha was reported equal with 0.7 [28].

Data on postpartum functional status were collected using the Inventory of functional status after childbirth (IFSAC). The questionnaire was initially designed by Fawcett, Tulman, and Myers and contains 36 self-reported items that evaluate the mother's ability to continue and assume new responsibilities in five areas, including household activities, social and community activities, infant care activities, self-care activities, and professional activities. The overall score and the score of all dimensions were calculated by summing

up the scores of all items and dividing them by the number of items. It ranges from 1 to 4 [12]. The questionnaire was validated in Iran by Mirghafourvand M et al., and the number of items was reduced from 33 to 36 based on Iranian culture. The Cronbach's alpha was reported equal with 0.73 in this study [29].

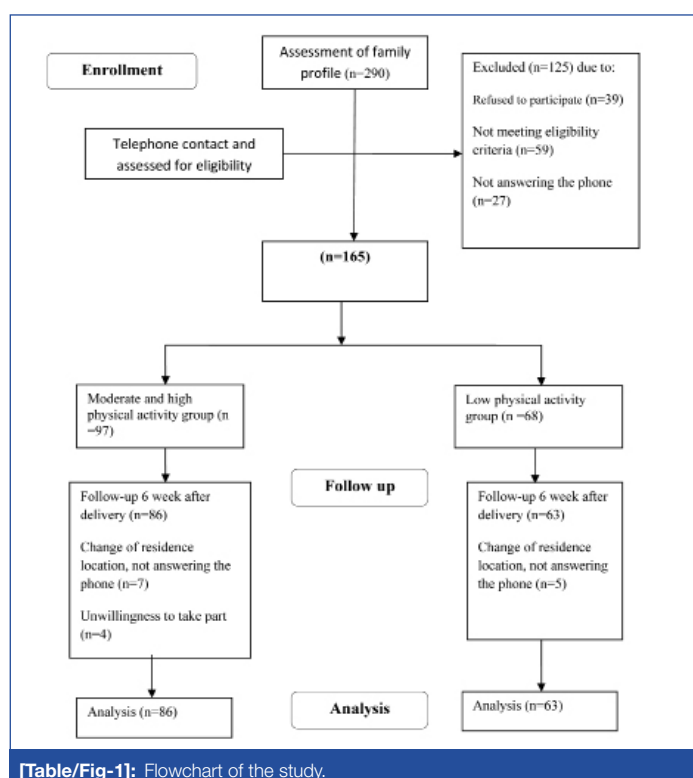
In this study, the reliability of functional status and physical activity questionnaires was confirmed by determining the internal consistency (Cronbach's alpha=0.92 and 0.61, respectively) by conducting the test on 30 mothers during the third trimester of pregnancy.

STATISTICAL ANALYSIS

Data were analysed using SPSS 21 (SPSS Inc., Chicago, IL). Normality of the quantitative data was confirmed using the Kolmogorov–Smirnov test and the variables of total physical activity, low physical activity, moderate and high physical activity, infant care activities subscale and self-care activities subscale had abnormal distribution. Independent *t*-test, Chi-square test and linear-by-linear Chi-square test were used to compare the two groups in terms of baseline characteristics. Mean (Standard deviation) and Median (Percentile 25 to percentile 75) was used for describing the physical activity and functional status. Independent sample T-test was used for comparison of total functional status score and dimensions of household activities, social and community activities scores and Mann-Whitney U test was used for comparison of infant care activities and self-care activities scores between two groups (low physical activity and moderate and high physical activity).

RESULTS

Participant recruitment and follow-up were conducted from April 2013 to March 2014. This study enrolled 290 mothers, of which 165 completed the questionnaire during pregnancy. In all, 39, 27, and 59 women were excluded from the study because of refusal to participate, not answering the phone, and not meeting eligibility criteria, respectively. Eventually, 68 primigravid women with low physical activity and 97 with moderate and high physical activity were included. After follow-up, at six weeks postpartum, 63 mothers in the low physical activity group and 86 in the moderate and high physical activity group completed the follow-up and were analysed [Table/Fig-1].



[Table/Fig-1]: Flowchart of the study.

The mean (SD=Standard Deviation) age was 25.27 (4.67) years in the low physical activity group and 28.88 (5.58) years in the moderate and high physical activity. Regarding body mass index, 40 (58.8%) mothers in both the low physical activity group and 62 (63.9%) mothers in the moderate and high physical activity had body mass index within the normal range (18.5-24.99). Sixty three (93%) mothers in the low physical activity group and 87 (90%) women in the moderate and high physical activity were housewives. Regarding education, 39(57%) mothers in the low physical activity group and 39(40%) mothers in the moderate and high physical activity had high school and diploma education. Fifty four (79%) women in the low physical activity group and 84(86%) in the moderate and high physical activity lived only with husband. Seventeen (25%) mothers in the low physical activity group and 29(30%) in the moderate and high physical activity lived in their own house, 53 (78%) women in the low physical activity group and 62(64%) in the moderate and high physical activity group were satisfied with their monthly income for living expenses. Furthermore, 61(90%) mothers in the low physical activity group and 79(81.4%) in the moderate and high physical activity breastfed their babies. No statistically significant difference was observed between the two groups in terms of sociodemographic characteristics ($p>0.05$) [Table/Fig-2].

In this study, 68 (41.2%) of the women had low-intensity physical activity during their pregnancy, 53 (32.1%) had moderate physical

Characteristics	Low physical activity (n=68) n (%)	Moderate and high physical activity (n=97) n (%)	p-value
Age (years)	25.27 (4.67)	28.88 (5.58)	0.344 [†]
Body mass index (kg/m ²)			0.501 [†]
18.5>	7 (10.3)	8 (8.2)	
18.5- 24.99	40 (58.8)	62 (63.9)	
25- 29.99	12 (17.7)	21 (21.3)	
>= 30	9 (13.2)	6 (6.2)	
Mother's education			0.784 [†]
Elementary	4 (6.0)	6 (6.0)	
Secondary school	10 (15.0)	21 (22.0)	
High school and Diploma	39 (57.0)	39 (40.0)	
University	15 (22.0)	31 (32.0)	
Family member			0.133 [‡]
Two people	54 (79.0)	84 (86.0)	
More than 2 people	14 (21.0)	13 (14.0)	
Home status			0.717 [†]
Private	17 (25.0)	29 (30.0)	
Rental and Family home	51 (75.0)	68 (70.0)	
Occupation			0.633 [†]
Housewife	63 (93.0)	87 (90.0)	
Working at home or outside the home	5 (7.0)	10 (10.0)	
Sufficiency of Income for Expense			0.332 [†]
Completely	5 (7.0)	23 (24.0)	
To some extent	53 (78.0)	62 (64.0)	
Absolutely not	10 (15.0)	12 (12.0)	
Infant Feeding			0.308 [‡]
Breast feeding	61 (90.0)	79 (81.4)	
Bottle feeding	7 (10.0)	18 (18.6)	

[Table/Fig-2]: Socio-demographic characteristics of primigravid women in two study groups.

[†] Mean (Standard deviation)

[‡] Independent sample t-test

[†] Linear-by-Linear Chi-square

[‡] Chi-Square

activity and 44 (26.7%) had high physical activity. The mean (standard deviation) of the total score of physical activity during pregnancy was calculated as 2563.7 (3414.6) MET-minutes per week. In the low physical activity group, the mean (standard deviation) was 1680.9 (2204.7), and in the moderate and high group, it was 3182.6 (3946.5) [Table/Fig-3].

The mean (standard deviation) of the total score of postpartum functional status was 2.7 (0.2) in both groups and there were no statistically significant differences between them in this score ($p=0.279$). As for the dimensions of functional status, the mean score of household chores was 3.1 (0.5) in the low physical activity group and 3.2 (0.4) in the moderate and high group; the mean score of social activities was 1.7 (0.3) in the low activity group and 1.8 (0.4) in the moderate and high group; the mean score of self-care was 2.0 (0.6) in the low group and 2.0 (0.4) in the moderate and high group; the mean score of neonatal care was 3.8 (0.3) in both groups. Regarding the dimensions of the functional status in both groups, dimension of infant care had the highest mean score out of dimensions of functional status, and social and community activities had the lowest mean score [Table/Fig-4].

DISCUSSION

The present study was conducted to determine the relationship between physical activity during pregnancy and postpartum functional status. According to the results obtained, most of the women (41.2%) had low physical activity during their pregnancy, while 32.1% had moderate and only 26.7% had high physical activity. A cross-sectional study conducted by Nascimento SL et al., assessed the physical activity status during and before pregnancy in 1279 Brazilian mothers during the first 72 hours postpartum using interviews and the Pregnant Physical Activity Questionnaire (PPAQ). They showed that the frequency of physical activity was 20% less during pregnancy than before pregnancy. They also showed that half of the participants had stopped some of their physical activities

Variables	Mean (SD)	Median (P25%-P75%) [†]	Achievable score
Total physical activity (n=165)	2563.7 (3413.6)	1188.0 (436.0-3360.0)	0-28476
Low physical activity (n=68)	1680.9 (2204.7)	775.0 (267.5-1731.0)	0-9786
Moderate and high physical activity (n=97)	3182.6 (3946.5)	1680.0 (706.5-5113.0)	0-28476

[Table/Fig-3]: The Mean and SD of the Scores of the physical activity and their subgroups in in primigravid women during pregnancy.

[†] Median (percentile 25- percentile 75)

Variables	Low physical activity (n=63)		Moderate and high physical activity (n=86)		p-value
	Mean (SD) [‡]	Med (Per 25 to 75) [§]	Mean (SD) [‡]	Med (Per 25 to 75) [§]	
Functional status score (1-4)	2.7 (0.2)	2.7 (2.6 to 2.9)	2.7 (0.2)	2.8 (2.6 to 3.0)	0.279*
Household activities (1-4)	3.1 (0.5)	3.2 (2.9 to 3.3)	3.2 (0.4)	3.2 (3.0 to 3.5)	0.250*
Social and community activities (1-4)	1.7 (0.3)	1.7 (1.5 to 2.0)	1.8 (0.4)	1.7 (1.5 to 2.0)	0.414*
Infant care activities (1-4)	3.8 (0.3)	4.0 (3.7 to 4.0)	3.8 (0.3)	4.0 (3.8 to 4.0)	0.163 [†]
Self-care activities (1-4)	2.0 (0.6)	2.0 (1.7 to 2.3)	2.0 (0.4)	2.0 (1.7 to 2.3)	0.748 [†]

[Table/Fig-4]: Association of physical activity during pregnancy with functional status and its subscales 6 weeks after childbirth.

[†]Independent sample T-test; [‡]Mann-Whitney U

[§]Standard Deviation; [¶]Median (Percentile 25 to Percentile 75)

and exercise routines since their pregnancy, such that the lowest frequency of exercise was observed in the first (13.4%) and third (13.6%) trimesters. Walking, followed by water aerobics, were reported as the most common activities during this period [30]. These results were inconsistent with the present findings regarding the frequency of physical activity in women during pregnancy, which could be due to the differences in sample size, data collection tools used and study type.

The present study also showed that in both groups, dimension of infant care had the highest mean score out of dimensions of functional status, and social and community activities had the lowest mean score. Norhayati MN et al., who conducted a study on functional status in Malaysian women with and without postpartum morbidity, found an increase in the overall mean score of functional status from one to six months postpartum. They also found the highest mean score of one month and six months postpartum to be respectively associated with infant care and self-care dimensions, and the lowest scores to be associated with social and community activities at both one month and six months postpartum [31], which is consistent with the present study. Moreover, the study conducted by Sehatie F et al., in Iran on the relationship between maternal self-confidence and functional status [32] and Mirghafourvand M et al., in Iran on the relationship between maternal self-efficacy and functional status found the highest and lowest mean scores to be respectively associated with infant care and social and community activities, which is consistent with the present study [17].

The present findings on the relationship between physical activity during pregnancy and functional status showed that physical activity during pregnancy has no effects on the return to normal functioning in women after childbirth. MacDonald IB examined 130 primiparous Canadian women in terms of the relationship between physical activity in the third trimester of pregnancy and functional status at week 6 and 12 postpartum. The results showed statistically significant differences between the different physical activity groups (light and moderate and vigorous) and the overall postpartum functional status at week 6 and 12 postpartum, as the general functional status of the women in the vigorous physical activity group was remarkably better at week 6 and 12 postpartum compared to the light or moderate group [20]. These results are inconsistent with the present findings in terms of the relationship between physical activity during pregnancy and functional status at week 6 postpartum. This disparity could be due to the different categorizations of physical activity during pregnancy in the two studies and the differences in the time of evaluating physical activity during pregnancy and the postpartum functional status.

CONCLUSION

The results of the present study showed that physical activity during the third trimester of pregnancy has no significant effects on functional status after childbirth in primiparous women; however, considering the study limitations and so as to achieve more definite results in this area, further studies, especially randomized, controlled, clinical trials, are recommended on the subject. Appropriate strategies should be adopted to encourage women to participate in physical activities so as to promote maternal and neonatal health during pregnancy and after childbirth. Midwives and maternal child health nurses have an essential role in supporting women during the pregnancy and postpartum period. Furthermore, midwives and nurses can be effective in designing and implementing programs aimed to encourage women to participate in physical activities.

LIMITATION

The short interval during which the participants were examined (i.e., weeks 28-34 of pregnancy and week 6 postpartum) and the lack of a follow-up between these two intervals comprise the limitations of this study. Additionally, in the present study, the reliability of physical activity questionnaire by Cronbach's alpha was determined

0.61 which is less than acceptable. The researchers therefore recommend similar studies conducted over a longer period of time and with follow-ups in smaller intervals.

ACKNOWLEDGMENTS

The authors would like to thank the Research Deputy, School of Nursing and Midwifery, and Student Research Committee of Tabriz University of Medical Sciences, as well as the participants and Tabriz health care personnel.

REFERENCES

- [1] Schmidt MD, Pekow P, Freedson PS, Markenson G, Chasan-Taber L. Physical activity patterns during pregnancy in a diverse population of women. *J Womens Health*. 2006;15(8):909-18.
- [2] World Health Organization. WHO Guidelines Approved by the Guidelines Review Committee. Global Recommendations on Physical Activity for Health. Geneva: World Health Organization 2010.
- [3] Poudevigne MS, O'Connor PJ. A review of physical activity patterns in pregnant women and their relationship to psychological health. *Sports Medicine*. 2006;36(1):19-38.
- [4] Lewis B, Avery M, Jennings E, Sherwood N, Martinson B, Crain AL. The effect of exercise during pregnancy on maternal outcomes: practical implications for practice. *Am J Lifestyle Med*. 2008;2(5):441-55.
- [5] Sorensen TK, Williams MA, Lee I-M, Dashow EE, Thompson ML, Luthy DA. Recreational physical activity during pregnancy and risk of preeclampsia. *Hypertension*. 2003;41(6):1273-80.
- [6] Hegaard HK, Pedersen BK, Bruun Nielsen B, Damm P. Leisure time physical activity during pregnancy and impact on gestational diabetes mellitus, pre-eclampsia, preterm delivery and birth weight: a review. *Acta Obstet Gynecol Scand*. 2007;86(11):1290-96.
- [7] Blum JW, Beaudoin CM, Caton-Lemos L. Physical activity patterns and maternal well-being in postpartum women. *Matern Child Health J*. 2004;8(3):163-69.
- [8] Borodulin K, Evenson KR, Wen F, Herring AH, Benson A. Physical activity patterns during pregnancy. *Med Sci Sports Exerc*. 2008;40(11):1901.
- [9] Schluskel MM, Souza EBd, Reichenheim ME, Kac G. Physical activity during pregnancy and maternal-child health outcomes: a systematic literature review. *Cad Saude Publica*. 2008;24:s531-s44.
- [10] Solmeyer AR, Feinberg ME. Mother and father adjustment during early parenthood: The roles of infant temperament and coparenting relationship quality. *Infant Behav Dev*. 2011;34(4):504-14.
- [11] Ahn S, Youngblut JM. Predictors of Women's postpartum health status in the first 3 months after childbirth. *Asian Nurs Res*. 2007;1(2):136-46.
- [12] Fawcett J, Tulman L, Myers ST. Development of the inventory of functional status after childbirth. *J Nurse Midwifery*. 1988;33(6):252-60.
- [13] Noor NM, Aziz AA, Mostapa MR, Awang Z. Validation of the Malay version of the inventory of functional status after childbirth questionnaire. *Biomed Res Int*. 2015;2015:972728.
- [14] McVeigh CA. Investigating the relationship between satisfaction with social support and functional status after childbirth. *MCN Am J Matern Child Nurs*. 2000;25(1):25-30.
- [15] Posmontier B. Functional status outcomes in mothers with and without postpartum depression. *J Midwifery Womens Health*. 2008;53(4):310-18.
- [16] Barkin JL, McKeever A, Lian B, Wisniewski SR. Correlates of Postpartum Maternal Functioning in a Low-Income Obstetric Population. *J Am Psychiatr Nurses Assoc*. 2017;23(2):149-58.
- [17] Mirghafourvand M, Bagherinia M. Relationship between maternal self-efficacy and functional status four months after delivery in Iranian primiparous women. *J Psychosom Obstet Gynaecol*. 2017:01-08.
- [18] Barkin JL, Wisner KL, Bromberger JT, Beach SR, Wisniewski SR. Assessment of functioning in new mothers. *J Womens Health*. 2010;19(8):1493-99.
- [19] Katabi V. A comparison of traditional practices used in pregnancy, labour and the postpartum period among women in Turkey and Iran. *Midwifery*. 2008;24(3):291-300.
- [20] Macdonald IB. Physical activity and postpartum functional status in primiparous women. Ph.D. thesis. Kingston: Queen's University. 2011.
- [21] Downs DS, Hausenblas HA. Women's exercise beliefs and behaviours during their pregnancy and postpartum. *J Midwifery Womens Health*. 2004;49(2):138-44.
- [22] Warburton DE, Nicol CW, Bredin SS. Health benefits of physical activity: the evidence. *Can Med Assoc J*. 2006;174(6):801-09.
- [23] Artal R, O'toole M. Guidelines of the American College of Obstetricians and Gynecologists for exercise during pregnancy and the postpartum period. *Br J Sports Med*. 2003;37(1):6-12.
- [24] Wolfe LA, Weissgerber TL. Clinical physiology of exercise in pregnancy: a literature review. *J Clin Gynecol Obstet*. 2003;25(6):473-83.
- [25] Hazavehei SMM, Asadi Z, Hassanzadeh A, Shekarchizadeh P. Comparing the effect of two methods of presenting physical education II course on the attitudes and practices of female Students towards regular physical activity in Isfahan University of Medical Sciences. *Iranian Journal of Medical Education*. 2008;8(1):121-31.
- [26] BashiriMoosavi F, Farmanbar R, Taghdisi M, AtrkarRoshan Z. Level of physical activity among girl high school students in Tarom County and relevant factors. *Iranian Journal of Health Education and Health Promotion*. 2015;3(2):133-40.
- [27] Craig CL, Marshall AL, Sjorstrom M, Bauman AE, Booth ML, Ainsworth BE, et al. International physical activity questionnaire: 12-country reliability and validity. *Med Sci Sports Exerc*. 2003;35(8):1381-95.
- [28] Moghaddam MB, Aghdam FB, Jafarabadi MA, Allahverdi-pour H, Nikookheslat SD, Safarpour S. The Iranian Version of International Physical Activity Questionnaire (IPAQ) in Iran: content and construct validity, factor structure, internal consistency and stability. *World Appl Sci*. 2012;18(8):1073-80.
- [29] Mirghafourvand M, Mohammad-Alizadeh-Charandabi S, Asghari Jafarabadi M, Soltanpour S. Psychometric properties of the Iranian version of the inventory of functional status after childbirth (IFSAC). *Iran Red Crescent Med J*. 2016;19(5):e30210.
- [30] Nascimento SL, Surlita FG, Godoy AC, Kasawara KT, Morais SS. Physical activity patterns and factors related to exercise during pregnancy: a cross sectional study. *PloS One*. 2015;10(6):e0128953.
- [31] Norhayati MN, Nik Hazlina NH, Aniza AA. Functional status of women with and without severe maternal morbidity: A prospective cohort study. *Women Birth*. 2016;29(5):443-49.
- [32] Sehtatie F, Mirghafourvand M, Bagherinia M. Association between maternal self-confidence and functional status in primiparous women of postpartum period, 2015-2016. *International Journal of Women's Health and Reproduction Sciences*. 2017;5(3):200-04.

PARTICULARS OF CONTRIBUTORS:

1. Associate Professor, Social Determinants of Health Research Center, Tabriz University of Medical Sciences, Tabriz, Iran.
2. Professor, Midwifery Department, Nursing and Midwifery Faculty, Tabriz University of Medical Sciences, Tabriz, Iran.
3. Associate Professor, Road Traffic Injury Research Center, Faculty of Health, Tabriz University of Medical Sciences, Tabriz, Iran.
4. MSc in Midwifery, Department of Midwifery, Students' Research Committee, Faculty of Nursing and Midwifery, Tabriz University of Medical Sciences, Tabriz, Iran.
5. MSc in Midwifery, Department of Midwifery, Students' Research Committee, Faculty of Nursing and Midwifery, Kurdistan University of Medical Sciences, Kurdistan, Iran.
6. MSc in Midwifery, Department of Midwifery, Students' Research Committee, Faculty of Nursing and Midwifery, Tabriz University of Medical Sciences, Tabriz, Iran.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Marzieh Bagherinia,
Department of Midwifery, Students' Research Committee, Faculty of Nursing and Midwifery,
Tabriz University of Medical Sciences, Shariatie Ave., Tabriz, Iran. Post code: 513897977, P.O. Box: 51745-347.
E-mail: m.bmarz@yahoo.com

Date of Submission: **Apr 07, 2018**
Date of Peer Review: **May 28, 2018**
Date of Acceptance: **Aug 21, 2018**
Date of Publishing: **Nov 01, 2018**

FINANCIAL OR OTHER COMPETING INTERESTS: None.