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Fatigue in pregnancy and associated determinants in Hamadan City, Iran.

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ABSTRACT

Fatigue during pregnancy is most common during the first trimester. It tends to go away during the second trimester, but will usually return in the third trimester. During early pregnancy, hormonal changes are likely the cause of fatigue. This study aimed to assess fatigue in pregnancy and its main determinants in women who attended in health centers of Hamadan city, Iran, 2015. This case-control study was conducted on 126 pregnant women (case: with fatigue, n = 40; control: without fatigue, n = 86) who attended prenatal care clinic for routine follow-up in health centers. The cluster sampling was used. Information was collected by interviewing and using a standardized validated questionnaire. Severity of fatigue was assessed through using questionnaire. Data processing and statistical analysis were performed by using SPSS/ 20.0. The results revealed that majority of women experienced fatigue during pregnancy. In a multivariable logistic regression model, age, education, husband s education, parity, Income, pre pregnancy weight, height, body mass index (BMI), and smoking were main determinants of fatigue during pregnancy. Most of pregnant women suffered fatigue during pregnancy which severity can be determined by advanced age, parity, pre pregnancy weight, BMI, and decreased income.

Keywords: Fatigue; pregnancy; Associated determinants; Iran

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INTRODUCTION

Fatigue is a common symptom during pregnancy. Some women may feel exhausted throughout their pregnancy, while some may hardly feel tired at all. Although experience with fatigue tends to vary, most women will feel more tired than usual during their pregnancy. Fatigue during pregnancy is most common during the first trimester. It tends to go away during the second trimester, but will usually return in the third trimester. During early pregnancy, hormonal changes are likely the cause of fatigue. Your body is producing more blood to carry nutrients to your growing baby. Your blood sugar levels and blood pressure are also lower. Hormones, especially increased progesterone levels, are responsible for making you sleepy. In addition to the physical changes occurring in your body, emotional changes can contribute to decreased energy [1][2].

Whether the pregnancy is planned or unplanned, you may experience anxiety about motherhood, worry about the baby's health, or even experience conflicting feelings about your pregnancy. It is important to understand that your emotions do play a part in how you feel physically, and all of these things are a natural and normal part of pregnancy. During second trimester, there is a good chance your energy level will increase and you will start to feel more like your old self. Many women take advantage of this time during the pregnancy to accomplish important tasks, as energy levels will likely decrease again in the third trimester. This is often called "The Happy Trimester." Now don't be alarmed if during this trimester you still experience fatigue. More than likely it will be less obvious, but unfortunately fatigue during pregnancy is still possible during the second trimester. In late pregnancy will most likely begin to feel tired again. At this point you will be carrying extra weight from the baby, may be having trouble sleeping, and dealing with frequent urination more often. The following are a list of ways to cope with the fatigue you may be experiencing [3][4][5][6].

Coping steps for fatigue during pregnancy including: Rest, Make sure you allow yourself to get extra bed rest during the times you feel fatigued. This can be accomplished by going to bed earlier or taking a nap during the day, if possible. Avoiding fluids several hours before bed is also a good way to cut down on the number of times you have to get up at night to use the bathroom. Eat a Balanced Diet, Eating nutritious meals will go a long way toward supporting your energy levels. Make sure you get enough iron, protein and calories. Fatigue can become worse if you are not getting the proper nutrients. Also, you will need to ensure you stay hydrated during your pregnancy. Moderate Exercise, Although you may feel like you do not have the energy to exercise, if you incorporate moderate activity, such as a 30 minute walk, this will actually make you feel more energized. Exercise is beneficial in pregnancy, unless your healthcare provider has advised otherwise [7].

Fatigue has been described in nursing textbooks as a subjective complaint of pregnancy. Anecdotal accounts of fatigue in pregnant women have been discussed in the professional literature. Despite the importance of fatigue as a part of pregnancy, few empirical studies describing fatigue have been reported. The primary purpose of this longitudinal descriptive pilot study was to determine changes in mothers' fatigue during pregnancy. Also, the relationships among fatigue, depression, and anxiety during the three trimesters of pregnancy were examined. The framework for the study of childbearing fatigue provided the theoretical basis for this research. The framework was developed from anecdotal reports, the authors' clinical experiences, and the limited empirical evidence available about fatigue during the childbearing experience. The model proposes that fatigue is influenced by physiological, psychological, and situational factors that may put a mother at risk of exhaustion and interfere with her performance. Framing fatigue in this way is consistent with the North American Nursing Diagnosis Association (1992) definition of fatigue: "An overwhelming sustained sense of exhaustion and decreased capacity for physical and mental work [8].

Fatigue during childbearing is an unpleasant sensation and if allowed to continue will lead to exhaustion. It does not describe that satisfied feeling of a job well done or good feeling after exercise when one is invigorated yet tired. Few researchers have examined how fatigue develops and changes during pregnancy. Common knowledge relates this fatigue to physiological and psychological changes in the mother. Based on an extensive review of the literature, Poole (1986) determined that fatigue is an accepted unpleasant symptom of early pregnancy. Two groups of investigators focused on fatigue during pregnancy. From a convenience sample of 20 women age 20 to 35 years, Reeves, Potempa, and Gallo (1991) found that pregnancy-related fatigue positively lasted to nausea and feeling tired on awakening from sleep. From a sample of 74 predominantly black mothers, Other study reported that depression and anxiety were significantly related to fatigue at 28 and 36 weeks of pregnancy [9]. Studies of other

pregnancy-related outcomes show findings related to fatigue. For instance, fatigue has been related to nausea and vomiting, employment, or as a symptom during the second trimester of pregnancy [10-12]. This study aimed to assess fatigue in pregnancy and its main determinants in women who attended in health centers of Hamadan city, Iran in 2015.

METHODS

This case-control study was carried out on 126 women who attended prenatal clinic for routine follow-up in health centers of Hamadan City, Iran in 2015. The study included case subjects (n= 40) who had fatigue during pregnancy. The control subjects (n= 86) were women who did not have Fatigue during pregnancy. The cluster sampling was used.

Firstly, the Hamadan city was divided into 4 regions and then from each region, four health centers were selected. Twenty women of each center who did not have fatigue during pregnancy were selected as a control group and 10 women who had fatigue during pregnancy were selected as a case group. The subjects were chosen randomly according to their fatigue during pregnancy. Self-reported height and weight were assessed and body mass index was calculated as weight (kg/m²).

In this study, all relevant information was collected by interviewing and using a standardized validated questionnaire. The data collection instruments comprised of two parts: The first part included demographic information (age, employment status of the spouse, education, family size, residence location); the second part included a fatigue assessment standard checklist 30 questions ranked based on a 5-point Likert scale so that each item is scored from 0 to 4 and the total score ranges from 0 to 120. In this questionnaire, the score of 0-40, 41-80, and 81-120 imply mild fatigue, moderate fatigue, and severe fatigue, respectively. The Persian version of this checklist by was used by Neshat (2001) and its reliability was approved using Cronbach's Alpha ($\alpha=0.88$) [13].

In the present study, the questionnaire's validity was adjusted through content validation using scientific articles and books, and the ideas of 10 assistant professors; then, it was given to the professors of the Faculty of Nursery and Midwifery of Hamadan University in order to determine whether it has content and face validity, and accordingly their opinions and suggestions were applied to the final revisions. Reliability of the fatigue assessment standard checklist in this study was confirmed using Cronbach's Alpha ($\alpha=0.93$). The results showed that the questionnaire had acceptable reliability [13]. The study was performed according to the Helsinki declaration protocol. The objectives of the study were explained to the women, and informed consent was obtained from all participants. Women could leave the study at any time. The study was approved by the Ethical Committee of Hamadan University of Medical Sciences.

Results were reported as mean \pm SD for the quantitative variables and percentages for the categorical variables. The groups were compared by using the student's t-test for the continuous variables and the Chi-square test (or Fisher's exact test if required) for the categorical variables. Multivariate logistic regression analysis was taken to investigate their independence predictors. P-values less than 0.05 were considered statistically significant. Data processing and statistical analysis was performed by SPSS/20.0.

RESULTS

One hundred twenty six participants were enrolled in this research. Table 1 demonstrates demographic and medical characteristics of participants. The two groups were similar at baseline. Kolmogorov-Smirnov test demonstrated that no significant differences were found between the groups on age, age at first pregnancy, gestational age, weight, height, BMI, monthly income, parity, supplement usage, history of complementary medicine, active and passive smoking ($P > 0.05$). Mean age was 25.70 \pm 7.41 and 26.72 \pm 5.29 and mean age at first pregnancy was 26.65 \pm 2.47 and 26.40 \pm 4.25 years old in case and control groups, respectively. Mean gestational age was 246.9 \pm 21.9 and 201.4 \pm 28.9 days and mean parity was 2.07 \pm 0.26 and 2.04 \pm 0.26 and mean monthly income was 1.450.000 \pm 0.5000 in case and control groups, respectively. In the present study all participants had in both groups were housewives. Mean weight before pregnancy was 62.95 \pm 9.92 and 62.81 \pm 11.07 kg and mean height was 160.80 \pm 9.60 and 161.47 \pm 7.35 cm in case and control groups, respectively. Approximately 20.0 and 9.3 % of the women had a family history of supplement usage case and control groups, respectively. About 92.5% and 97.7% of participants were none smoker and 52.5% and 58.1 of

them had passive smoker. Majority of women had history of complementary medicine in both groups. Majority of women had body mass index (BMI = 18.5-24.9) kg/m² in both groups (Table 1).

Table 1: Baseline characteristics and clinical data of the study population

Characteristics	Fatigue group (n=40)	Non fatigue group (n=86)	p
Age (years)	25.70 (7.41)	26.72(5.29)	0.379
Age at first pregnancy (years)	26.65(2.47)	26.40(4.25)	0.73
Gestational age (days)	246.9(21.9)	201.4(28.9)	0.100
Number of parity	2.07(0.266)	2.04(0.261)	0.57
Monthly income (Toman)	1.450.000 (0.5000)	1.450.000 (0.58)	0.974
Weight before pregnancy(kg)	62.95 (9.92)	62.81 (11.07)	0.947
Height (cm)	160.80(9.60)	161.47(7.35)	0.664
BMI(kg/m ²)			1.00
< 18.5	9(22.50)	21(24.42)	
18.5-24.9	21(52.50)	46(53.49)	
> 25-29.9	10(25.00)	19(22.09)	
Supplement usage (%)			0.095
Yes	8(20)	8(9.3)	
No	32(80)	78(90.7)	
History of complementary medicine (%)			0.168
Yes	40 (100)	82 (95.3)	
No	0(0)	4 (4.7)	
Active smoking (%)			0.169
Yes	3(7.5)	2(2.3)	
No	37(92.5)	84(97.7)	
Passive smoking (%)			0.556
Yes	21(52.5)	50(58.1)	
No	19(47.5)	36(41.9)	

Table 2: Multivariate logistic regression model for determinants of fatigue

Model	Un standardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-24.443	.805		-30.381	< 0.001
Age	.486	.025	4.547	19.484	< 0.001
Education	-4.258	.206	-10.647	-20.710	< 0.001
Husband's education	.623	.025	1.652	25.247	< 0.001
Parity	.135	.005	1.296	27.377	< 0.001
Income	.883	.088	1.683	10.051	< 0.001
Pre pregnancy weight	-.104	.003	-5.308	-36.996	< 0.001
Height	.266	.008	5.658	33.426	< 0.001
BMI	1.681	.060	3.088	28.231	< 0.001
Smoking	-1.173	.041	-2.183	-28.344	< 0.001

For determining indicators of the appearance of fatigue during pregnancy and in a multivariable logistic regression model, advanced age, age, education, husband's education, parity, monthly income, pre pregnancy weight, height, BMI, and smoking were main determinants of fatigue during pregnancy (Table 2).

DISCUSSION

Increase of fatigue may lead to different problems during pregnancy, delivery, and thereafter including increase of prevalence of preterm delivery (birth), lower birth weight in babies, increase of delivery

duration, increase of delivery using assistant instruments such as forceps, caesarean delivery, and postpartum (post-delivery) depression [11][14-19].

Based on the theoretical framework of Pooch and Miligan (1993), fatigue occurs as a result of the energy imbalance in body and incoordination of the energy supply and demand. In fact, fatigue is a defensive mechanism of the body indicating the decrease of the body's energy level as a result of which the activity level is reduced in order to decrease the energy consumption and reach a balance. Fatigue and the lack of energy are frequently reported during pregnancy and postpartum periods [3].

Results of Chin and Co showed that fatigue is a major problem among the pregnant women and can increase cesarean delivery. The professional health caregivers should gather their required information about fatigue and intervention as fast as possible in order to control it; this can help reduce the number of the cesarean deliveries [5][20].

A study titled "The impact of sole reflexology on fatigue severity in pregnant women" was conducted by Ghaffari and Pourghaznein in Ramsar. In this research, the mean score of the fatigue severity in pregnant women in the experimental group before intervention (63.91 with standard deviation of 12.43) and after applying sole reflexology (55.25 with standard deviation of 13.40) showed a significant difference; furthermore, after the intervention, a significant difference was observed between the experimental and control groups in terms of the fatigue severity ($P=0.001$, $t=4.93$). Based on the results of this study, reflexology significantly reduced fatigue in pregnant women [21].

Another important factor in reduction of fatigue in women during pregnancy is counseling. In fact, counseling means consulting and exchanging information on a subject between the client (help-recipient) and the expert (counselor). Counseling is done on different scientific fields and subjects for different purposes; however, the psychological aspect (psychological counseling) which is aimed to improve the mental/spiritual status and psychological quality of life quality of the client is the most well-known aspect among the people [15][22-23].

Ridsdale et al. (2001) studied the effect of counseling on fatigue perception and its relation to the psychological factors. The results showed that counseling to the patients affects reducing their fatigue and psychological distress [24].

Results of studies indicated that counseling the women in the third trimester of pregnancy could reduce their anxiety and fatigue at the outset of their delivery. Counseling is recommended for reducing fatigue of the nulliparous women in late pregnancy [25-27].

Most of pregnant women suffered fatigue during pregnancy which severity can be determined by advanced age, parity, pre pregnancy weight, BMI, and decreased income.

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REFERENCES

- [1] Mayberry L, Gennaro S, Strange L, Williams M, De A. J Obstet Gynecol Neonatal Nurs 2008;28(2):175-81.
- [2] Reeves N, Potempa K, Gallo A. Journal of Nurse-midwifery. 1991;36(5):303-9.
- [3] Tsai SY; Lin JW; Kuo LT; Thomas KA. SLEEP 2012;35(2):257-262.
- [4] Shobeiri F, Aghababaii S, Hosseinipana SM. J Postgrad Med Inst 2016; 30(1): 80-3.
- [5] Shobeiri F, Nazari M. Int J Fertil Steril 2014;8(3):267-72.
- [6] Shobeiri F, Jenabi E. Iran J Obstet Gynecol Infertil 2014;17(96):1-5.

- [7] Schwartz, AL, Mori MOTOMI, Gao RENLU, Nail LM, King ME. *Medicine & Science in Sports & Exercise* 2010; 33(5): 718-723.
- [8] Pugh LC, Milligan R. *Advances in Nursing Science* 1993;15(4):60-70.
- [9] Chou FH, Lin LL, Cooney AT, Walker LO, Riggs Mark W. *Journal of Nursing Scholarship* 2003; 35(2): 119–125.
- [10] Shobeiri F, Nazari M. *Iranian Journal of Medical Sciences*. 2006;31(2):94-7.
- [11] Shobeiri F, Nazari M. *Pakistan journal of biological sciences: PJBS*. 2007;10(19):3470-2.
- [12] Shobeiri F, Arasteh FE, Ebrahimi R, Nazari M. *The Iraian J of Obstetrics , Gynecology & Infertility*. 2016;19(1.2):1-8.
- [13] Neshat R. *Mashhad University of Medical Sciences* 2002; 38-51.
- [14] Pugh L, Milliqaan R, Parks P, Lenz ER, Kitzman H. *Journal of Obstetric, Gynecologic, & Neonatal Nursing* 1999; 28(1): 74-80.
- [15] Chien L, Ko Y. *Journal of Advanced Nursing* 2004; 45(5): 487-494.
- [16] Akbarzadeh M, Shobeyri F, Mahjub H, Ebrahimi R. *The Iranian Journal of Obstetrics, Gynecology & Infertility* 2014; 17 (105):1-9.
- [17] Shobeiri F, Taravati-Javad M, Soltani F, Karami M. *Journal of Education And Community Health* 2015;2(2):1-9.
- [18] Shobeiri F, Tehranian N, Nazari M. *International Journal of Gynecology & Obstetrics*. 2007;96(3):197-8.
- [19] Jenabi E, Shobeiri F, Hazavehei SM, Roshanaei G. *Oman medical journal* 2015;30(3):151.
- [20] Chien L, Ko YL. *J Adv Nurs* 2004;45(5):487-940.
- [21] Ghaffari F, Ghaznein, TP. *Caspian Journal of Internal Medicine* 2010;1:58-62.
- [22] Tehranian N, Shobeiri F, Pour FH, Hagizadeh E. *Asian Pacific J Cancer Prev* 2010;11:1723-5.
- [23] Soltani F, Shobeiri F. *The Iranian Journal of Obstetrics, Gynecology & Infertility* 2011; 14(1): 28-36.
- [24] Ridsdale L, Godfrey E, Chalder T, Seed P, King M, Wallace P, et al. *Br J Gen Pract* 2001;51(462):19-24.
- [25] Ghazi Jahani B. *Obstetric and gynecological diseases Denfort: Golban Nashr*; 2012: 87-100.
- [26] Shobeiri F, Tehranian N, Nazari M. *BMC research notes*. 2014;7(1):733.
- [27] Shobeiri F, Sattari M, Kalhori F, Nazari M. *Research Journal of Pharmaceutical, Biological and Chemical Sciences* 2016; 7 (2): 871-868.