Predictors of birth satisfaction among Iranian postpartum women: a cross-sectional study

Forough Mortazavi (frmortazavi@yahoo.com)
Sabzevar University of Medical Sciences
Maryam Mehrabadi
Sabzevar University of Medical Sciences

Research Article

Keywords: birth satisfaction, pregnant women, cross-sectional study, predicting factors, Iran

Posted Date: June 14th, 2021

DOI: https://doi.org/10.21203/rs.3.rs-508304/v1

Abstract

Background: Childbirth dissatisfaction may reduce maternal tendency for subsequent pregnancies and increase maternal request for elective cesarean. This study aimed to investigate predictors of birth satisfaction in a sample of Iranian postpartum women.

Methods: This cross-sectional study was conducted on 767 women in early postpartum using a convenience sampling method in 2019. Women's demographic/obstetrical information were collected. Women completed three questionnaires including the World Health Organization-5 well-being Index (WHO-5 well-being Index), the Birth Satisfaction scale-R (BSS-R), and the Wijma Delivery-Expectancy/experience Questionnaire (W-DEQ) version B. We used univariate general linear model to investigate the relationships between independent variables and birth satisfaction scores. Multiple linear regression analysis was used to determine predictors of birth dissatisfaction.

Results: The percentage of women who gave birth by elective cesarean, emergency cesarean, and vaginal birth were 13.2%, 19.06%, and 67.8%, respectively. Predictors of low birth satisfaction were primiparity, low level of well-being, low and moderate satisfaction with pregnancy, moderate satisfaction with spouse's emotional/financial support, emergency cesarean, severe fear of childbirth, and long duration from admission to delivery. Women who had vaginal birth and were accompanied by a doula reported a higher level of birth satisfaction than those without a doula ($p = 0.012$). Women who had emergency cesarean accompanied by a doula reported a lower level of birth satisfaction than those without a doula ($p = 0.045$).

Conclusions: Our results indicate that in order to promote birth satisfaction, specific interventions should be designed that enhance maternal well-being, reduce fear of childbirth, and promote spouse's support. Also, revising and improving admission protocols in maternity hospitals and other measures that help women have a smooth and hassle-free pregnancy can promote birth satisfaction. Further studies should also be conducted in Iran to examine other significant social predictors of birth satisfaction such as interaction between midwives/physicians and patients and respectful attitude of staff members.

Background

Childbirth is a unique and powerful experience in a woman's life. Childbirth dissatisfaction reduces maternal desire for subsequent pregnancies [1] or increases the interval between them [2]. Dissatisfaction with natural childbirth may also increase maternal request for elective cesarean [3].

Increased maternal request for cesarean [4] and its high rate [5] in recent decades in Iran has turned into a challenging public health issue. At the same time, the total fertility rate (TFR) has been declining since 1992, falling to 1.8% in 2005 and remaining close to that level since then [6, 7]. These developments have prompted health officials to explore policies that may reduce the rate of caesarean birth and encourage women to have more children. In 2014, a new policy initiative called the Health Transformation Plan (HTP) was launched in the Iranian health system [8]. The HTP consisted of many features and interventions such as improvement and renovation of maternity care facilities, cost-free normal delivery, free prenatal education classes, and allowing pregnant women to have a doula in labor and birth [8, 9]. At the same time, women's satisfaction with childbirth has received growing attention from health officials and hospitals have been required to assess maternal satisfaction with the received care and services periodically [10]. Unfortunately, few studies have been performed in Iran to evaluate maternal birth satisfaction as one of the main policy goals of the HTP and other attendant measures.

In previous studies several variables have been found to be associated with childbirth satisfaction including planned pregnancy, planned childbirth [11], women's knowledge of labor, low-intensity labor pain [12], short labor [13], empathy of midwives/physicians, respectful behavior of caregivers, physical comfort [14, 15], multiparity, women's participation in maternal care decision- making process [15], giving birth in primary level facilities [16] or in private hospitals [17]. However, there have been opposing results with regard to factors associated with birth satisfaction. For example, in a study conducted in Italy, women with higher levels of educational attainment had a higher level of vaginal birth satisfaction than women with lower levels of education [18]. But in contrast to the above study, two other studies found that women with low educational levels [19] or no formal education [11] had higher levels of birth satisfaction. In one study, administration of analgesics during labor was found to be associated with birth satisfaction [20], while in another study, no intrapartum intervention [13] was associated with birth satisfaction. The result of a study conducted in Iran showed no relationship between the mode of childbirth and level of satisfaction [21] while in another study cesarean birth was a predictor of childbirth satisfaction [22].

Considering that birth satisfaction influences women's decisions about future pregnancies and their request for cesarean, we aimed to identify factors associated with birth satisfaction. There are a number of important questions regarding postpartum women which need to be explored such as 1. Is there a relationship between birth satisfaction and mode of birth? 2. Does having a doula at birth influence birth satisfaction among women who planned for vaginal birth? 3. To what extent, maternal birth satisfaction is influenced by psychological factors such as fear of childbirth, well-being, sexual/marital satisfaction, spouse's emotional support, and experiencing a smooth pregnancy. To answer these questions, we undertook a study to investigate predictors of birth satisfaction in a sample of Iranian postpartum women. This is the first step in adopting proper strategies to promote women's birth satisfaction.

Methods And Materials

This study was performed using data which had been collected for the validity study of the Persian Birth Satisfaction Scale (the Persian BSS-R) [23]. The Ethics Committee of Sabzevar University of Medical Sciences has reviewed and approved this study (approval number: IR.MEDSAB.REC.1400.119). All procedures were performed in accordance with the guidelines of Sabzevar University of Medical Sciences, which is in accordance with the Declaration of Helsinki. Our study population comprised women who had given birth and had been transferred to the postpartum wards of Mobini Hospital, operated by Sabzevar University of Medical Sciences, Sabzevar, Iran. Women filled out the questionnaires during the first 24 hours after birth. The sampling in our study was performed by convenience sampling method in Mobini hospital and lasted from July to September 2019. The average annual birth rate in the hospital is 6,000.

The inclusion criteria were having a healthy newborn baby, reading literacy, and physical ability to fill out the questionnaires. We excluded women with severe mental illness and those with severe postpartum complications. Two graduate midwives distributed the written consent forms and the anonymous questionnaires among participants who had given verbal consent to participate in the study. The midwives also extracted obstetrical information from the women's files.

Instruments

Interview form

The women completed a two-section questionnaire. The first section contains questions on socio-demographic characteristics. The second section consists of obstetrical information (such as parity, mode of birth, induced or spontaneous labor pain, pain relief method during labor, having a doula at birth). The women also rated their level of satisfaction with pregnancy, spouse's emotional/financial support, and conjugal and sexual satisfaction on a five-point Likert scale ranging from 1-5 (1= not satisfied to 5 = very satisfied). With regard to the satisfaction with pregnancy, we asked the following question: Given the health problems you faced during your pregnancy, how satisfied are you with your pregnancy? (the supplementary file)

The Birth Satisfaction Scale–Revised (BSS-R)

The Birth Satisfaction Scale–Revised (BSS-R) was developed in 2014 to measure birth satisfaction [24]. The scale consists of 10-items that participants respond to on a four-point Likert scale which ranges from 0-4 (0 = strongly disagree to 4 = strongly agree). The minimum and maximum scores of the questionnaire are zero and 40, respectively. The reliability of BSS-R has been confirmed (Cronbach's alpha = 0.79). The scale contains three factors consisting of stress experienced during labor (four items), women's personal attributes (two items), and quality of care provision (four items). The International Consortium for Health Outcome Measures (ICHOM) recommended the scale as the measure of choice for assessing women's experiences of childbirth [24]. The scale has been translated and validated in different languages, including Italian [25], Turkish, [26], Slovak [27], and Spanish [28]. The construct validity of the scale has been also confirmed in two studies in Australia [29] and US [30]. The scale was translated into Persian (Persian BSS-R) in 2019 and its validity and reliability were investigated. The results of the confirmatory factor analysis on the scale confirmed the structure proposed by the scale developers. The results of the confirmatory factor analysis on the scale confirmed the structure proposed by the scale developers. The reliability of the Persian BSS-R has been confirmed (Cronbach's alpha = 0.76) [23].

Wijma Delivery Expectancy/ Experience Questionnaire (W-DEQ) version B

The Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ) was designed in 1998 to assess fear of childbirth [31]. The W-DEQ has a single factor with 33 items. Each item is scored on a six-level Likert scale with a range of zero to five (0- disagree strongly, 5- agree strongly). The scale's total score ranges from 0 to 165, with larger scores corresponding to greater levels of fear. The scale showed excellent reliability (Cronbach's alpha = 0.93). Wijma et al. investigated the validity of the scale by calculating the correlations between the W-DEQ and several other psychological scales. The moderate correlations between Wijma scores and the scores from other scales confirmed the W-DEQ validity [31]. A Cut-off point of 85 has been proposed for screening women with severe fear of childbirth [32]. The W-DEQ was translated into Persian. The validity assessment of the Persian W-DEQ indicates that the scale consists of six factors. It showed moderate correlations with the Childbirth Attitude Questionnaire and the State-Trait Anxiety Inventory. The Cronbach's alpha coefficients of the scale and its factors were in the acceptable range (between 0.633 and 0.919) [33].

The World Health Organization's Well-Being Index (*WHO-5 Well-Being Index*)

The World Health Organization's well-being Index (WHO-5 Well-Being Index) assesses the well-being of individuals over the preceding two weeks [34]. It comprises of five items with a 6-point Likert scale (such as "I woke up feeling fresh and rested"). Each question is scored from zero (having good feelings at no time) to five (having good feelings all the time). The scale's total score ranges from 0 to 25 which is converted to a scale of 0 to 100. A score of 50 has been used as the cut-off score in screening for depression. In the case of persons with scores less than fifty, referral for further assessment has been recommended. Mortazavi and colleagues investigated the validity and reliability of

the Persian WHO-5 Well-Being Index in pregnant women. The results confirmed the reliability and unidimensionality of the scale (Cronbach's alpha = 0.85) [35].

Data analysis

We used the SPSS version 18 to analyze the data. To characterize the sample, descriptive statistics including mean and standard deviation were used for the quantitative data and numbers and percentages for the qualitative data. We investigated the normal distribution of the birth satisfaction scores using skewness and kurtosis. We used univariate general linear model to investigate the relationships between independent variables and birth satisfaction scores. Then, all variables with a p-value < 0.25 in the general linear models were entered into three separate multiple linear regression analyses by backward-LR method. Based on these analyses, we determined the demographic/obstetric, psychological, and overall predictors of birth dissatisfaction.

We checked linear regression assumptions and verified the normality of residuals. Collinearity statistics also showed tolerance < 1 and variance inflation factor < 2 indicating no multicollinearity. We calculated the adjusted R squared to determine the proportion of the variance of the BSS-R scores that can be explained by the independent variables. We investigated the relationship between having a doula and birth satisfaction in emergency cesarean and vaginal birth using t-test.

Results

The mean value of age, education (in years), gestational age, birth weight, and admission to delivery duration were 28.5 ± 6.1, 11.2 ± 3.7, 39.0 ±1.3, 3170.8 ± 491.8, and 7.2 ±7.5, respectively. The mean Wijma scores, WHO-5 well-being scores, and birth satisfaction scores were 73.9 ±23.0, 53.2 ± 25.2, and 23.0 ±7.1, respectively. Fifty-nine point six percent (59.6%) of the women were multiparous, and of these 34.2% and 25.4% were multipara 2 and multipara 3, respectively. The correlation between birth satisfaction total scores and admissions to delivery duration was -0.305 (p<0.001). Sample characteristics are presented in table1. Table 1 also presents the results of general linear models for birth satisfaction scores.

Table 1. The results of general linear models on birth satisfaction scores (N = 767).

Demographic/obstetric variables	N (%)	M (SD)	Mean difference (95% CI)	P
Age (years)				
< 20	49 (6.4)	22.4 ± 7.3	Ref	
20-30	378 (49.3)	22.8 ± 7.1	-.409 (-1.69, 2.61)	.703
> 30	340 (44.3)	23.3 ± 7.0	.857 (-1.26, 2.97)	.427
Educational level (years)				
Primary school	125 (16.3)	22.8 ± 6.5	-.872 (-2.46, .71)	.280
High school	446 (58.2)	22.8 ± 7.0	-.888 (-2.07, .30)	.142
University	196 (25.6)	23.6 ± 7.5	Ref	
Job				
Housewife	690 (90.0)	22.9 ± 7.0	-1.080 (-2.74, .58)	0.203
Employed	77 (10.0)	24.0 ±7.2	Ref	
Household income				
Insufficient	269 (35.1)	21.7 ± 6.3	-2.005 (-3.04, -.97)	<0.001
Sufficient	498 (64.9)	23.7 ± 7.4	Ref	
Obstetric variables				
Parity				
Primipara	310 (40.4)	21.5 ± 7.0	-2.55 (-3.55, -1.55)	<0.001
Multipara	457 (59.6)	24.0 ± 6.9	Ref	
History of abortion				
Yes	129 (16.8)	22.1 ± 7.1	-1.05 (-2.38, .29)	.123
No	638 (83.2)	23.2 ± 7.0	Ref	
Mode of birth				
Elective cesarean	101 (13.2)	24.7 ± 6.6	1.306 (-.175, 2.79)	.084
Emergency cesarean	146 (19.0)	20.4 ± 6.9	-2.939 (-4.22, -1.66)	<.001
Vaginal delivery	520 (67.8)	23.4 ± 7.0	Ref	
Gestational age at birth (week)				
< 38	104 (13.6)	21.7 ± 6.4	-2.057 (-4.01, -.101)	.039
38-40	567 (73.9)	23.1 ± 7.1	-.637 (-2.163, .888)	.412
> 40	96 (12.5)	23.7 ± 7.1	Ref	
Birth weight (gr)				
< 2500	66 (8.6)	21.7 ± 6.5	-1.54 (-4.56, 1.47)	.316

2500-3999	670 (87.4)	23.1 ± 7.1	-.082 (-2.62, 2.46)	.950
≥ 4000	31 (4.0)	23.2 ± 7.6	Ref	
Infant gender				
Female	403 (52.5)	22.8 ± 7.0	-.344 (-1.34, .66)	0.500
Male	364 (47.5)	23.2 ± 7.1	Ref	
Labor pain				
Spontaneous	466 (60.8)	23.0 ± 7.1	Ref	
Induced	203 (26.5)	21.9 ± 6.9	-1.03 (-2.19, .125)	0.080
Elective cesarean	98 (12.8)	24.8 ± 7.0	1.72 (.19, 3.25)	.027
Having a doula				
Yes	186 (27.9)	23.9 ± 7.8	Ref	
No	480 (72.1)	22.3 ± 6.7	-1.67 (-2.85, -.48)	0.004
Elective cesarean	98 (12.8)	24.7 ± 6.6	.748 (-.950, 2.45)	.388
Pain relief method‡				
Entonox	314 (60.4)	23.1 ± 7.0	1.15 (-.20, 2.51,)	.095
Spinal/epidural analgesia	30 (5.8)	20.3 ± 5.8	3.95 (1.21, 6.70)	.005
Hot water showers/massage	23 (4.4)	24.6 ± 8.4	-.321 (-3.40, 2.75)	.838
Nothing	153 (29.4)	24.3 ± 6.9	Ref	
Psychological variables				
Fear of childbirth				
W-DEQ < 85	529 (69.0)	25.0 ± 6.7	Ref	
W-DEQ ≥ 85	238 (31.0)	18.5 ± 5.6	-6.44 (-7.42, -5.46)	<0.001
WHO-5				
< 50	371 (48.4)	21.3 ± 6.1	-3.37 (- 4.34, -2.40)	<0.001
≥ 50	396 (51.6)	24.6 ±7.5	Ref	
Satisfaction with pregnancy				
Low satisfied	115 (15.0)	18.4 ± 6.2	-6.73 (-8.12, -5.33)	<0.001
Moderately satisfied	281 (36.6)	22.1 ± 6.1	-3.03 (-4.06, -2.00)	<0.001
Satisfied or very satisfied	371 (48.3)	25.1 ± 7.2	Ref	
Perceived marital/sexual satisfaction				
Low satisfied	11 (1.4)	18.4 ± 4.9	-4.99 (-9.16, -.83)	0.019
Moderately satisfied	69 (9.0)	20.1 ± 6.2	-3.29 (-5.01, -1.55)	<0.001

Satisfied or very satisfied	687 (89.6)	23.4 ± 7.1	Ref	
Satisfaction with spouse's support				
Low satisfied	24 (3.1)	20.8 ± 7.2	-3.20 (-5.99, -.415)	0.024
Moderately satisfied	151 (19.7)	19.4 ± 5.0	-4.58 (-5.80, -3.36)	<0.001
Satisfied or very satisfied	592 (77.2)	24.0 ± 7.2	Ref	

general linear model (GLM), ‡NVD group was included in the analysis

In table 2, detailed results of multiple linear regression analysis for the birth satisfaction scores are presented. Predictors of the low birth satisfaction were primiparity, low level of well-being, low and moderate satisfaction with pregnancy, moderate satisfaction with spouse's emotional/financial support, emergency cesarean, severe fear of childbirth, and long admission to delivery duration.

Table 2. Results of multiple linear regression analysis on the birth satisfaction scores.

	Unstandardized Coefficients		Standardized Coefficients		95.0% CI for B		Collinearity Statistics	
	B	S.E	Beta	P	Lower Bound	Lower Bound	Tolerance	VIF
Demographic/obstetric predictors								
Contrast	28.606	.802		<.001	27.032	30.181		
Insufficient income	-2.027	.504	-.137	<.001	-3.017	-1.037	.966	1.035
Primiparity	-1.596	.504	-.111	.002	-2.586	-.606	.913	1.095
Emergency cesarean	-1.850	.640	-.103	.004	-3.108	-.593	.885	1.130
Spinal/epidural	-2.123	1.236	-.058	.086	-4.550	.303	.974	1.027
Not having a doula	-.897	.514	-.062	.081	-1.905	.112	.905	1.105
Long admission To delivery duration	-.233	.033	-.248	<.001	-.298	-.167	.892	1.122
Psychological predictors								
Contrast	32.668	.678		<.001	31.337	33.999		
Low satisfaction with pregnancy	-4.247	.665	-.215	<.001	-5.552	-2.942	.826	1.211
Moderate satisfaction with pregnancy	-1.912	.484	-.131	<.001	-2.863	-.962	.855	1.170
Moderate satisfaction with spouse's support	-2.745	.560	-.155	<.001	-3.843	-1.646	.939	1.064
Severe fear of childbirth	-5.298	.480	-.348	<.001	-6.240	-4.356	.944	1.059
Low level of well-being	-1.775	.449	-.126	<.001	-2.656	-.895	.925	1.081
Overall predictors								
Contrast	36.875	.890		<.001	35.128	38.622		
Insufficient income	-.803	.440	-.054	.069	-1.667	.061	.936	1.069
Primiparity	-1.883	.439	-.131	<.001	-2.745	-1.021	.890	1.124
Low level of well-being (ref: WHO-5 ≥ 50)	-1.679	.425	-.119	<.001	-2.514	-.844	.914	1.094
Low satisfaction with pregnancy (ref: high satisfaction)	-3.810	.633	-.193	<.001	-5.052	-2.568	.809	1.235
Moderate satisfaction with pregnancy (ref: high satisfaction)	-2.099	.458	-.143	<.001	-2.999	-1.199	.846	1.181
Moderate satisfaction with spouse's support (ref: high satisfaction)	-2.657	.541	-.150	<.001	-3.718	-1.595	.893	1.120

Emergency cesarean (ref: vaginal birth)	-1.536	.599	-.086	.011	-2.713	-.360	.746	1.340
Severe fear of childbirth (ref: low fear)	-4.806	.456	-.315	<.001	-5.701	-3.911	.928	1.078
Long admission To delivery duration	-.176	.029	-.188	<.001	-.233	-.119	.868	1.152

R square for the first regression analysis= 14.5%, , R square for the second regression analysis = 28.8%, , R square for the third regression analysis = 36.8%, method: backward

We looked into the relation between the presence of a doula during labor and delivery and birth satisfaction in the case women who had emergency cesarean and also women who had vaginal delivery. Women who had vaginal birth and were accompanied by a doula reported a higher level of birth satisfaction than those without a doula (p = 0.012). Women who had emergency cesarean accompanied by a doula reported a lower level of birth satisfaction than those without a doula (p = 0.045) (table 3).

Table 3. Distribution of the birth satisfaction scores according to the mode of birth and having a Doula at birth (N = 666).

	Emergency Cesarean		Vaginal birth	
Having a doula at birth	N	Mean ± SD	N	Mean ± SD
No	131	20.8 ± 7.0	349	22.8 ± 6.6
Yes	15	17.1 ± 5.3	171	24.5 ± 7.7
t	2.02		2.52	
P	0.045		0.012	

Discussion

In this study, we investigated the predictors of low birth satisfaction in early postpartum. Our results indicate that primiparity, emergency cesarean, long duration from admission to delivery, low level of well-being, low and moderate satisfaction with pregnancy, moderate satisfaction with spouse's emotional/financial support, and severe fear of childbirth are predictors of low birth satisfaction. The proportion of the variance in birth satisfaction explained by the demographic and psychological variables were 14.5% and 28.8%, respectively. The total explained variance by all the independent variables was 36.8%. Our results can be compared to those obtained by Nahaee and colleagues in a study in Tehran which investigated, Pre- and during-labor predictors of low birth satisfaction. They found that the proportion of the variance explained by during-labor, pre-labor, and overall variables were 75%, 14%, and 76%, respectively [36]. In our study, the highest proportion (28.8%) of variation in birth satisfaction scores are explained by the psychological variables, which include fear of childbirth, well-being, satisfaction with pregnancy, and satisfaction with spouse's emotional/financial support.

We found that postpartum fear of childbirth was a predictor of birth satisfaction. This result is in agreement with those reported by Nahaee et al. in Tehran, Iran [36]. A survey on 1004 Indian women found that experiencing no fear of childbirth had a positive impact on birth satisfaction in women who gave birth vaginally [37]. In our study, women's low level of well-being was a predictor of low birth satisfaction. We used the WHO-5 well-being Index which

was recommended as a depression screening tool [34]. This result is consistent with that of a previous study which found severe anxiety state was a predictor of low birth satisfaction [36].

In our study, having a smooth, hassle free pregnancy was a predictor of birth satisfaction. In a study on 225 postpartum women in Khaf, Iran, childbirth experience improved with lower hassle and an increased sense of uplift [38]. In our study, satisfaction with spouse's support could predict birth satisfaction. In a study on 652 women at 12 to 48 hours postpartum, helpfulness of partner support was a predictor of a satisfactory birth experience [39].

Results from this study indicate that primaparity is a predictor of low birth satisfaction. This is in agreement with results from studies by Nahaee et al. [36], Takacs et al. [15], and Fumagalli et al. [13]. Results from our study and similar studies indicate that in primiparous women, childbirth experience is associated with more fear in comparison with multiparas, and that labor duration is usually longer in nulliparas than multiparas. Both of these facts may have a role in low birth satisfaction. In our study, long labor duration was a strong predictor of low birth satisfaction, which is in line with other studies conducted in Canada [40], Italy [13], and Ethiopia [41]. Dystocia was also a predictor of low satisfaction in Nahaee et al. study [36].

We found that emergency cesarean could predict low birth satisfaction. In a study on 652 postpartum women in Canada, type of birth was the strongest predictor of women's childbirth perceptions [39]. We found no socio-demographic variables related to maternal satisfaction which is in line with Fumagalli et al. study [13].

Our results indicate that having a doula at birth is one of the predictors of birth satisfaction. Further investigation showed that the effect of having a doula during labor and birth on birth satisfaction depends on the mode of birth. In women who eventually had a vaginal delivery, having a companion had a significant positive effect on birth satisfaction but in women who had an emergency cesarean, it had a significant negative effect. This result is in line with previous studies that found that in normal vaginal deliveries, having a doula at birth improved maternal emotional wellbeing, reduced anxiety and fear of childbirth [42, 43]. In addition, evidence from other studies indicate that presence of a companion at birth is a predictor of childbirth experience [38] and increase the overall birth satisfaction [16]. Since the implementation of the HTP in Iran, free childbirth preparatory classes are regularly organized for pregnant women. Participants in these classes are allowed to have a doula present during labor and childbirth. Our results indicate that women who pay to have a doula during normal vaginal birth but fail to deliver normally, experience a sense of frustration which impacts on their satisfaction with childbirth. Such cases should be considered by public health officials who are developing programs and interventions which aim to improve childbirth satisfaction in early postpartum.

The mean birth satisfaction score was 23.0 ± 7.1 which is close to that reported in Nahaee et al. study in Tehran, Iran [36] and Goncu et al. study in Turkey [26]. In their studies, the mean birth satisfaction scores were 23.8 ± 6.5 and 20.4 ± 6.0, respectively. The birth satisfaction mean score in our study is lower in comparison with studies conducted in developed countries such as the United State (32.4 ± 6.4) [44], Australia (30.4 ± 5.9) [29], and United Kingdom (28.4 ± 5.6) [24].

Due to the increased internet and satellite TV penetration in Iran, women have access to more information about the higher quality of maternity services and better conditions of childbirth in developed countries. This may have led to higher levels of expectations regarding childbirth. The mismatch between expectations and available maternity services and substandard care may have a role in lower birth satisfaction in developing countries [45]. Moreover, in developed countries, the evolution of maternity services has led to a shift in the focus of health policy toward the

provision of woman-centered individualized care [46], but in developing countries, with the reduction in maternal mortality and morbidity, the focus of policy has only recently shifted to improving birth satisfaction.

In this cross-sectional study, we measured fear of childbirth and birth satisfaction in early postpartum at the same time; therefore, the cause and effect relationship between these two variables is difficult to determine although it seems more plausible to assume that the direction of causality is from fear of childbirth to birth satisfaction. Although we used the WHO-5 to measure wellbeing over two weeks preceding delivery, well-being may be influenced by events and conditions during childbirth.

The strong point of this study is the large sample size and its weak point is that we investigated the birth satisfaction during the first 24 hours postpartum. Several problems resulting from substandard or discontinued care may reduce birth satisfaction only after discharge from hospital. These problems may adversely impact perceived overall birth satisfaction. Another point of weakness was that some variables of interest such as domestic violence or previous birth experience were not included in the study

Conclusions

We found that primiparity, emergency cesarean, long duration between admission and delivery, low level of well-being, low and moderate satisfaction with pregnancy, moderate satisfaction with spouse's support, and severe fear of childbirth were the predictors of the low birth satisfaction. Some of these factors can be manipulated with the aim of helping women to have a positive childbirth experience. The following are some of the measures which should be considered in this regard: interventions to enhance maternal well-being in late pregnancy, interventions to reduce fear of childbirth, promotion of spouse's support, provision of doula care, and appropriate changes to hospital admission protocols.

Our findings indicate that the obstetric/psychological predictors of birth satisfaction are responsible for 36.8% of variation in birth satisfaction. We recommend that further studies be conducted in Iran to identify other significant factors influencing birth satisfaction, particularly social predictors of birth satisfaction such as helpfulness of midwives/physicians, communication of information, and respectful attitude of staff members. Also, attitudes and expectations of parturient women with regard to participation in decision-making and having choice and autonomy during labor and birth should be investigated. Furthermore, the trajectory of birth satisfaction during the first two weeks postpartum may reveal the effects of other important variables on birth satisfaction such as breastfeeding problems.

List Of Abbreviations

HTP: Health transformation plan

W-DEQ: The Wijma Delivery Expectancy/Experience Questionnaires

WHO-5 Well-Being Index: The World Health Organization's Well-Being Index

BSS-R: The Birth Satisfaction Scale–Revised

Declarations

Ethics approval and consent to participate

The Ethics Committee of Sabzevar University of Medical Sciences has approved this study (Number: IR.MEDSAB.REC.1399.119). All methods were performed in accordance with guidelines of Sabzevar University of Medical sciences which is in accordance with the Declaration of Helsinki. Women who consented to participate in the study signed an informed consent form.

Consent for publication

Not applicable.

Availability of data and materials

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Competing interests

We declare that there is no conflict of interest in publishing this manuscript.

Funding

This study received a fund from the Sabzevar University of Medical Sciences which approved the proposal. The funding body had no role in the design of the study, collection, analysis, and interpretation of data, and in writing the manuscript.

Authors' contributions

All authors contributed to the study. MM collected the data and wrote the first draft of the manuscript. FM analyzed the data and wrote the final draft of the manuscript. The authors have read and approved the manuscript.

Acknowledgements

We would like to thank pregnant women who participated in this study.

References

1. Rashidian A, Moradi G, Takian A, Sakha MA, Salavati S, Faraji O, Piroozi B: Effects of the Health Transformation Plan on caesarean section rate in the Islamic Republic of Iran: an interrupted time series. Eastern Mediterranean health journal = La revue de sante de la Mediterranee orientale = al-Majallah al-sihhiyah li-sharq al-mutawassit 2019, 25(4):254-261.

2. Gottvall K, Waldenstrom U: Does a traumatic birth experience have an impact on future reproduction? BJOG : an international journal of obstetrics and gynaecology 2002, 109(3):254–260.

3. Johnson R, Slade P: Does fear of childbirth during pregnancy predict emergency caesarean section? BJOG : an international journal of obstetrics and gynaecology 2002, 109:1213-1221.

4. Darsareh F, Aghamolaei T, Rajaei M, Madani A: Determinants of caesarean birth on maternal demand in the Islamic Republic of Iran: a review. Eastern Mediterranean Health Journal 2017, 23(6):441-448.

5. Gibbons L, Belizán JM, Lauer JA, Betrán P, Merialdi M, Althabe F: The Global Numbers and Costs of Additionally Needed and Unnecessary Caesarean Sections Performed per Year: Overuse as a Barrier to Universal Coverage Geneva: WHO 2010.

6. Cincotta R, Sadjadpour K: IRAN IN TRANSITION: The Implications of the Islamic Republic's Changing Demographics. In. Edited by Peace. CEfI. Washington, DC: Carnegie Endowment for International Peace; 2017.

7. Karamouzian M, Sharifi H, Haghdoost AA: Iran's shift in family planning policies: concerns and challenges. Int J Health Policy Manag 2014, 3(5):231-233.

8. Moradi-Lakeh M, Vosoogh-Moghaddam A: Health sector evolution plan in Iran; equity and sustainability concerns. Int J Health Policy Manag 2015, 4(10):637-640.

9. Setudezadeh F, Yousefinezhadi T: The increasing prevalence of cesarean in Iran: How the rate of cesareans could be controlled? Obstetrics & Gynecology International Journal Obstet Gynecol Int J 2019, 9(6):532–535.

10. Yousefinezhadi T, Mosadeghrad AM, Arab M, Ramezani M, Sari AA: An Analysis of Hospital Accreditation Policy in Iran. Iranian journal of public health 2017, 46(10):1347-1358.

11. Tadele M, Bikila D, Fite RO, Obsa MS: Maternal satisfaction towards childbirth Service in Public Health Facilities at Adama town, Ethiopia. Reproductive Health 2020, 17(1):60.

12. Jafari E, Mohebbi P, Mazloomzadeh S: Factors Related to Women's Childbirth Satisfaction in Physiologic and Routine Childbirth Groups. Iranian journal of nursing and midwifery research 2017, 22(3):219-224.

13. Fumagalli S, Colciago E, Antolini L, Riva A, Nespoli A, Locatelli A: Variables related to maternal satisfaction with intrapartum care in Northern Italy. Women and Birth 2021, 34(2):154-161.

14. Pantoja L, Weeks FH, Ortiz J, Cavada G, Foster J, Binfa L: Dimensions of childbirth care associated with maternal satisfaction among low-risk Chilean women. Health Care for Women International 2020, 41(1):89-100.

15. Takacs L, Seidlerova JM, Sulova L, Hoskovcova SH: Social psychological predictors of satisfaction with intrapartum and postpartum care - what matters to women in Czech maternity hospitals? Open medicine (Warsaw, Poland) 2015, 10(1):119-127.

16. Mocumbi S, Högberg U, Lampa E, Sacoor C, Valá A, Bergström A, von Dadelszen P, Munguambe K, Hanson C, Sevene E *et al*: Mothers' satisfaction with care during facility-based childbirth: a cross-sectional survey in southern Mozambique. BMC pregnancy and childbirth 2019, 19(1):303.

17. Karoni HF, Bantie GM, Azage M, Kasa AS, Aynie AA, Tsegaye GW: Maternal satisfaction among vaginal and cesarean section delivery care services in Bahir Dar city health facilities, Northwest Ethiopia: a facility-based comparative cross-sectional study. BMC pregnancy and childbirth 2020, 20(1):473.

18. Tocchioni V, Seghieri C, De Santis G, Nuti S: Socio-demographic determinants of women's satisfaction with prenatal and delivery care services in Italy. Int J Qual Health Care 2018, 30(8):594–601.

19. Asres G: Satisfaction and associated factors among mothers delivered at Asrade Zewude Memorial Primary Hospital, Bure, West Gojjam, Amhara, Ethiopia: a cross sectional study. Prim Health Care 2018, 8(2).

20. Dickinson JE, Paech MJ, McDonald SJ, Evans SF: Maternal satisfaction with childbirth and intrapartum analgesia in nulliparous labour. Australian and New Zealand Journal of Obstetrics and Gynaecology 2003, 43(6):463-468.

21. Spaich S, Welzel G, Berlit S, Temerinac D, Tuschy B, Sütterlin M, Kehl S: Mode of delivery and its influence on women's satisfaction with childbirth. European Journal of Obstetrics & Gynecology and Reproductive Biology 2013, 170(2):401-406.

22. Bitew K, Ayichiluhm M, Yimam K: Maternal Satisfaction on Delivery Service and Its Associated Factors among Mothers Who Gave Birth in Public Health Facilities of Debre Markos Town, Northwest Ethiopia. BioMed Research International 2015, 2015:460767.

23. Mortazavi F, Mehrabadi M, Hollins Martin CJ, Martin CR: Psychometric properties of the birth satisfaction scale-revised (BSS-R) in a sample of postpartum Iranian women. Health Care for Women International 2020, 10.1080/07399332.2020.1802464:1-16.

24. Martin CJH, Martin CR: Development and psychometric properties of the Birth Satisfaction Scale-Revised (BSS-R) Midwifery 2014, 30:610-619.

25. Nespoli A, Colciago E, Pedroni S, Perego S, Fumagalli S: The Birth Satisfaction Scale-Revised (BSS-R): process of translation and adaptation in an Italian context. Annali dell'Istituto superiore di sanita 2018, 54(4):340-347.

26. Goncu Serhatlioglu S, Karahan N, Hollins Martin CJ, Martin CR: Construct and content validity of the Turkish Birth Satisfaction Scale - Revised (T-BSS-R). Journal of reproductive and infant psychology 2018, 36(3):235-245.

27. Skodova Z, Nepelova Z, Grendar M, Baskova M: Psychometric properties of the Slovak version of the Birth Satisfaction Scale (BSS) and Birth Satisfaction Scale-Revised (BSS-R). Midwifery 2019, 79:102550.

28. Romero-Gonzalez B, Peralta-Ramirez MI, Caparros-Gonzalez RA, Cambil-Ledesma A, Hollins Martin CJ, Martin CR: Spanish validation and factor structure of the Birth Satisfaction Scale-Revised (BSS-R). Midwifery 2019, 70:31-37.

29. Jefford E, Hollins Martin CJ, Martin CR: Development and validation of the Australian version of the Birth Satisfaction Scale-Revised (BSS-R). Journal of reproductive and infant psychology 2018, 36(1):42-58.

30. Barbosa-Leiker C, Fleming S, Hollins Martin CJ, Martin CR: Psychometric properties of the Birth Satisfaction Scale-Revised (BSS-R) for US mothers. Journal of reproductive and infant psychology 2015, 33(5):504-511.

31. Wijma K, Wijma B, Zar M: Psychometric aspects of the W-DEQ: a new questionnaire for the measurement of fear of childbirth. J Psychosom Obstet Gynecol 1998, 19(2):84-97 http://dx.doi.org/10.3109/01674829809048501 PMID: 01674829809638601.

32. Toohill J, Fenwick J, Gamble J, Creedy DK: Prevalence of childbirth fear in an Australian sample of pregnant women. BMC pregnancy and childbirth 2014, 14:275-275.

33. Mortazavi F: Validity and reliability of the Farsi version of Wijma delivery expectancy questionnaire: an exploratory and confirmatory factor analysis. Electronic Physician 2017, 9(6):4616-4615.

34. About the WHO-5. https://www.psykiatri-regionh.dk/who-5/about-the-who-5/Pages/default.aspx. Accessed 15 Dec 2020.

35. Mortazavi F, Mousavi SA, Chaman R, Khosravi A: Validation of the World Health Organization-5 Well-Being Index; assessment of maternal well-being and its associated factors. Turk psikiyatri dergisi = Turkish journal of psychiatry 2015, 26(1):1-7.

36. Nahaee J, Mohammad-Alizadeh-Charandabi S, Abbas-Alizadeh F, Martin CR, Hollins Martin CJ, Mirghafourvand M, Hassankhani H: Pre- and during-labour predictors of low birth satisfaction among Iranian women: a prospective analytical study. BMC pregnancy and childbirth 2020, 20(1):408.

37. Jha P, Larsson M, Christensson K, Skoog Svanberg A: Satisfaction with childbirth services provided in public health facilities: results from a cross- sectional survey among postnatal women in Chhattisgarh, India. Global Health Action 2017, 10(1):1386932.

38. Khalife-Ghaderi F, Amiri-Farahani L, Haghani S, Hasanpoor-Azghady SB: Examining the experience of childbirth and its predictors among women who have recently given birth. Nursing Open 2021, 8(1):63-71.

39. Bryanton J, Gagnon AJ, Johnston C, Hatem M: Predictors of women's perceptions of the childbirth experience. Journal of obstetric, gynecologic, and neonatal nursing : JOGNN 2008, 37(1):24-34.

40. Bélanger-Lévesque M-N, Pasquier M, Roy-Matton N, Blouin S, Pasquier J-C: Maternal and paternal satisfaction in the delivery room: a cross-sectional comparative study. BMJ Open 2014, 4(2):e004013.

41. Demis A, Getie A, Wondmieneh A, Bimerew M, Alemnew B, Gedefaw G: Women's satisfaction with existing labour and delivery services in Ethiopia: a systematic review and meta-analysis. BMJ Open 2020, 10(7):e036552.

42. McLeish J, Redshaw M: "Being the best person that they can be and the best mum": a qualitative study of community volunteer doula support for disadvantaged mothers before and after birth in England. BMC pregnancy and childbirth 2019, 19(1):21.

43. Mortazavi F, Mehrabadi M: Predictors of fear of childbirth and normal delivery among Iranian postpartum women: a cross-sectional study BMC pregnancy and childbirth 2021, 10.21203/rs.3.rs-156700/v1.

44. Martin CR, Hollins Martin CJ, Burduli E, Barbosa-Leiker C, Donovan-Batson C, Fleming SE: Measurement and structural invariance of the US version of the Birth Satisfaction Scale-Revised (BSS-R) in a large sample. Women and birth : journal of the Australian College of Midwives 2017, 30(4):e172-e178.

45. Mortazavi F, Mirzaii K: Concerns and expectations towards husband's involvement in prenatal and intrapartum cares: a qualitative study. Payesh 2012, 11(1):51-.

46. Martin CR, Hollins Martin C, Redshaw M: The Birth Satisfaction Scale-Revised Indicator (BSS-RI). BMC pregnancy and childbirth 2017, 17(1):277.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- thequestionnaire.docx