ORIGINAL ARTICLE

Survey of the Relationship between fear of childbirth, pain and delivery outcomes

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ABSTRACT

Background: Delivery is a unique experience in women's life. Fear of childbirth is an important factor that affects women's psychological health. Fear is accompanied by increased pain sensation and undesirable delivery outcomes.

Aim: To survey the relationship between fear of childbirth and pain and delivery outcomes in nulliparous women in maternity ward of public hospitals in Rasht.

Methods: This analytical cross-sectional study was conducted on 230 eligible nulliparous women based on convenience sampling. Data collection instruments included questionnaires of demographic, fertility and Wijma Delivery Expectancy/Experience version B questionnaires and visual analogue scale for pain. The Fisher exact test, one-way analysis of variance, chi-square and multinomial logistic regression tests were performed for data analysis.

Results: Univariate analyses revealed that fear did not have a significant relationship with pain and delivery outcomes (p>0.05). The regression model revealed that some items of the fear questionnaire, maternal education, desired fetal sex, receiving information at admission, participation in childbirth preparation classes, maternal age, maternal diseases and Persian ethnicity, compared to Gilak ethnicity, were the predictors of Caesarean section and pain.

Conclusions: The findings of this study revealed a significant relationship between fear of childbirth and receiving information at admission. Considering the psychological aspects of delivery for mother and pleasurizing delivery by providing psychological support and appropriate environment are important issues in delivery rooms. **Keywords:** fear; pain; delivery; delivery consequences

INTRODUCTION

Childbirth is an important process and a unique experience in a woman's life. Psychological, emotional and physical stress interfere with delivery causing a crucial life crisis^{1,2}. These factors can be potentially hazardous and have positive or negative effects on physical and psychological health of women and result in a painful experience for mothers³⁻⁶.

Fear of childbirth, and being worried about delivery are among the important factors that affect psychological health of women in pregnancy¹. Almost every pregnant woman is, to some extent, nervous about delivery⁷. Fear of delivery outcome is a normal reaction to an unknown situation^{8,9}.

Based on the findings of various studies, fear of pain is the most common cause of Fear of childbirth¹⁰. Pain is one of the most common medical problems and is considered as a threatening factor for personal capabilities. Pain can cause fear in pregnancy, more than any other issues, and cause women to ask for help. Many women consider delivery pain as the most painful experience in life¹¹.

Many factors influence maternal perception of labor pain, among which fear of childbirth is an important factor⁸.. Individuals who suffer from fear of pain have disastrous ideas and negative interpretation of pain and consider pain to be equal to harm. In fact, if fear of pain becomes irrational or pathologic, it can cause avoidance from the cause of pain¹⁰.

Studies that were recently conducted in Scandinavian countries revealed an increase in the prevalence of fear of childbirth. The exact prevalence of this psychological problem is not known but it is estimated that approximately 5-20% of pregnant women in the Western societies are afraid of delivery¹². The prevalence of fear of childbirth was reported to be 59% in Iran¹⁰.

Fear of childbirth is among the important problems in delivery and can have harmful effects. Fear of childbirth can be accompanied by increased pain, delayed labor progression, prolonged delivery and unpleasant delivery experience in most women^{2,8,13}. Women who experience Fear of childbirth are at risk for increased surgical intervention and undesired delivery outcomes. Increased fear was accompanied with increased delivery induction and Caesarean section. Fear can increase serum catecholamines and cortisol and thus reduce blood perfusion of the pelvic muscles and cause hypoxia and in turn result in increased pain in mother^{8,13,14}.

The findings of studies on the relationship between fear of childbirth and pain and consequences of childbirth are inconsistent. Junge, Handelzalts and Adams reported a relationship between fear of childbirth and negative delivery outcomes including delivery pain, duration of labor, assisted delivery, emergency Caesarean section and negative delivery experiences¹⁵⁻¹⁷. In contrast, Sluijs,

Alehagen, Hall and Iranshahi found no relationship between fear of childbirth and pain and problems during delivery¹⁸⁻²¹. Considering the psychological aspects of mothers at delivery room and pleasurizing delivery by providing and psychological support satisfactory environment for the mother along with providing delivery preparation education for pregnant women are healthcare necessities²². Delivery is full of tensions, which occur at a short time, and is considered as a high stress event in a woman's life that threatens health. Pregnant women need more support and care in order to cope with this stressful period. Midwifery care is the most important and effective care for provision and improvement of women's health in this period. Therefore, this study was performed to evaluate fear of childbirth and its relationship with pain and delivery outcomes in nulliparous women who were admitted for delivery in maternity ward in public hospitals of Rasht.

METHODS

The current study was a descriptive analytical crosssectional study with the aim of assessing fear of childbirth and its relationship with pain and delivery outcomes. This study was conducted on nulliparous women who were admitted for childbirth in maternity ward of public hospitals in Rasht from July 2019 to December 2019. Study population included all pregnant women who were admitted in maternity wards at Rasool Akram and Al-Zahra public hospitals. Sampling was performed by frequent visit to the hospitals by the researcher using convenience sampling method. Pregnant women who were admitted in the maternity wards of the two hospitals for delivery were studied. Inclusion criteria were being nulliparous and in the labor phase, with a live fetus, singleton term fetus, cephalic presentation of the fetus, and stable condition of the mother. Mothers with body mass index higher than 30 kg/m² or those with underlying diseases during pregnancy, including preeclampsia, eclampsia, uncontrolled diabetes, hemorrhage, placenta abruption, placenta previa, cardiovascular diseases, uncontrolled epilepsy, cancer, acquired immune deficiency syndrome (AIDS), acute renal pyelonephritis. failure. thromboembolism, psychological disorders and preterm labor, who were admitted to hospital or were under treatment by a specialist other than an obstetrics and gynecologist were excluded from the study. Furthermore, single mothers and mothers who were living separately due to problems with their spouses, and mothers who encountered fetal death during the study, and those who were not willing to participate in the study were excluded from the study. Sample size for this study was calculated based on the study by Tzeng et al. in Taiwan²³ and by considering confidence interval of 1 – \propto = .95%, power 1 – B = .90 % the required sample size was 230 subjects. Data collection tools in this study included two questionnaires and a visual analogue scale. The first part of the questionnaire included a researcher made questionnaire regarding demographic characteristics, fertility and delivery outcomes based on hospital history forms. This part was filled based on the available data in patient records. Personal and social characteristics of the subjects were assessed based on the data in this part. Furthermore, pregnancy characteristics, including parity,

number of abortions, gestational age, unwanted pregnancy for mother or spouse, history of infertility, use of assisted reproductive technology, fetal sex desirability of the current fetal sex, as well as participation in Childbirth preparation class, maternal information about childbirth and source of information, obtaining information during admission and the efficacy of this information, were recorded in this part. Maternal delivery outcomes consisted of receiving interventions during delivery, including induction or augmentation of labor, receiving methods or medications for pain reduction, and duration of the active phase of labor, duration of the second phase of labor, type of delivery, accelerated labor, genitalia laceration and episiotomy, atony of uterus, and postpartum hemorrhage, were also obtained by researcher from patient records or by interview or observation.

The Wijma Delivery Expectancy/Experience (W-DEQ) version B questionnaire was used to assess fear of childbirth in admitted women in delivery room. The questionnaire was filled within 2 hours after vaginal delivery or when mother's condition became stable after Caesarean section. This questionnaire was designed by Wijma et al²⁴ and includes 33 items that are scored based on a 6-point Likert scale (0 indicating not at all and 6 indicating severely). The minimum and maximum score for this questionnaire is 85. Scores higher than 85 indicate fear of childbirth. Psychometric analysis and validity of this questionnaire was assessed by Mortazavi et al. (2014) in Sabzevar and the content validity index was reported to be 0.80²⁵.

The visual analogue scale (VAS) was used to assess pain severity during uterine contraction in the active phase of labor when cervical dilatation was at least 4 cm. This tool resembles a ruler which is marked from 0 to 10 cm. The 0 score indicates no pain while the score 10 indicates severe pain. Subjects were informed about the use of the pain severity scale during the latent phase of labor in order to be able to rapidly score their pain severity during the active phase of labor.

Collected data were entered into SPSS version 21. Data analysis was performed using descriptive statistic indices and the Fisher exact test, one-way analysis of variance (ANOVA), chi-square, and multiple logistic regression (Back Ward LR model) analysis.

RESULTS

A total of 230 nulliparous women participated in this study. Majority of the mothers (61.74%) were within the age of 20 and 35 years old. Other characteristics of the study subjects are presented in Table 1.

Out of 230 women in this study, 118 (51.3%) had fear of childbirth. The mean score for fear (from 0 to 165) was 85.95 ± 18.61 . Majority of women (80%) had severe pain in the active phase of labor.

The relationship between fear of childbirth and pain was assessed using the Fisher exact test and one-way ANOVA. There was no significant relationship between pain severity and fear score (p=0.999) and total score (p=0.510). The unadjusted regression model revealed that some of the fear questions were predictors for severe pain in the active phase of labor (Table 2). After adjusting for personal, social and fertility factors, the logistic regression model revealed that among the study variables, some of the fear questions, maternal disease (OR= 0.212, p=0.004), maternal education (OR=2.1, p=0.015), desired fetal sex (OR=7.9, p=0.001), receiving information at admission (OR=0.227, p=0.023), and participation in Childbirth preparation class (OR=3.9, p=0.011) could predict severe pain in the active phase of labor (Table 3). The findings of this study revealed that maternal delivery outcomes were not significantly related to Fear of childbirth based on the chi-square test (p>0.05). But the unadjusted

regression model revealed that some of the fear questions were the predictors for labor induction in the latent phase of labor (Table 4).

Based on the unadjusted logistic regression model, some of the fear questions were predictors for Caesarean section (Table 5). After adjustment for personal, social and fertility factors, the logistic regression model revealed that some of the fear questions and personal and social factors, maternal age (OR= 6.77, p=0.001), spousal education level (OR=3.2, p=0.004), receiving education at admission (OR=3, p=0.036) were predictors for Caesarean section (Table 6).

Table 1: Frequency distribution of personal and social characteristics of the nulliparous women in maternity of public hospitals of Rasht city

Variable		Frequency	Percentage
Maternal age	Below 20 years old	25	10.87
	20-35 years old	142	61.74
	35 years old and older	63	27.39
	Mean ± SD	26.03 ± 5.43	
	Minimum, maximum	16-43	
Marital age	Below 20 years old	83	36.09
	20-35 years old	118	51-30
	35 years old and older	29	12.61
	Mean ± SD	22.31 ± 5.44	·
	Minimum, maximum	13.0, 41.0	
Maternal disease	Yes	63	27.39
	No	167	72.61
Maternal education	Primary	18	7.83
	Guidance school	66	28.70
	Diploma	92	40.00
	University	54	23.48
Ethnicity	Gilak	173	75.22
-	persian	10	4.35
	Turk	40	17.39
	Other	7	3.04
Maternal occupation	Housewife	206	89.57
	Employed	24	10.43
Income	low	112	48.70
	medium	107	46.52
	Acceptable	11	4.78
Spousal education	Primary	22	9.57
	Guidance school	57	24.78
	Diploma	103	44.78
	University	48	20.87
Spousal occupation	Office employee	14	6.09
	Worker	63	27.39
	Farmer	63	27.39
	Free lance	141	61.30

SD: Standard deviation

Table 2. Regression coefficient and odds ratio for predictors of severe pain in the active phase of labor in unadjusted model

Fear questions		Regression	Standard	Sig	OR	95% CI for OR	
		coefficient	error	P value		Lower	upper
Final logistic	Q24F	0.965	0.151	<0.001	2.624	1.951	3.528
model for pain	Q26F	0.245	0.114	0.032	1.278	1.021	1.599
(unadjusted)	Constant	-	-	-	-	-	-

OR: Odds ratio, CI: Confidence interval

Table 3. Regression coefficient and odds ratio for predictors of severe pain in the active phase of labor in adjusted model
Variables after adjustment

Fear questions		Regression Standard sig		OR	95% CI for OR		
و متغیرهای فردی و باروری		coefficient	error	P value		Lower	upper
Final logistic	Q3F	0.261	0.145	0.071	1.299	0.978	1.725
model for pain	Q11F	- 0.302	0.146	0.038	0.739	0.555	0.983
(adjusted)	Q21F	- 0.669	0.361	0.064	0.512	0.252	1.039
	Q23F	- 0.338	0.155	0.029	0.713	0.527	0.966

Q24F	1.308	0.215	0.000	3.698	2.425	5.639
Q26F	0.442	0.159	0.005	1.556	1.139	2.126
Maternal	- 0.083	0.045	0.065	0.920	0.843	1.005
age						
Maternal	- 1.551	0.533	0.004	0.212	0.075	0.602
disease (1)						
Maternal	0.775	0.317	0.015	2.170	1.165	4.039
education						
Desirability	2.068	0.620	0.001	7.907	2.344	26.675
of fetal sex						
Receiving	- 1.483	0.650	0.023	0.227	0.063	0.811
information						
at admission						
Participation	1.371	0.541	0.011	3.938	1.363	11.379
in childbirth						
preparation						
classes						
constant	- 4.173	2.603	0.109	0.015		

OR: Odds ratio, CI: Confidence interval

Table 4. Regression coefficient and odds ratio for predictors of labor induction in the active phase of labor in unadjusted model

Fear questions		Regression	Standard	sig	OR	95% CI for OR	
		coefficient	error	P value		Lower	upper
Final logistic	Q11F	- 0.228	0.121	0.059	0.796	0.628	1.008
model for	Q16F	0.280	0.144	0.052	1.323	0.998	1.754
labor	Q17F	- 0.238	0.132	0.070.	0.788	0.609	1.020
induction	Q20F	0.285	0.135	0.035	1.329	1.020	1.733
(unadjusted)	Q24F	0.345	0.148	0.020	1.412	1.056	1.888
	Q28F	0.245	0.130	0.061	1.277	0.989	1.649
	Q33F	- 0.271	0.111	0.014	0.763	0.614	0.948
	Constant	- 0.806	1.139	0.479	0.447		

OR: Odds ratio, CI: Confidence interval

Table 5. Regression coefficient and odds ratio for predictors of Caesarean section in the active phase of labor in unadjusted model

Fear questions		Regression	Standard	sig	OR	95% CI for OR	
		coefficient	error	P value		Lower	upper
Final logistic	Q13F	- 0.249	0.108	0.021	0.779	0.631	0.963
model for	Q19F	0.270	0.122	0.027	1.310	1.032	1.663
Caesarean	Q23F	0.222	0.113	0.049	1.249	1.001	1.559
section	Q24F	- 0.716	0.160	0.000	0.489	0.357.	0.669
(unadjusted)	Q26F	- 0.287	0.097	0.003	0.751	0.621	0.908
	Q27F	- 0.170	0.092	0.066	0.844	0.704	1.011
	Q29F	- 0.273	0.091	0.003	0.761	0.636	0.911
	Q31F	0.166	0.084	0.049	1.181	1.001	1.393
	Constant	3,380	0.906	0.000	29.368		

OR: Odds ratio, CI: Confidence interval

Table 6. Regression coefficient and odds ratio for predictors of Caesarean section in the active phase of labor in adjusted model

Fear questions		Regression	Standard	sig	OR	95% CI for OR	
	متغیرهای زمینه ای	coefficient	error	P value		Lower	upper
Final logistic	Q4F	0.189	0.112	0.093	1.208	0.969	1.505
model for	Q13F	- 0.375	0.116	0.001	0.687	0.547	0.863
Caesarean	Q24F	- 0.626	0.164	0.000	0.535	0.388	0.738
section	Q25F	- 0.234	0.106	0.027	0.791	0.643	0.974
(adjusted)	Q26F	- 0.358	0.113	0.002	0.699	0.560	0.872
	Q30F	- 0.312	0.099	0.002	0.732	0.603	0.888
	Maternal age	0.117	0.035	0.001	1.124	1.049	1.204
	Maternal	1.166	0.407	0.004	3.210	1.445	7.131
	disease (1)						
	Gilak ethnicity	0			1		
	(reference)						
	Persian	1.912	0.911	0.036	6.769	1.134	40.387
	ethnicity						
	Turk ethnicity	- 0.059	0.479	0.903	0.943	0.369	2.411
	Other	1.761	0.991	0.076	5.821	0.834	40.612
	ethnicities						

Spousal	- 0.436	0.215	0.043	0.647	0.424	0.986
education						
Spousal	- 0.410	0.179	0.022	0.664	0.467	0.942
occupation						
Gestational age	0.290	0.165	0.078	1.337	0.968	1.846
Receiving	1.101	0.525	0.036	3.008	1.074	8.420
information at						
admission						
Constant	- 8.468	6.690	0.206	0.000		

OR: Odds ratio, CI: Confidence interval

DISCUSSION

The current study aimed to survey the relationship between fear of childbirth and maternal delivery outcomes. The findings of the current study indicated that the mean fear score, from a range of 0 to 165, in majority of mothers was 85.95 ± 18.61. The mean fear score was reported to be 83.68 in a study by Taheri et al., which was in line with the findings of the current study²⁶. On the other hand, the mean fear score in the studies by Varshoei Jaghargh, O'Connell, Nasiri. Adams and Slujis were 35.74, 59.17, 55.42, 33.45, 56.66, and 65.8 respectively, which were in contrast to the findings of the current study^{17,19,27-30}. The findings of the current study revealed that 51.3% of the women in the study had fear of childbirth. In contrast, the prevalence of fear of childbirth in some studies including the metaanalysis by O'Connell on Scandinavian countries, Europe, Australia, and in the studies by Iranshahi, Ghazaii, Pirdel and Beiranvand were was reported to be 8%, 12%, 23%, 21%, 59%, 86.7% and 80% respectively^{10,12,21,29,31}. Different instruments, have been used to assess the fear of childbirth in various studies^{17,28}. Although the cut-off score for detecting fear of childbirth in W-DEQ is ≥85, some studies used different cut-off scores^{21,28,29}. Different personality characteristics, antenatal experiences, cultural determinants, cultural differences in women, including delivery norms, personal and religious beliefs, and differences in social characteristics of the studied populations can be the reasons for the different findings of the studies.

The mean pain severity score among the study subjects was 8 ± 2.09 in the current study and 80% of the subjects had severe pain in the active phase of labor. These findings were in line with the findings of the studies by Junge (mean score=8.17) and Garthus (mean score=8.54)^{15,32}. It seems that perception of the severity of pain is influenced by various factors, including cultural, social, environmental and psychological factors. Pain perception is different in different racial groups. Differences in the study populations and the effect of social differences in the perception of pain, and cultural-educational factors in different countries, can be the reasons for the different findings of the current study and the mentioned studies.

The findings of the current study revealed no significant relationship between fear of childbirth and pain severity. These findings were in line with the findings of the study by Alehagen¹⁸. One of the most important psychological factors that affect labor pain is fear of childbirth⁴⁴. In contrast to the findings of the current study, Junge, Gosselin and Haines reported a significant

relationship between fear of childbirth and pain, indicating that the delivery pain was more severe in women with fear of childbirth compared to women without fear of childbirth^{15,43,44}. The study by Junge showed that severe fear of childbirth can affect delivery pain through various physiologic and psychological factors. Women who have a severe fear of delivery probably have psychological health disorders, which are important in the perception of delivery pain in women. The relationship between fear of childbirth and pain can be described by psychological health factors, including depression and anxiety¹⁵. But the current study included healthy women without psychological disorders, which can describe the difference in the findings of the current study and the previous studies. Similarly, in the study by Alehagen the reasons for the observed different findings were proposed to be related to differences in methodology in terms of measuring fear and pain, receiving epidural anesthesia, and the effects of cultural norms on the formation of maternal reactions in delivery room¹⁸.

The findings of the current study revealed no significant relationship between fear of childbirth and maternal outcomes, including induction of labor, use of pain reduction methods, type of delivery, accelerated delivery, genital laceration, episiotomy, atony of uterus, postpartum hemorrhage, based on univariate analysis using chi-square and Fisher exact tests. Similarly, Iranshahi, Alipoor, Handelzalt, O'Connell, Hall and Slujis also reported no significant relationship between fear of childbirth and delivery problems, including increasing the duration of the active phase of labor, oxytocin administration, epidural anesthesia, type of delivery, emergency or elective Caesarean section, assisted vaginal delivery, prolonged labor, duration of the second and third phases of labor, and hemorrhage within 2 hours after delivery^{16,19-21,28,45}. In contrast, Iranshahi, Adams, Laursen, Junge and Handelzalt reported a significant relationship between fear of childbirth and duration of labor, duration of the second phase of labor, assisted vaginal delivery, emergency and elective Caesarean section, dystocia, and the use of pain reduction methods, including epidural, spinal, paracervical, and pudendal nerve block^{15-17,21,40}. Elongated delivery duration in women with fear of childbirth is a new issue that integrates psychology and obstetrics and gynecology sciences. However, the clinical outcomes of fear of childbirth are not known and there is a need for further studies to provide evidence based healthcare recommendations in women with fear of childbirth¹⁵. The current study included healthy women with no psychological disorders, which might be the reason for the difference in the findings of the current study and the mentioned studies.

In the current study, the unadjusted regression model revealed that some of the fear questions were predictors of severe pain in the active phase of labor. After adjusting the model for personal and social factors, some of the fear questions, maternal disease, maternal education, desired fetal sex, receiving information at admission, and participation in the childbirth preparation classes were predictors for severe pain in the active phase of labor. The findings of the studies by Heidarpor and Hoshmandi revealed that racial groups, maternal age, maternal occupation, wanted or unwanted pregnancy, desirability of fetal sex, private of public hospital, environmental factors, treatment and care factors, fear and anxiety from delivery were the predictors for pain severity^{46,47}. In contrast to the findings of the current study. Dekalava reported that fear and anxiety factors were not significantly related to study variables after adjusting for confounders. This finding was due to the important role of support, education and providing helpful information to pregnant women during pregnancy that could be the reason for the differences in the findings of the study by Dekalava and the current study.

The unadjusted regression model revealed that some of the fear questions were significantly related to Caesarean section and labor induction in the latent phase of labor. After adjusting for personal, social and fertility factors, the identified predictors of labor induction did not change but the adjusted model revealed that some fear questions, maternal age, maternal disease, Persian ethnicity in contrast to Gilak ethnicity, spousal education, receiving information at admission were the predictor for Caesarean section. The findings of the studies by Hashima, Koelewijn, Adams and Rondung were in line with the findings of the current study^{17,49-51}. But the findings of the studies by Pavlov, and Smorti were in contrast to the findings of the current study³⁷⁻³⁸. Smorti considered anxiety and depression as a complicated psychological phenomenon which encompasses both psychological and physical factors. They considered depression as a more effective factor. In contrast, the current study considered fear as a distinct phenomenon and therefore, the findings of the current study might be different from the findings of the studies that assessed the relationship between anxiety disorders and depression.

CONCLUSION

The findings of the current study revealed no significant relationship between fear of childbirth and pain and delivery consequences. The findings of this study can be used in the education of pregnant women as fear of childbirth might have a negative effect on the delivery experience, pain and outcomes. If delivery pain is managed, delivery would change from an agonizing experience to a pleasurable experience. Midwives have an important role at the time of admission and in delivery room. Midwives should respond to individualized needs of women, and understand their needs to be able to effectively support women during the labor. Furthermore, psychological status of pregnant women should be considered and supportive programs should be designed for midwives in order to achieve the required knowledge and skills to support mothers and provide a calm environment for pregnant women.

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