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Predictors regarding childbirth fear prior to pregnancy: A study on female and male students

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Abstract

Several predictors of childbirth fear during pregnancy have been identified. However, the influence of prior to pregnancy parameters has not been elucidated. This study was conducted to determine childbirth fear prior to pregnancy and identify its predictors among XXX female and male students. This cross-sectional study was conducted between March and June 2018. The sample consisted of 842 students (421 female and 421 male) who were studying at a state university in the eastern side of XXX. Data were collected using a Personal Information Form, the Women Childbirth Fear – Prior to Pregnancy Scale, the Men Childbirth Fear – Prior to Pregnancy Scale, the Ten-Item Personality Inventory, and the Beck Anxiety Inventory. A hierarchical linear regression model indicated that planning to have a cesarean section, expected labor pain, being extroverted, being agreeable, and anxiety were among the important indicators of female students' childbirth fear prior to pregnancy (β=0.147, β=0.162, β=0.124, β=0.124, and β=0.183, respectively; p<0.05). According to a simple linear regression model, expected labor pain, being extroverted, characteristics of neuroticism, and anxiety were among the most important indicators of male students' childbirth fear prior to pregnancy (β=0.164, β=0.113, β=0.153, and β=0.130, respectively; p<0.05). Severe labor pain expectancy and high anxiety levels are predictors of childbirth fear prior to pregnancy in both female and male students. Extroversion and agreeableness in female students; extroversion and neuroticism in male students are personality traits that affect childbirth fear prior to pregnancy.

Keywords: Childbirth fear, anxiety, labor pain, pre-pregnancy, personality traits, student.

Introduction

Childbirth fear is a socio-cultural phenomenon that may affect both men and women. It may be either mild enough to be ignored, or severe enough to cause serious emotional and physical effects. Labor pain, obstetric complications, and medical risks regarding mothers and babies are among the most important causes of this fear [1,2].

Recent studies have focused on childbirth fear during pregnancy, but little is known about childbirth fear prior to pregnancy [3-5]. Understanding the birth-related behaviors and fears of young men and women who plan to be parents in the future, determining the factors causing childbirth fear, and conducting studies in this regard are all important. People with a high level of fear define pregnancy as unpredictable and risky, while those with minor fears consider this period as normal and natural [6]. Some studies have indicated that there is a positive relationship between childbirth fear among young women and men, cesarean section [3,4,7], and other birth procedures (e.g., episiotomy, induced labor, and vacuum extraction) [7].

A study conducted with university students in Canada reported that 13.6% of young women had high childbirth fear, while this figure was only 3.5% for young men [7]. Young women with high childbirth fear stated that they were afraid of physical issues during birth (including vaginal tears and stretching) and the possibility that labor pain would be unbearable, thus feeling vulnerable while thinking about birth [6,8]. Moreover, young men reported that they considered birth to be risky and unpredictable and that the changes occurring in women's bodies during the birth caused them some concern [7].

Certain psycho-social characteristics of women and men are related to childbirth fear [9]. In certain studies, anxiety was claimed to increase childbirth fear [5,10]. Another study conducted with university students indicated that there was a positive relationship

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between anxiety and childbirth fear [6], which was also found in other studies conducted with pregnant women [5,11].

One of the most significant factors affecting childbirth fear is personality traits or conditions. For instance, childbirth fear was found to be more common among women with low self-esteem and those who were sensitive and neurotic had a depressive personality and were incompetent in coping with stress [12]. Another study also indicated that childbirth fear was related to traits such as anxiety, neuroticism, vulnerability, depression, and low self-esteem [13].

Understanding the birth-related behaviors and fears among young men and women who are planning to be parents in the future and determining the amendable factors that may make one especially susceptible to childbirth fear can help couples decide on the type of birth while also reducing the rate of cesarean section procedures [6]. Healthcare professionals providing prior to pregnancy care services will be able to consider the potential psycho-social characteristics that may lead to the development of prior to pregnancy fear of childbirth among young men and women. Midwives and nurses will provide information about risk factors related to prior to pregnancy fear of childbirth and will enable them to plan educational and supportive interventions for the relevant groups. Accordingly, factors regarding childbirth fear should be examined specifically concerning those personal and psychological traits among female and male students that may be associated with such concerns.

The objectives were to determine the level of childbirth fear prior to the pregnancy of Turkish female and male students; examine the differences in childbirth fear prior to pregnancy among different sociodemographic subgroups of Turkish female and male students; examine the relationships between childbirth fear prior to pregnancy and other continuous variables (personality traits and anxiety) among Turkish female and male students, and identify the predictors of childbirth fear prior to pregnancy among Turkish female and male students.

Research questions

1. Is anxiety a predictor of pre-pregnancy birth fear in female students?

2. Are personality traits a predictor of pre-pregnancy birth fear in female students?

3. Is anxiety a predictor of pre-pregnancy birth fear in male students?

4. Are personality traits a predictor of pre-pregnancy birth fear in male students?

Materials and Methods

Procedure and design

This cross-sectional study was conducted between March and June 2018 at X University in the east of Turkey. The number of students studying at the university at the time of the study was 31,155 (excluding distant learners). The sample size was calculated using the power analysis on OpenEpi version 3, open-source statistical analysis software available for general use. The ideal sample size was determined to be 383 students with a 5% error margin, two-way significance level, 95% confidence interval, and 80% power level (separately for each gender, meaning that 383 female and 383 male students were to be included). Considering the possibility that some would abandon the study, more students (10%) were included in both groups, and the total figure reached 842 students (421 female and 421 male students).

Students from all faculties and colleges were included in the study. The numbers of students from the health sciences, social sciences, and life sciences were determined by considering the proportion of these units to the population of this study. Thus, 192 students were added from the health sciences (n=7.104), while 408 were included from the social sciences (n=15.661), and 242 were added from the life sciences (n=8.954). The number of male and female students included from each department was the same. These students were listed and numbered through a simple random sampling method—the probability sampling method—and the students constituting the sample were determined using a table of random numbers. Male and female students who were already parents, female students who had been pregnant before, and those who were not planning to be parents in the future were excluded.

The Ethical Committee of Scientific Researches and Publications within the Institute of Health Sciences at X University provided its ethical consent (Decision No: 2016/16-9), and the university was permitted to conduct the study (Issue:83533471-044). Students were informed about the study, noting that their personal information would be protected, and those students who volunteered to participate and gave their verbal consent were included.

Data Collection Tools

The data collection forms were personally completed by the students. These forms included a Personal Information Form, the Women Childbirth Fear – Prior to Pregnancy Scale (WCF-PPS), the Men Childbirth Fear – Prior to Pregnancy Scale (MCF-PPS), the Ten-Item Personality Inventory (TIPI), and the Beck Anxiety Inventory.

Personal Information Form: This form was developed by the researchers to determine certain personal characteristics of the students. It consisted of items questioning students' socio-demographic characteristics (e.g., age, department, economic status, and family type) and factors affecting childbirth fear (e.g., information about the birth process, the experience of participating in the birth process, and type of birth planned for the future) [6,11,13-15].

Students were also asked about the estimated level of pain on the form. For this purpose, the Numeric Pain Rating Scale was used. Students were asked to mark the severity of pain they expected from labor (with the values ranging from 0 indicating the absence of fear, to 10 meaning unbearable pain) [16].

Women Childbirth Fear – Prior to Pregnancy Scale / Men Childbirth Fear – Prior to Pregnancy Scale: These scales were developed by Stoll et al. (2016) to measure young men's and women's childbirth fear prior to pregnancy. In the Childbirth Fear – Prior to Pregnancy Scale developed by Stoll et al., a single scale is used for men and women. Uçar and Timur Taşhan (2018), who adapted the scale to Turkish, conducted the validity and reliability study of the scale

separately for women and men. The Women Childbirth Fear – Prior to Pregnancy Scale (WCF-PPS) was used for female students, while the Men Childbirth Fear–Prior to Pregnancy Scale (MCF-PPS) was used for male students. The WCF-PPS and MCF-PPS had the same number of items, item content, and scale assessment process. The scales contained dimensions designed to measure those factors causing the greatest amount of fear among young men and women: pain during birth, loss of control, inability to cope with the pain, complications, and irreversible physical issues. The scales had ten items, with the available responses numbered along a six-point Likert-type scale. The minimum score obtainable on the scales was 10, while the maximum score was 60. Higher total item scores indicated a higher level of fear [8]. In this study, Cronbach's alpha value was 0.89 for the WCF-PPS, while it was 0.83 for the MCF-PPS.

Ten-Item Personality Inventory: This scale was developed by Gosling, Rentfrow, and Swann (2003) and adapted into Turkish by Atak (2013) [17]. The scale measured five personality traits: openness to experiences (inclination towards diversity, intellectual curiosity, and esthetic compassion), agreeableness (tendency towards interpersonal trust and consideration of others), neuroticism (predisposition to psychological distress, inability to control urgency, tendency to have impractical ideas and inability to cope with stress), conscientiousness (inclination towards determination, diligence, and organization), and extroversion (tendency towards affirmative emotions, sociability, and high activity). Each dimension consisted of statements that were designed to measure personality and personal attitudes. The available responses were numbered on a seven-point Likert-type scale, with two items under each subdimension. There was no cut-off for the scale, and the subscale scores ranged from 2 to 14. An increase in the scores obtained from a subscale indicated that the personality trait of that subscale was prominent [17]. In this study, Cronbach's alpha value was calculated as 0.68.

Beck Anxiety Inventory: This measure was developed by Beck et al. (1988) and adapted into Turkish by Ulusoy et al. (1998). This Likert-type scale consisted of 21 items and was scored with points ranging from 0 to 3. The highest score to be obtained from the scale was 63. Higher mean scores indicated higher anxiety levels [18,19]. Cronbach's alpha value was 0.92 for this scale in the present study.

Data Collection

After the necessary explanations are made to the participants, their verbal consents were obtained. The data collection tools were applied by the face-to-face interview method. No time restriction was imposed on the participants during the data collection phase. The data collection phase lasted for approximately 10-15 minutes for each participant.

Statistical Analysis

The data were assessed using IBM's Statistical Package for the Social Sciences (SPSS) 25.0 for Windows (SPSS, Chicago, IL, USA). Descriptive statistics were provided as numbers, percentages, mean values, and standard deviations. Within the comparisons for the two groups, a t-test was used for the variables fulfilling the parametric test conditions, while a one-factor analysis of variance was performed for the comparisons of more than two groups. Pearson's correlation analysis was used for examining the relationship between the variables, and the Kruskal–Wallis test was employed for the comparison of more than two groups that did not fulfill the parametric conditions. The variables affecting female students' childbirth fear prior to pregnancy were assessed through two-step multiple hierarchical regression analysis, while the variables affecting the same fear experienced by men were examined using simple linear regression analysis. While determining the variables to be included in both regression models, those that had a significant relationship with the childbirth fear prior to pregnancy ($p<0.05$) were added to the model. For the female students, certain properties regarding the process of birth (e.g., information regarding the birth, type of birth planned for the future, and expected labor pain), were found to be significant ($p<0.05$) in terms of their relation to childbirth fear prior to pregnancy, were added to the first block. Personality trait measures and scales determining anxiety levels were added to the second block. Regarding the male students, the expected labor pain was found to be significant as one of the factors determining childbirth fear prior to pregnancy ($p<0.05$), and the scales specifying personality traits and anxiety level were included in the regression model. The statistical significance level was $p<0.05$.

Results

Sample Characteristics

The total number of students in this study was 842 (421 female and 421 male). Of the female students, 42.5% were 20 years of age or younger, and their mean age was 20.90±1.76 years (range 17–29). Of these students, 48.5% were studying the social sciences, 87.9% had a moderate income level, 79.8% were from a nuclear family, and 62.7% had no partner. Of the male students, 35.6% were between 21 and 22 years of age, and their mean age was 21.57±2.22 years (range 18–30). Of these students, 48.5% were studying in the social sciences, 73.2% had a moderate income level, 72.7% came from a nuclear family, and 62.2% had no partner (Table 1).

Differences in Childbirth Fear Prior to Pregnancy Among Various Certain Characteristics

The female students' mean WCF-PPS score was 41.29±12.28 (range 10–60) while male students' mean MCF-PPS score was 34.65±10.02 (range 10–60) (t=8.594, $p<0.001$).

The comparison between the WCF-PPS and MCF-PPS scores based on certain characteristics is presented in Table 2. Female students with information about birth had lower mean WCF-PPS scores compared to those who had no such information ($p<0.05$). Female students planning to have a vaginal birth in the future had a lower mean WCF-PPS score compared to those planning to undergo cesarean section ($p<0.001$).

The comparison between the male students' mean MCF-PPS score regarding the birth information and planned birth type indicated that the difference between the groups was not statistically significant ($p>0.05$). In addition, the comparison between the mean childbirth fears scores of female and male students regarding age group, department, family type, presence of a partner, previous experience of watching labor, and reasons of preferring vaginal birth and cesarean section indicated no statistically significant difference between the groups ($p>0.05$; Table 2).

Table 1. Distribution of socio-demographic characteristics of students (n=842)

Variables	Female Students (n=421)		Male Students (n=421)	
	n	%	n	%
Age (years) (mean ± SD)	20.90 ± 1.76		21.57 ± 2.22	
≤ 20	179	42.5	148	35.2
21-22	168	39.9	150	35.6
≥ 23	74	17.6	123	29.2
Department				
Health Sciences	96	22.8	96	22.8
Social Sciences	204	48.5	204	48.5
Life Science	121	28.7	121	28.7
Income status				
Low	28	6.7	67	15.9
Moderate	370	87.9	308	73.2
High	23	5.5	46	10.9
Family type				
Nuclear	336	79.8	306	72.7
Extended	78	18.5	105	24.9
Shattered	7	1.7	10	2.4
Partner presence				
Yes	157	37.3	159	37.8
No	264	62.7	262	62.2

Table 2. Comparing the average scores receive from WCF-PPS and MCF-PPS according to some variables of the students

	WCF-PPS (n=421)			MCF-PPS (n=421)		
	n	Mean ± SD	Test and p-value	n	Mean ± SD	Test and p-value
Age (years)						
≤ 20	179	42.65±12.04	F=2.122	148	33.80±10.04	F=1.037
21-22	168	40.63±12.24	p=.121	150	34.77±10.16	p=.356
≥ 23	74	39.51±12.75		123	35.54±9.80	
Department						
Health Sciences	96	40.47±12.62	F=.303	96	36.50±9.32	F=2.348
Social Sciences	204	41.65±11.96	p=.739	204	34.39±10.20	p=.097
Life Science	121	41.34±12.60		121	33.63±10.12	
Family type						
Nuclear	336	41.49±12.18	KW=.421	306	34.26±10.13	KW=2.433
Extended	78	40.55±13.03	p=.810	105	35.83±9.80	p=.296
Shattered	7	40.14±9.11		10	34.20±8.27	
Partner presence						
Yes	157	42.31±11.40	t=1.307	159	35.74±10.83	t=1.731
No	264	40.69±12.75	p=.192	262	34.00±9.75	P=.084
Information about birth						
Yes	193	39.51±11.80	t=¬-2.764	152	35.24±9.68	t=.908
No	228	42.80±12.49	p=.006	269	34.32±10.20	p=.364
Experience of watching a labor						
Yes	180	40.21±12.38	t=-1.572	133	34.62±9.25	t=-.051
No	241	42.10±12.17	p=.117	288	34.67±10.37	p=.959
Planned Birth Type						
Vaginal	342	40.10±12.44	t=-4.239	362	34.60±9.75	t=-.272
Cesarean	79	46.47±10.09	p<.001	59	34.98±11.60	p=.785
Reasons of preferring vaginal birth (n=704)						
Fewer Risks	282	40.21±12.49		222	34.74±9.67	
I do not know	3	46.33±12.66		48	33.46±9.79	
Less Painful	16	35.63±11.03	KW=4.176	7	39.29±9.30	KW=4.580
Natural	19	39.32±13.19	p=.524	56	33.79±9.80	p=.469
Suggestion	3	36.00±14.00		11	39.09±10.56	
Less intrusive	19	42.58±12.18		18	33.89±10.08	
Reasons of preferring cesarean (n=138)						
I do not know	7	45.12±12.50		23	32.87±13.74	
Less Painful	48	47.00±10.15	KW=9.506	20	34.90±10.08	KW=2.695
Fewer Risks	-		p=.050	6	39.67±5.46	p=.610
More healthy	1	44.00		6	37.83±12.49	
More comfortable	12	40.17±9.13		4	36.25±12.97	
Fear	11	52.09±6.25				

WCF-PPS: Women Childbirth Fear – Prior to Pregnancy Scale MCF-PPS: Men Childbirth Fear – Prior to Pregnancy Scale SD: Standard Deviation

Table 3. Correlation between students' childbirth fear prior to pregnancy and personality traits, anxiety, and expected labor pain

Variables	Female Students (n=421)		Male Students (n=421)	
	WCF-PPS		MCF-PPS	
	Mean±SD	r	Mean±SD	r
TIPI sub-dimensions				
Openness to experiences	8.15±2.82	.109*	7.63±2.65	.124*
Conscientiousness	8.67±2.98	.174**	8.42±2.94	.069
Extroversion	8.59±2.67	.226**	7.99±2.41	.166**
Agreeableness	8.96±3.14	.250**	8.16±2.80	.134**
Neuroticism	7.67±2.77	.137**	7.38±2.42	.189**
Anxiety level [a]	19.05±13.47	.203**	16.53±12.17	.129**
Expected labor pain [b]	9.00±1.81	.201**	8.24±1.97	.177**

*Correlation is significant at the 0.05 level (2-tailed) **Correlation is significant at the 0.01 level (2-tailed) [a]Beck Anxiety Inventory scores [b]Numeric Pain Rating Scale scores WCF-PPS: Women Childbirth Fear–Prior to Pregnancy Scale MCF-PPS: Men Childbirth Fear – Prior to Pregnancy Scale TIPI: Ten-Item Personality Inventory SD: Standard Deviation

Table 4. Hierarchical Linear Regression analysis for childbirth fear prior to pregnancy determinants of female students (n=421)

Variables	B	SE	β	t	p	
Information about birth						
(1.Yes 2.No)	2.192	1.154	.088	1.898	.058	R=.284
Planned Birth Type						R2=.081
(1. Vaginal 2. Cesarean)	4.761	1.534	.147	3.104	.002	F=11.294
Expected labor pain	1.108	.324	.162	3.423	.001	p<.001
TIPI sub-dimensions						
Openness to experiences	-.093	.232	.022	-.402	.688	
Conscientiousness	.390	.206	.096	1.893	.059	R=.439
Extroversion	.583	.242	.127	2.404	.017	R2=.193
Agreeableness	.623	.209	.160	2.978	.003	F=10.090
Neuroticism	.045	.226	.010	.200	.842	p<.001
Anxiety	.167	.043	.183	3.906	.000	

TIPI: Ten-Item Personality Inventory B: unstandardized coefficient of regression SE: standard error β: standardized coefficient of regression R^2: coefficient of determination

Table 5. Simple Linear Regression analysis for childbirth fear prior to pregnancy determinants of male students (n=421)

Variables	B	SE	β	t	p	
TIPI sub-dimensions						
Openness to experiences	.108	.212	.029	.510	.611	R=.318
Extroversion	.478	.238	.113	2.009	.045	R2=.101
Agreeableness	.082	.199	.023	.412	.681	F=6.425
Neuroticism	.637	.218	.153	2.920	.004	p<.001
Anxiety	.107	.039	.130	2.714	.007	
Expected labor pain	.837	.246	.164	3.406	.001	

TIPI: Ten-Item Personality Inventory B: unstandardized coefficient of regression SE: standard error β: standardized coefficient of regression R^2: coefficient of determination

Bivariate Analyses of Childbirth Fear Prior to Pregnancy

Table 3 presents the correlation between students' childbirth fear, personality traits, anxiety levels, and expected labor pain. A statistically significant and positive relationship was found between female students' childbirth fear and openness to experiences, conscientiousness, extroversion, agreeableness, neuroticism, anxiety, and expected labor pain (r=.109, r=.174, r=.226, r=.250, r=.137, r=.203, and r=.201 respectively; p<0.05). Moreover, another statistically significant and positive relationship was found between male students' childbirth fear and openness to experiences, extroversion, agreeableness, neuroticism, anxiety, and expected labor pain (r=.124, r=.166, r=.134, r=.189, r=.129, and r=.177 respectively; p<0.05) (Table 3).

Factors Impacting Childbirth Fear Prior to Pregnancy for Female and Male Students in the Regression Models

The results of the hierarchical linear regression analysis in the model formed with the factors affecting female students' childbirth fear are presented in Table 4. Accordingly, planning to have a cesarean birth, expected labor pain, extroversion, agreeableness, and anxiety were among the significant factors determining childbirth fear among female students (β=0.147, β=0.162, β=0.124, β=0.124, and β=0.183, respectively; p<0.05).

The results of the simple linear regression analysis in the model formed with the factors affecting male students' childbirth fear are presented in Table 5. Accordingly, expected labor pain, extroversion, neuroticism, and anxiety were among the significant factors determining childbirth fear among male students (β=0.164, β=0.113, β=0.153, and β=0.130, respectively; p<0.05).

Discussion

Having examined childbirth fear prior to pregnancy among young female and male students, this study found that female students had greater fear compared to male students, which has also been

demonstrated by other similar studies [20]. Specifically, Stoll conducted with Canadian students indicated that childbirth fear was present among 13.6% of female students, while it was felt by only 3.5% of male students [7]. Additionally, answers (1. no fear10. great fear) given to the question, "How do you assess your childbirth fear?" in another study performed to determine students' birth-related attitudes and beliefs revealed that female students' mean fear score was higher than that of male students (female students: 7.44, male students: 6.15) [20]. The difference between the fear of childbirth in this study may also be due to the inhomogeneity of some characteristics of male and female students. In this study, students were selected by sampling randomization. The most important disadvantage of randomization is that the individuals included in the sample may show different characteristics from each other.

Gender differences are common in person-reported emotional experiences. Women report greater affective intensity and experience negative emotions such as fear more frequently [21]. Therefore, it can be thought that women experience the fear of childbirth more than men. In addition, since one of the important duties expected from women in society is the mode of delivery, women who prefer other birth methods with the discourse that all women can give birth naturally are exposed to the words "incomplete motherhood". Thus, even how the woman should give birth is determined by society, and it seems very important to have a "normal birth" to be socially approved and to avoid negative discourses [22]. This pressure and necessity created by society can affect women's fear of childbirth.

According to the regression model in this study, the type of birth planned for the future — one of the birth-related factors assessed for female students — was among the significant factors affecting childbirth fear. Those female students who were planning to perform vaginal birth had less fear compared to those planning to undergo a cesarean section. Similarly, a relevant study performed with young people indicated that the childbirth fear of students who were planning to perform birth via cesarean section was greater. Moreover, the probability of considering birth as a natural and normal process was higher for students with less childbirth fear [7]. Another study performed with non-pregnant women revealed that the probability of preferring vaginal birth was higher for women with minor childbirth fear compared to those with greater fears in this regard [23]. Similarly, birth reports from a study performed with pregnant women showed that as childbirth fear increased, the risk of an emergency cesarean section procedure also increased [11]. Accordingly, a significant relationship may be present between the type of birth planned for the future and childbirth fear prior to pregnancy [24].

The pain-related expectation is another important element of childbirth fear [25]. This study found that the expected pain level was among the significant factors determining childbirth fear among female and male students. Another study conducted by Antic et al. examining the factors related to childbirth fear among non-pregnant women also indicated a significant relationship between childbirth fear and the expected amount of pain during birth [26]. Childbirth fear was higher among the students who reported that they expected to have pain during the birth. Another study conducted to assess the factors of childbirth fear among

pregnant women indicated greater fear among the women who believed that they would have greater pain during the birth process [27]. Thus, childbirth fear may cause people to perceive the birth as painful and intimidating [7].

This study indicated that anxiety was among the significant factors affecting childbirth fear among female and male students. A study conducted with non-pregnant women [26] yielded similar results compared to the results of studies performed with pregnant women [27,28]. According to Erkaya et al. a study of 184 pregnant women, reported a positive relationship between fear of childbirth and anxiety [29]. Another study conducted with men whose wives were pregnant indicated that men with childbirth fear had higher anxiety levels compared to those who did not have such fears [30].

Based on the regression model in this study, extroversion, and agreeableness—two of the personal traits assessed for female students—were among the significant factors affecting childbirth fear. As extroverted people are regarded as energetic and excited [13], it is fair to state that young women with energetic personalities had greater childbirth fear. Another study conducted with pregnant women to determine the relationship between childbirth fear and personality traits found that people who avoided monotony and searched for excitement had greater childbirth fear [12]. No studies examining agreeableness and childbirth fear prior to pregnancy were found, but the results of studies examining agreeableness during pregnancy and childbirth fear were not consistent [11,13]. Agreeable people can be expected to be dependent or submissive, which may cause negative affection [31]. Thus, these people may have greater childbirth fear.

The regression analysis in this study indicated that openness to experiences, a sense of conscientiousness, and neuroticism among female students were not significant factors affecting childbirth fear, and the correlation analysis indicated a positive relationship between these personality traits and childbirth fear. Other relevant studies have indicated that there was a correlation between childbirth fear and openness to experiences [12,13], a sense of conscientiousness [13], and neuroticism [11,13] among pregnant women.

The correlation analysis performed in this study indicated a positive and significant relationship between the male students' childbirth fear and certain personality traits such as extroversion, agreeableness, neuroticism, and being open to experiences. The regression analysis showed that extroverted and neurotic personality traits were among those factors affecting childbirth fear. No studies were found that have examined the personality traits of men who had childbirth fear. Severe childbirth fear is defined as tokophobia, which can cause severe anxiety disorder [32,33]. Accordingly, the study conducted by Sharma on female and male students, which yielded similar results to those of the present study, indicated a positive and significant relationship between neuroticism personality traits and anxiety levels [34]. Similarly, another study conducted by Joyner on students indicated that those who had neuroticism personal traits and were open to experiences had higher anxiety levels [35]. Additionally, the study conducted by Kaplan et al. on university students, which supports the results of the present study, indicated a significant relationship between personality traits, such as neuroticism and openness to

experiences, and anxiety [36].

Limitations

This study had certain limitations. First, the data were collected through the self-report method. Moreover, some of the factors examined in this study (e.g., personality traits, anxiety, and birth-related variables) may change over time. Although a retrospective approach suits the present study, a prospective or longitudinal format can be adopted for future studies. This study was based on a probability sampling method, and data were collected from university students within a certain age range in a certain province in Turkey. Therefore, the results of this study cannot be generalized to all young men and women. However, the present study still provides concrete evidence regarding those factors affecting childbirth fear prior to pregnancy.

Conclusion

According to the results, the most important factors affecting female students' childbirth fear included planning for a cesarean section, expected labor pain, high anxiety, extroversion, and agreeableness. Those factors affecting male students' relevant fears included expected labor pain, high anxiety, extroversion, and neuroticism traits.

These results are important for planning medical programs for future parents. Health professionals offering preconception care services should consider the potential psycho-social characteristics that may lead to the development of childbirth fear prior to pregnancy among young women and men. In particular, it is recommended to investigate the factors that may cause future cesarean delivery planning and high expected labor pain in women and men, to plan training and interventions for these factors, as well as to plan psycho-educational programs to reduce their anxiety. Those risk factors that cause childbirth fear prior to pregnancy should be observed, and educational and supportive interventions should be planned for the relevant groups. In addition, interventions that will reduce childbirth fear should be available throughout the country.

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