



Factors Associated with Attitudes towards the Preferred Method of Delivery in Medical and Non-Medical Female Students

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Authors' contributions

This work was carried out in collaboration among all authors. Authors SA, FJK and ZBK designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript.

Author EKL managed the analyses of the study. Authors SA and FJK managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Aims: In order to reduce the rate of cesarean section (CS), it is necessary to be aware of attitudes of women to predict their preferred method of delivery and its related factors. This study aimed to compare attitudes of medical and non-medical female students regarding the preferred method of delivery and its related factors in 2019.

Study Design: cross sectional-analytical study.

Place and Duration of Study: Medical and non-medical undergraduate female students of Guilan, Rasht, Iran, were randomly selected between October 2019 and November 2019.

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Methodology: We included 1040 students (873 non-medical, 167 medical students; mean age 20.90 ± 1.54 years). The data were collected by a researcher-made questionnaire and analyzed using descriptive and inferential (Chi Square, Fisher's exact test, Kruskal-Wallis, Mann-Whitney and multiple regression) statistics ($P = .05$).

Results: In general, 71.50% of subjects in both groups had a neutral attitude. For group comparison, the medical and non-medical groups (24% and 12.40%) had a positive attitude towards CS and (11.40% and 14.80%) had a positive attitude towards normal vaginal delivery (NVD), respectively. Attitude score according to the university ($P = .002$), the school ($P = .002$), the academic year ($P = .001$), age ($P = .031$), ethnicity ($P = .001$), child rank ($P = .042$), father education ($P = .007$), mother education ($P = .006$), childbirth method of the mothers in other children ($P = .007$), and delivery method of the relatives ($P = .05$) was significant.

Conclusion: Although non-medical students had more positive attitude towards NVD, in general, in both groups, the majority of them had a neutral attitude towards the mode of delivery. It seems necessary to develop the educational-counseling interventions to form a positive attitude towards NVD in all students and youngs.

Keywords: Attitude; cesarean section; Iran; normal vaginal delivery; students.

1. INTRODUCTION

Delivery is the most important emotional event in women's life [1], and one of the most sensitive indices for the health system [2]. However for various reasons, the rate of normal vaginal delivery (NVD) has reduced [3-5] and the rate of cesarean section (CS) has increased over the last three decades [6]. Iran ranks first among Asian countries in terms of CS [7]. The prevalence of CS in Iran is about 48% [8]. Guilan ranks second in the country in the prevalence of CS after Tehran [9], while since 1985 the World Health Organization (WHO) has called the rate of CS more than 10-15% unjustifiable [5].

Today CS is unfortunately not performed only for emergencies [10] and many factors are involved in its selection [11]. These factors include greater use of monitoring technologies, maternal age at first delivery, macrosomia, physician's recommendation and maternal request [12], ignorance, beliefs, behaviors, misconceptions, and fear of labor pains [10,13,14]. Elective CS is one of the most common reasons, without any medical indications [15].

Women's preference in choosing the method of delivery is influenced by cognitive-social factors such as social image, being up-to-date, social level and imitation [14,16]. The subjective norms also play an important role. Women whose subjective norms were more positive toward CS were more likely to choose CS [17]. Social, economic, and cultural factors as well as changes in women's attitudes toward CS have led women considering CS as a precautionary

measure against the risks of birth time [18]. A study showed that attitude and understanding of self-efficacy have been two important predictors in choosing the method of delivery [19]. Another study on midwifery and medical students showed that students had a positive preference and attitude to CS [20]. In a study on graduate students in all fields of study at a university, it was found that CS was largely associated with a positive attitude toward advanced technological interventions and possibly with less knowledge of the facts associated with NVD and CS [21].

There are several processes involved in changing attitudes [22] and as knowledge and practice improve, negative attitudes can change into positive [10]. Early birth information and training for the youth of childbearing age will generally resolve their lack of knowledge and shape their attitudes about the advantages of physiologic delivery and the proper use of delivery technologies [23]. Studies in recent years on attitudes toward delivery have largely examined the post partum and pregnant women, especially primiparous women [24-26], but there is little information on the attitude and preferred methods of delivery of the younger generation who will be future parents [23,27] and there are few studies on the youngs' beliefs and attitudes toward fertility issues in published papers [27].

In order to reduce the rate of CS, it is necessary to know women's attitudes in order to predict their delivery method and identify the factors related to it [16,28]. Accordingly, we conducted this study with the aim of determining and comparing attitudes of female medical and non-medical students in relation to the method of delivery and its related factors.

2. MATERIALS AND METHODS

In this cross sectional-analytical study, the study population included all undergraduate female students of the University of Medical Sciences and non- Medical of Guilan (north of Iran) who were studying in different schools in the academic year of 2019-2020. Among the total number of undergraduate female students who were 8231 students, the sample size of this study based on the study results of Handan et al. [29] was a total of 713 students with 95% confidence and considering the error percentage of positive attitude towards NVD. Since in this study, the sampling method of the subjects was cluster stratified sampling and considering the effect of cluster sampling method equal to 1.5, the final sample size of this study was 1070 students. The inclusion criteria were: studying in the academic year 2019-2020, first to fourth year undergraduate students, being Iranian, nulligravid, being single during the implementation of this study and willingness to participate in the study. The incomplete questionnaire and / or not continued cooperation after participating in the study were among the study exclusion criteria. Meanwhile, 30 questionnaires were incompletely responded, and finally the data of 1040 students were statistically analyzed. In this study, the researcher-made questionnaire was taken from literature review, and papers by Fayazi et al. [20] and Stoll et al. [30], and the necessary correspondence was obtained to take permission to use the above tools. This questionnaire consists of two parts. The first part of the questionnaire includes demographic information (university, school, field of study, semester, age, ethnicity, child rank in the family, general economic status of the family, father's education, mother's education, field of study of at least one parent in the fields of medical sciences, the method of maternal delivery at the time of the student's birth, the method of maternal delivery in other deliveries, the method of delivery of those around and the preferred method of delivery if there is no medical problem).

The second part includes attitudes towards the method of delivery in the form of 50 phrases and in two fields (NVD and CS) with 5-point Likert scale (I completely agree, I agree, I have no opinion, I disagree, and I completely disagree) and the scores are from 1 to 5. In favor of NVD, "I completely agree" had the highest score, and "I completely disagree" had the lowest score, and in the case of CS, it was the opposite. The range of attitudes towards NVD includes questions 1-

23, for questions 1-8 the highest score is given to "I completely agree" and for questions 9-23 the highest score is given to "I completely disagree". The range of attitudes towards CS includes questions 24-50, and in questions 24-37, the highest score is related to "I completely disagree", and for questions 38-50, the highest score is related to "I completely agree". In general, among 50 questions of attitudes towards delivery methods, the range of scores is between 50 and 250, which after collecting the data, the attitude was categorized based on the following method.

Obtaining a score equal to or greater than the mean score plus one standard deviation ($\text{Mean} + 1\text{SD} \leq \text{attitude score}$) showed a positive attitude towards NVD and obtaining a score equal to or below the mean score minus one standard deviation ($\text{attitude score} \leq \text{Mean} - 1\text{SD}$) showed a negative attitude towards NVD. Also, obtaining a score less than the mean score plus one standard deviation and / or higher than the mean score minus one standard deviation ($\text{Mean} - 1\text{SD} < \text{attitude score} < \text{Mean} + 1\text{SD}$) was considered as no opinion (neutral attitude).

The face and content validity of the questionnaire (CVR and CVI) was confirmed. The reliability of the questionnaire was confirmed by test-retest and internal consistency by calculating Cronbach's alpha coefficient. The stability coefficient of questionnaire was obtained 98.64% for the attitude towards NVD and 99.16% for the attitude towards CS. Also, Cronbach's alpha coefficient for the attitude towards NVD was 0.71 and 0.90 for the attitude towards CS, so the questionnaire had acceptable internal consistency.

Data were collected by completing a self-report questionnaire since Oct. 14, 2019 to Nov. 26, 2019. After data collection, the data were analyzed using statistical software SPSS version 16 and descriptive (mean, standard deviation, percentage, range of changes) and inferential (Kolmogorov-Smirnov, Chi Square, Fisher's exact test, Kruskal-Wallis and Mann-Whitney) statistical tests. Multiple regression models were used to determine the predictors of the method of delivery. The significance level of the tests in this study was considered to be $P=.05$.

3. RESULTS AND DISCUSSION

The majority (83.94%) of the students were non-medical ($n= 873$) and according to the field of

study, most of them (32.69%) studied humanities and literature. Also, the majority (33.85%) were in the third year of study. The mean age of the students was 20.90 ± 1.54 years. In terms of economic status, the majority (58.75%) had a moderate economic status. The education of the father of most of the students (36.83%) and the education of their mothers (45.96%) was Diploma. For the study of ethnicity, the majority (60.10%) were Guilaks. For the study of child rank in the family, the child rank of the majority

(55.96%) was second and higher. Other characteristics were presented in Table 1. According to Table 2, The percentage of positive attitude towards CS in the group of medical students (24%) was twice as high as the group of non-medical students (12.4%) and this difference was significant based on Chi Square test ($P = .001$). The status of attitude toward delivery method was compared in medical and non-medical groups in Table 3. In Table 4, the attitude score towards the delivery method

Table 1. Frequency distribution of students' demographic characteristics in both groups (n = 1040)

Variables	Properties	Chi -Square test			P-Value
		Medical group N(%)	non-Medical group N(%)	Total N(%)	
What was your mother's method of delivery at your birth?	NVD	85(50.90)	381(43.64)	466(44.81)	.084
	CS	82(49.10)	492(56.36)	574(55.19)	
Which of the following is your mother's method of delivery to other children?	NVD	75(47.77)	340(44.21)	415(44.82)	0.716
	CS	68(43.31)	356(46.29)	424(45.79)	
	Both	14(8.92)	73(9.49)	87(9.40)	
Which of the following is the most common method of delivery for those around you?	NVD	51(30.54)	185(21.19)	236(22.69)	0.010
	CS	94(56.29)	512(58.65)	606(58.27)	
	I do not know	22(13.17)	176(20.16)	198(19.04)	
Which method of delivery do you prefer if there is no medical problem?	NVD	97(58.08)	450(51.55)	547(52.60)	0.121
	CS	70(41.92)	423(48.45)	493(47.40)	

The above results show that in the two groups of medical and non-medical students, only the method of delivery of those around them had a statistically significant difference between the two groups ($P < .01$). So that those around medical students (30.5%) had more NVD than non-medical students (21.2%)

Table 2. Comparison of the scores of attitude towards the method of delivery in two groups (medical and non-medical students)

Attitude scores	Mean (SD)	minimum	maximum	P-value
variables				
Medical group (n=167)	147.83 (18.56)	102.00	202.00	.001
Non- medical group (n= 873)	152.89 (16.76)	105.00	236.00	
Total (n= 1040)	152.08 (17.15)	102.00	236.00	

The mean and standard deviation of the attitude score of non-medical students was higher (152.89 ± 16.76) (the higher the attitude score, the higher the tendency to NVD). So the attitude of non-medical students was more positive than that of medical students to NVD, and this difference was statistically significant ($P = .001$)

according to personal-social information of the subjects in two groups was compared. In Table 5, the multiple regression analysis of the demographic factors related to the score of attitude towards the method of delivery was shown.

3.1 Discussion

In this study, we have compared of attitudes of medical and non-medical female students in Guilan, Rasht, Iran, regarding the preferred method of delivery and its related factors. According to the results of the present study, non-medical students had a more positive attitude towards NVD than medical students, and this difference was statistically significant ($P < .01$). In general, the attitude of 71.5% of all students in the two groups to the method of delivery was neutral. 11.4% of medical students had a positive attitude towards NVD and 24% had a positive attitude towards CS, while the rate for non-medical students was 14.8% and 12.4%, respectively. In other words, the percentage of positive attitudes towards CS in the group of medical students has been twice as high as the group of non-medical students. These results are consistent with the study results of Fayazi et al. [20], Heidari and Kohan [16] and Lauluei et al. [31]. According to the researcher, given that medical students are more familiar with the methods of delivery and the consequences of each method, it seemed that they should have a more positive attitude towards NVD, but considering the contradiction before according to the results of the present study, it can be concluded that several factors are involved in students' attitudes, including insufficient training provided in universities to create a positive attitude towards NVD, experience and practical exposure and observation of the delivery process

and the quality of services provided in the labor and delivery departments that have sometimes led to negative attitudes towards NVD. The presence of students in the maternity ward and observing the process of providing different delivery care plays a major role in the formation or change of attitudes and if in clinical settings the quality of care provided in them is based on the principles of patient-centered care and physiological delivery definitely, such care can play a role in improving the delivery process and a positive attitude towards NVD. However, the above results are not consistent with the study results of Swift et al. [32] and Handan et al. [29]. Perhaps the reasons for this difference are due to differences in the study population, study environment and study tools.

Comparison of the score of attitude towards the method of delivery among the individual-social characteristics examined in the students showed that the attitude score according to the university, the school of the place of study, academic year, age groups, ethnicity, parental education, mother delivery method in other children, and the delivery method of those around has been significant. The score of attitude of non-medical students was higher than medical students, with the highest attitude score on delivery method or in other words the positive attitude toward NVD for students of School of Physical Education and Sports Sciences, Technical School of East Guilan and School of Mechanics, respectively. A study by Stoll et al. on 3161 non-medical students aged 18-25 years found that 10.8% of them generally preferred CS [33], indicating that they were more likely to have NVD. It is consistent with the present study. The results of several studies have shown a significant relationship between attitudes towards delivery method and level of education [6,20,26]. In the

Table 3. Comparison of the attitudes towards the delivery methods in the two groups (medical and non-medical students)

Attitude	Positive attitude towards CS N (%)	Neutral attitude towards the mode of delivery N (%)	Positive attitude towards NVD N (%)	Total N (%)	P-value
Variables					
Medical group (n=167)	40 (23.95%)	108 (64.67%)	19 (11.38%)	167 (100%)	.001
Non- medical group (n= 873)	108 (12.37%)	636 (72.85%)	129 (14.78%)	873 (100%)	
Total (n= 1040)	148 (14.23%)	744 (71.54%)	148 (14.23%)	1040 (100%)	

In medical group, positive attitude towards CS was more (24%) than non-medical group (12.4%) and this difference was statistically significant ($P = .001$). In general, 71.50% of subjects in both groups had a neutral attitude towards the mode of delivery

Table 4. Comparison of the attitude score towards the delivery method according to personal-social information of the subjects

Attitude scores	Properties	Mean (SD)	Median	P-value
Variables				
Academic year	First year	152.56 (16.79)	151.00	.001
	Second year	154.47 (16.32)	153.00	
	Third year	150.42 (17.06)	150.00	
	Fourth year	151.46 (18.62)	150.00	
Age groups	≤ 20	153.28 (16.32)	152.00	.031
	> 20	151.34 (17.62)	151.50	
Ethnicity	Guilak	151.39 (15.67)	150.00	.001
	Fars	148.71 (18.61)	152.00	
	Azari	151.53 (18.21)	153.00	
	Mazani	151.95 (20.60)	150.00	
	Kurd	165.00 (11.97)	164.00	
Child rank	Other	158.43 (18.79)	157.00	.042
	First child	153.10 (16.88)	153.00	
	Second child or more	151.27 (17.34)	151.00	
Father's education	Illiterate	146.72 (15.22)	147.00	.007
	Under diploma	154.30 (14.97)	153.00	
	Diploma	152.65 (17.83)	152.00	
	Associate degree	148.13 (15.56)	147.00	
	Bachelor's degree and higher	152.06 (17.87)	152.00	
Mother's education	Illiterate	139.20 (10.60)	140.00	.006
	Under Diploma	152.45 (15.45)	152.00	
	Diploma	152.09 (16.96)	152.00	
	Associate degree	156.05 (20.54)	154.00	
	Bachelor's degree and higher	151.08 (17.59)	150.50	
The mother's delivery method in other children	NVD	150.32 (17.29)	150.00	.007
	CS	153.95 (16.71)	154.00	
	NVD & CS	152.82 (19.16)	153.00	
The delivery method of those around	NVD	150.45 (19.74)	152.00	.05
	CS	152.07 (16.47)	151.00	
	I do not know	154.05 (15.71)	153.00	

The attitude score based on the academic year ($P = .001$), age groups ($P = .031$), ethnicity ($P = .001$), child rank in the family ($P = .042$), education of the father ($P = .007$), the mother's education ($P = .006$), the mother's delivery method in other children ($P = .007$) and the delivery method of those around ($P = .05$) is significant. In terms of academic year, the mean and median of the score of attitude to delivery method was higher in second year students (a mean of 154.5 and median of 153). Age groups 20 years and younger had a higher score on NVD (a mean of 153.3 and median of 152). In terms of ethnicity, Fars ethnicity had a lower attitude score (a mean of 148.7 and median of 152) and Kurds had a higher attitude score (a mean of 165 and median of 164) to NVD. The students who were the first child had a higher score on NVD (a mean of 153 and median of 153). The students whose fathers and mothers were illiterate or had lower education had a lower score on delivery methods. The students whose mothers gave birth by CS in other children were more likely to have NVD. The students with those around with NVD had a higher score (a mean of 150.5 and median of 152) to NVD.

present study, the mean and median of the score of the second-year students' attitude towards the delivery method were higher than the fourth year students. Consistent with the results of the present study, a study by Fayazi et al. also showed that the fourth year midwifery and medical internship students have a positive attitude towards CS than the first year midwifery and medical students [20]. While the study results of Jalali et al. [10] and safari-Moradabadi

et al. [34] are inconsistent with the results of the present study. Perhaps the reasons for the difference between the results of the above studies are the cultural and social differences, differences between the study population and period of study.

In the present study, students aged 20 and younger had higher scores on NVD. This result is consistent with the study results of Siabani et al.

[35] and Lovasmoen et al. [36], but inconsistent with the study results of safari-Moradabadi et al. [34]. Perhaps the reason for this difference is due to the differences in the study population.

In the present study, ethnicity was related to attitudes towards delivery methods, so that the people of Fars had the lowest score of attitudes towards NVD and the Kurds had a higher attitude to NVD. Consistent with the results of the present study, a study by Fayazi et al. [20] showed that ethnicity had a significant relationship with attitude and preferred method of delivery.

According to the researcher, given that NVD is a natural and traditional method for delivery, it seems that in communities where traditions are still common and adherence to traditions is more valuable, attitudes toward NVD are also more positive.

One of the variables studied in the present study was the child rank of students in the family, and the study results showed that students who were the first child had higher scores on their attitudes toward NVD. The students whose parents' education was low (illiterate) also had lower

Table 5. Multi regression analysis of demographic factors related to attitude score towards delivery method (NVD to CS)

Model		B	SD	Significance level (P-value)	B at 95% confidence interval	
					Minimum confidence interval	Maximum confidence interval
Predictors related to the attitude towards delivery method (NVD to CS)	Constant value	150.42	2.64	.001	145.24	155.61
	Kurd to Fars	16.23	4.17	.001	8.05	24.41
	School of Literature and Humanities compared to Shahid- Beheshti School of Nursing and Midwifery in Rasht	5.41	1.25	.001	2.96	7.86
	Maternal CS in other children compared to NVD	1.89	0.87	.030	0.18	3.60
	East Guilan Technical School compared to Shahid-Beheshti School of Nursing and Midwifery in Rasht	8.59	3.24	.008	2.24	14.95
	School of Physical Education and Sports Sciences compared to Shahid-Beheshti School of Nursing and Midwifery in Rasht	8.90	3.62	.014	1.80	16.00
	Child rank (second child of the family and more)	-2.65	1/16	.023	-4.93	-0.36
	School of Basic Sciences compared to Shahid-Beheshti School of Nursing and Midwifery in Rasht	4.06	1.88	.031	0.38	7.74

The ethnicity of Kurd compared to Fars (B = 16.23, P <.001), School of Literature and Humanities (B = 5.41, P <.001), East Guilan Technical School (B = 8.59, P <.008), School of Physical Education (B = 8.90, P <.014), and School of Basic Sciences (B = 4.06, P <.031) to the reference group (Shahid- Beheshti School of Nursing and Midwifery, Rasht, Iran), the maternal CS in other children compared to NVD (B = 1.89, P <.03) and the second and higher child rank in the family compared to the first child (B = -2.65, P <.023) have been considered as predictors related to the attitude towards the method of delivery in the studied students

scores on their attitudes toward delivery methods. However, in a study by Fayazi et al., no significant relationship was observed between attitudes toward delivery and students' parents' education [20]. The difference between the study environment and the socio-cultural factors may be the reason for this difference. In the present study, the students whose mothers gave birth in other children by CS or both delivery methods (NVD and CS) or those around them had NVD, had a positive attitude towards NVD. However, the study results of Weeks et al. on students showed that those with a family history of CS were more likely to have CS [21]. Given that mothers and those around are among the sources of information about delivery [37], so giving awareness and information and recounting their delivery experience to children can be effective on forming the attitude of delivery in them, which in the present study seems to have been influenced by maternal experience and those around the study group in favor of NVD. However, our results were inconsistent with the the study results of Fayazi et al. they showed that delivery methods of maternal and those around has no significant relationship with students' attitudes [20]. It is possible that socio-cultural diversity and differences in the research environment can justify these results.

In the present study, the economic status of the family, the field of study of the parents and the method of maternal delivery at the time of students' birth did not show a significant relationship with the attitude scores.

Since the present study has compared attitudes of female undergraduate medical and non-medical students in Guilan, Iran, regarding the preferred method of delivery and its related factors, it is necessary to be careful in generalizing the results to students of other academic levels and other universities.

Due to few studies conducted on the group of students and nulli-gravid young women in the country, the study results can guide researchers in the field of reproductive health and midwifery to begin and continue further research on attitudes towards delivery methods and related factors in the young teenage girls who are future mothers.

4. CONCLUSION

In this study, the results showed that attitudes of non-medical students were more positive than

that of medical group students about NVD and medical students' attitudes have been more positive towards CS. Also, the Kurdish ethnic group had a greater tendency towards NVD than Fars. School of Literature and Humanities, East Guilan Technical School, School of Physical Education and School of Basic Sciences compared to the reference group were more prone to NVD. CS in other children and the second and higher child rank in the family were among the predictors related to attitude towards delivery method in the studied students. In general, the rate of neutral attitude towards the delivery method in both medical and non-medical students was higher than the positive or negative attitudes. Therefore, with educational planning at the university and even before the university, it is possible to provide appropriate information and knowledge about the advantages of NVD and CS complications.

CONSENT

All authors declare that verbal and written informed consent were obtained from the students participated in this study.

ETHICAL APPROVAL

All authors hereby declare that in this study we obtained research permission from the department of research and technology and the ethics committee of Guilan university of medical sciences, Rasht, Iran, with the code IR.GUMS.REC.1398.200. Therefore this study has been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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