

# Attitude and Knowledge Level Towards Mode of Delivery: A Cross-Sectional Study among Pregnant in Saudi Arabia

Ahmed Ghazi<sup>1</sup>, Almaha Alshehri<sup>2</sup>, Wajd Alshehri<sup>2</sup>, Kholoud Alamri<sup>3</sup>, Aseel Alzahrani<sup>4</sup>, Raghad Bouges<sup>3</sup>, Shatha Alzahrani<sup>5</sup>, Tasneem Altayieb<sup>2</sup>, Khame T. Alzahrani<sup>6</sup>

<sup>1</sup>Department of Obstetrics and Gynecology, College of Medicine, University of Jeddah, Jeddah, Saudi Arabia. <sup>2</sup>University of Jeddah, Jeddah, Saudi Arabia. <sup>3</sup>King Abdulaziz University, Jeddah, Saudi Arabia. <sup>4</sup>Taif University, Taif, Saudi Arabia. <sup>5</sup>Albaha University, Albaha, Saudi Arabia.

<sup>6</sup>Department of Endodontic, Saudi Board of Endodontic SR, King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.

## Abstract

People's knowledge and attitudes are essential for changing their decision-making; therefore, before any decision-making regarding normal vaginal delivery or cesarean section in consideration of health authority intervention, they should have adequate knowledge concerning delivery modes. Therefore, there is a pressing need for such research. This study aims to assess the attitude and knowledge level toward normal vaginal delivery and cesarean section among pregnant women in the Kingdom of Saudi Arabia. This cross-sectional study was conducted in Saudi Arabia from August 2022 to April 2023 using an online questionnaire. The IBM SPSS program version 27 is being used for data entry and analysis. The study included 461 participants, 41.6% of them aged between 21- 30 years old and 30.2% were between 31-40 years old. 76.1% of participants were university-educated. 81.3% of participants had natural childbirth and 18.7% had a cesarean delivery. Reasons to refuse cesarean section, 29.7% of them refuse it for fear of surgery or surgery, 26.9% for delayed recovery after the operation, 2.8% for operation costs, and 4.1% because of the length of the clinical rest period. 4.6% of participants had good knowledge scores, 27.1% had moderate knowledge scores and 68.3% had poor knowledge scores. Attitude towards the mode of delivery was significantly linked to several previous pregnancies ( $P < 0.05$ ). Women in Saudi Arabia had poor knowledge with good attitudes towards modes of delivery. For women to make wise decisions about their reproductive health, there should be an increase in health literacy about decision-making with regard to modalities of delivery.

**Keywords:** Pregnant, Delivery, Women, Obstetric surgery, Saudi Arabia

## INTRODUCTION

Vaginal delivery and cesarean section (CS) are the two main methods available for delivery; Vaginal delivery is seen to be the ideal delivery option [1]. Normal delivery (vaginal delivery) is an ancient, spontaneous process that does not require any complex medical interventions [2]. On the other hand, Over the years Cesarean section (CS) has saved the lives of millions of mothers and babies [3]. Although it is a critical obstetric surgery that saves the lives of both mothers and infants, it has both short- and long-term adverse effects [4]. The risks of postpartum depression, maternal death, anesthesia complications, pain, headaches, and urinary tract infection are higher in CS than in vaginal delivery [5]; Therefore, it should be used only when vaginal childbirth is impossible or when the mother or baby is at serious risk [3].

The most frequently performed obstetrical procedure worldwide was cesarean section [6]; as a consequence, the global CS rate increased by 12.4% between 1990 and 2014 [7]. Despite WHO recommendations which state that the rate of cesarean section should be between 5-15% [8], the global cesarean section rate has increased in both developed and developing countries, reaching over 40% in some places [9].

These rates are anticipated to be 50% in Asia and 48% in China [8].

Few articles were conducted regarding the awareness level of cesarean section and vaginal delivery benefits and drawbacks among pregnant females, particularly in Saudi Arabia. Also, the rate of cesarean section births has been rapidly ascending in Saudi Arabia, reaching a rate of more than 80% during the last two decades, mainly due to maternal choice regardless of knowing the benefits and consequences

**Address for correspondence:** Ahmed Ghazi, Department of Obstetrics and Gynecology, College of Medicine, University of Jeddah, Jeddah, Saudi Arabia.  
Aaghazi@Uj.edu.sa

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**How to cite this article:** Ghazi A, Alshehri A, Alshehri W, Alamri K, Alzahrani A, Bouges R, et al. Attitude and Knowledge Level Towards Mode of Delivery: A Cross-Sectional Study among Pregnant in Saudi Arabia. Arch Pharm Pract. 2023;14(S):A06231451.

of the different modes of delivery. However, no current studies exist to assess the awareness level of cesarean section and vaginal delivery benefits and drawbacks among pregnant females in Saudi Arabia. Despite the good number of studies, there is a lack of generalizability of results and a small sample size in the previous studies. Moreover, most of the existing studies were concerned about the awareness level of choosing cesarean section method without reference to their knowledge assessment of vaginal delivery mode. People's knowledge and attitudes are essential for changing their decision-making; therefore, before any decision-making regarding normal vaginal delivery or cesarean section in consideration of health authority intervention, they should have adequate knowledge concerning the advantages and disadvantages of delivery modes.

Despite the good number of studies, there is a lack of generalizability of results and a small sample size in the previous studies. Moreover, most of the existing studies were concerned about the awareness level of choosing cesarean section method without reference to their knowledge assessment of vaginal delivery mode. People's knowledge and attitudes are essential for changing their decision-making; therefore, before any decision-making regarding normal vaginal delivery or cesarean section in consideration of health authority intervention, they should have adequate knowledge concerning the advantages and disadvantages of delivery modes. Therefore, there is a pressing need for such research. This study aims to assess the attitude and knowledge level toward normal vaginal delivery and cesarean section among pregnant women in the Kingdom of Saudi Arabia.

## MATERIALS AND METHODS

### Study Design

This cross-sectional study was conducted in Saudi Arabia from August 2022 to April 2023 using an online questionnaire.

### Study Population and Selection Criteria

All pregnant women from the Saudi population who were 18 years and above and women who could provide informed consent were eligible to participate in the study. In this study, we will include pregnant women in Saudi Arabia older than 18 years old who agreed to participate in our study. Pregnant women younger than 18 years old, medical or health field students, and health care providers were excluded.

### Sample Size and Sampling Method

The sample size was calculated by (Raosoft, Inc., Seattle, WA, USA) [10] at 384 individuals using the following formula and applying means and standard deviation. Considering the standard deviation ( $=1.96$ ) for a 95% Confidence interval and the maximum acceptable error ( $=0.05$ ). Therefore, the calculated minimum sample size

required for this study is  $n = (1.96)^2 \times 0.50 \times 0.50 / (0.05)^2 = 384$  participants.

$$n = \frac{Z^2 p(1-p)}{d^2} \quad (1)$$

### Method for Data Collection and Instrument (Data Collection Technique and Tools)

A questionnaire extracted from similar previous studies was used as a study tool. It was available in both English and Arabic. The questionnaire is comprised of five sections. The 1st section contains informed consent, the 2nd includes sociodemographic data and obstetric history, the 3rd contains two questions to assess women's willingness to undergo cesarean sections or vaginal delivery in current pregnancies and the factors influencing their decision-making, and the 4th section contains nine knowledge-based statements to assess the knowledge regarding the mode of delivery. The last section includes ten statements to evaluate the attitude toward vaginal delivery and cesarean section. The data was gathered using an online questionnaire in the Arabic language designed using Google Forms and was distributed via social media to Saudi Arabian pregnant females.

### Scoring System

Overall, nineteen statements were used to assess the level of knowledge and attitude.

### Knowledge Score

Nine statements for knowledge scoring, one point given for correct answers, and zero points for incorrect answers or I don't know. The scoring system was divided as follows:  $\geq 7$  for a high level of knowledge, 4-6 for a medium level of knowledge, and  $\leq 3$  for a low level of knowledge.

### Attitude Score

A total of 10 statements were used to assess the attitude towards vaginal delivery and cesarean section, using five statements for each one. A six-point Likert scale was used and regarded from 5-0 as a strong positive to I don't know. The score  $\geq 21$  considered a positive attitude, 13-20 considered a neutral attitude, and  $< 12$  considered a negative attitude.

### Analyzes and Entry Method

The IBM SPSS program version 27 is being used for data entry and analysis. The quantitative variable was exhibited by using mean  $\pm$  standard deviation while frequencies were used to display the qualitative variables. The maximum acceptable error of 0.05 or below was used to determine statistical significance with a 95% confidence interval.

### Ethical Considerations

Ethical approval was taken from the University of Jeddah, and consent was taken from the participants before filling out the survey.

## RESULTS AND DISCUSSION

The study included 461 participants, 41.6% of them aged between 21- 30 years old and 30.2% were between 31- 40 years old. 76.1% of participants were university-educated. 51% of participating women were housewives and 40.3% were employees. 43.8% had an average monthly income and 37.3% had a good income. 18.9% of participants had one pregnancy, 45.3% had 2- 4 pregnancies and 21.3% had 5 pregnancies or more (**Table 1**).

**Table 1.** Sociodemographic characteristics of participants (n=461)

Parameter	No.	%	
Age	18 -20	21	4.6
	21 -30	192	41.6
	31 -40	139	30.2
	41 -50	92	20.0
	51 -60	17	3.7
Educational level	Uneducated	7	1.5
	Primary stage	8	1.7
	Intermediate stage	9	2.0
	High school	86	18.7
	University stage	351	76.1
Job	housewife	235	51.0
	free work	40	8.7
	employee	186	40.3
Monthly family income	Less than 5,000 riyals	87	18.9
	5000-10000 riyals	202	43.8
	More than 10,000 riyals	172	37.3
	I have never been pregnant	67	14.5
Number of pregnancies	Once	87	18.9
	2-4 times	209	45.3
	5 times or more.	98	21.3

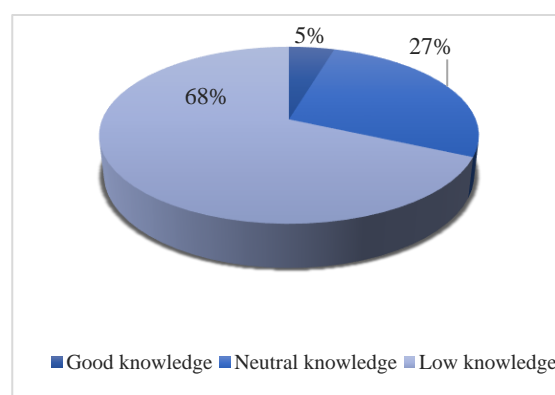
In **Table 2**, 81.3% of participants had natural childbirth and 18.7% had a cesarean delivery. Reasons to choose a cesarean section were, 14.8% chose it for the benefit of the fetus, 15.6% chose it to follow the doctor's advice, 10.4% chose it for fear of natural childbirth, and 4.1% for previous successful cesarean section. Reasons to refuse cesarean section, 29.7% of them refuse it for fear of surgery or surgery, 26.9% for delayed recovery after the operation, 2.8% for operation costs, and 4.1% because of length of the clinical rest period.

**Table 2.** Type of childbirth and reasons for choosing or refusing CS among participants (n=461).

Parameter	No.	%	
Type of childbirth preferred	Natural childbirth	375	81.3
	Cesarean delivery	86	18.7
	For the benefit of the fetus	68	14.8
	Following the doctor's advice	72	15.6

Reason for choosing a cesarean section.	Fear of natural childbirth	48	10.4
	Previous successful cesarean section	19	4.1
	otherwise	254	55.1
	Fear of surgery or surgery.	137	29.7
Reason for refusing a cesarean delivery	Delayed recovery after the operation	124	26.9
	Operation costs	13	2.8
	The length of the clinical rest period.	19	4.1
	otherwise	168	36.4

As shown in **Figure 1**, 4.6% of participants had good knowledge scores, 27.1% had moderate knowledge scores and 68.3% had poor knowledge scores. the attitude scores, 98% had a positive attitude, 1.3% had a neutral attitude and 0.7% had a negative attitude.



**Figure 1.** Knowledge score of participants towards mode of delivery

As illustrated in **Table 3**, 19.1% of participants think that the pain of childbirth after a cesarean section is less severe than a natural childbirth. 44% reported that the incidence of diseases during the postpartum period is higher after undergoing a cesarean section compared to a natural birth. 42.7% reported that infections are more common after cesarean section compared to normal delivery. 26.9% think that in the event of a desire to tie the fallopian tube, the delivery should be by cesarean section. 22.1% think that a mother who has previously given birth by cesarean section must have all her next deliveries by cesarean section. 32.8% think that the bleeding of a cesarean section is less severe than the bleeding of a natural childbirth. 69.6% reported that a cesarean section is required if the fetus is breech in the mother's womb.

**Table 3.** Knowledge of participants of the mode of delivery (n=461).

Parameter	True	False	Don't know
The pain of childbirth after a cesarean section is less severe than a natural childbirth	88 19.1%	267 57.9%	106 23.0%

The incidence of diseases during the postpartum period is higher after undergoing a cesarean section compared to a natural birth	203 44.0%	69 15.0%	189 41.0%	Newborn respiratory diseases are less common in cesarean section	63 13.7%	170 36.9%	228 49.5%
Infections are more common after cesarean section compared to normal delivery	197 42.7%	101 21.9%	163 35.4%	A caesarean section is required if the fetus is breech in the mother's womb	321 69.6%	48 10.4%	92 20.0%
In the event of a desire to tie the fallopian tube, it is preferable that the delivery is by cesarean section.	124 26.9%	32 6.9%	305 66.2%	As illustrated in <b>Table 4</b> , 63.6% of participants strongly agree that natural childbirth is an appropriate and acceptable method of childbirth. 86.1% strongly agree that the first moment a mother sees her baby after giving birth is considered a joyful moment. 72.9% strongly agree that natural childbirth helps the mother recover faster. 56.2% strongly agree that natural childbirth has a positive effect on the mother's relationship with her child. 60.1% strongly agree that natural childbirth is better in terms of the outcome. 13.4% strongly agree that cesarean section is preferred because natural childbirth is painful.			
The level of intelligence among children born in cesarean section is higher, compared to their peers born during a normal birth.	40 8.7%	247 53.6%	174 37.7%				
A mother who has previously given birth by cesarean section must have all her next deliveries by cesarean section.	102 22.1%	294 63.8%	65 14.1%				
The bleeding of a cesarean section is less severe than the bleeding of a natural childbirth	151 32.8%	125 27.1%	185 40.1%				

**Table 4.** Attitude of participants of modes of delivery (n=461).

Parameter	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	Don't know
Natural childbirth is an appropriate and acceptable method of childbirth	293 63.6%	122 26.5%	37 8.0%	4 .9%	2 .4%	3 .7%
The first moment a mother sees her baby after giving birth is considered a joyful moment	397 86.1%	44 9.5%	13 2.8%	1 .2%	3 .7%	3 .7%
Natural childbirth helps the mother recover faster	336 72.9%	81 17.6%	31 6.7%	8 1.7%	2 .4%	3 .7%
Natural childbirth has a positive effect on the mother's relationship with her child	259 56.2%	80 17.4%	70 15.2%	29 6.3%	11 2.4%	12 2.6%
Natural childbirth is better in terms of the outcome	277 60.1%	84 18.2%	59 12.8%	25 5.4%	5 1.1%	11 2.4%
In the absence of financial difficulties, a cesarean section is preferred	50 10.8%	43 9.3%	103 22.3%	162 35.1%	74 16.1%	29 6.3%
If the mother is not comfortable with her position on the birthing table, a cesarean section is preferred	43 9.3%	74 16.1%	91 19.7%	153 33.2%	61 13.2%	39 8.5%
Cesarean section is preferred because natural childbirth is painful	62 13.4%	64 13.9%	79 17.1%	153 33.2%	77 16.7%	26 5.6%
Children born through caesarean section are healthier than those born through normal delivery	37 8.0%	30 6.5%	103 22.3%	161 34.9%	76 16.5%	54 11.7%
If the mother wishes to have the fallopian tubes connected, it is preferable for her to choose a cesarean section.	78 16.9%	74 16.1%	123 26.7%	73 15.8%	14 3.0%	99 21.5%

As shown in **Table 5**, Knowledge scores of modes of delivery were significantly associated with the age of the mother, educational level, and number of previous pregnancies ( $P < 0.05$ ).

**Table 5.** Association between knowledge scores of modes of delivery with sociodemographic characters of participants

		Knowledge score			Total (N=461)	P value
		Good knowledge	Moderate knowledge	Poor knowledge		
Age	18 -20	3 0.7%	6 1.3%	12 2.6%	21 4.6%	<b>0.001</b>
	21 -30	8 1.7%	34 7.4%	150 32.5%	192 41.6%	

	31 - 40	6 1.3%	42 9.1%	91 19.7%	139 30.2%	
	41 -50	4 0.9%	40 8.7%	48 10.4%	92 20.0%	
	51 - 60	0 0.0%	3 0.7%	14 3.0%	17 3.7%	
	Uneducated	5 1.1%	1 0.2%	1 0.2%	7 1.5%	
	Primary stage	2 0.4%	2 0.4%	4 0.9%	8 1.7%	
<b>Educational level</b>	Intermediate stage	1 0.2%	3 0.7%	5 1.1%	9 2.0%	<b>0.001</b>
	High school	4 0.9%	27 5.9%	55 11.9%	86 18.7%	
	University stage	9 2.0%	92 20.0%	250 54.2%	351 76.1%	
	housewife	13 2.8%	60 13.0%	162 35.1%	235 51.0%	
<b>Job</b>	free work	2 0.4%	7 1.5%	31 6.7%	40 8.7%	<b>0.324</b>
	employee	6 1.3%	58 12.6%	122 26.5%	186 40.3%	
	Less than 5,000 riyals	9 2.0%	25 5.4%	53 11.5%	87 18.9%	
<b>Monthly family income</b>	5000-10000 riyals	4 0.9%	46 10.0%	152 33.0%	202 43.8%	<b>0.006</b>
	More than 10,000 riyals	8 1.7%	54 11.7%	110 23.9%	172 37.3%	
	I have never been pregnant	2 0.4%	14 3.0%	51 11.1%	67 14.5%	
<b>number of pregnancies</b>	Once	6 1.3%	10 2.2%	71 15.4%	87 18.9%	<b>0.002</b>
	2-4 times	8 1.7%	63 13.7%	138 29.9%	209 45.3%	
	5 times or more.	5 1.1%	38 8.2%	55 11.9%	98 21.3%	

An attitude towards mode of delivery was significantly linked to a number of previous pregnancies ( $P < 0.05$ ) as in **Table 6**.

**Table 6.** Association between attitude scores of modes of delivery with sociodemographic characters of participants

		Attitude score			Total (N=461)	P value
		Positive	Neutral	Negative		
<b>Age</b>	18 -20	19 4.1%	1 0.2%	1 0.2%	21 4.6%	<b>0.136</b>
	21 -30	186 40.3%	4 0.9%	2 0.4%	192 41.6%	
	31 - 40	138 29.9%	1 0.2%	0 0.0%	139 30.2%	

	41 -50	92	0	0	92	
		20.0%	0.0%	0.0%	20.0%	
	51 - 60	17	0	0	17	
		3.7%	0.0%	0.0%	3.7%	
	Uneducated	7	0	0	7	
		1.5%	0.0%	0.0%	1.5%	
	Primary stage	8	0	0	8	
		1.7%	0.0%	0.0%	1.7%	
<b>Educational level</b>	Intermediate stage	9	0	0	9	<b>0.980</b>
		2.0%	0.0%	0.0%	2.0%	
	High school	84	2	0	86	
		18.2%	0.4%	0.0%	18.7%	
	University stage	344	4	3	351	
		74.6%	0.9%	0.7%	76.1%	
	housewife	232	3	0	235	
		50.3%	0.7%	0.0%	51.0%	
<b>Job</b>	free work	35	3	2	40	<b>0.001</b>
		7.6%	0.7%	0.4%	8.7%	
	employee	185	0	1	186	
		40.1%	0.0%	0.2%	40.3%	
	Less than 5,000 riyals	82	3	2	87	
		17.8%	0.7%	0.4%	18.9%	
<b>Monthly family income</b>	5000-10000 riyals	200	2	0	202	<b>0.060</b>
		43.4%	0.4%	0.0%	43.8%	
	More than 10,000 riyals	170	1	1	172	
		36.9%	0.2%	0.2%	37.3%	
	I have never been pregnant	63	1	3	67	
		13.7%	0.2%	0.7%	14.5%	
<b>Number of pregnancies</b>	Once	84	3	0	87	<b>0.001</b>
		18.2%	0.7%	0.0%	18.9%	
	2-4 times	208	1	0	209	
		45.1%	0.2%	0.0%	45.3%	
	5 times or more.	97	1	0	98	
		21.0%	0.2%	0.0%	21.3%	

A recent study has indicated that the World Health Organization (WHO) recommendation to limit population-based cesarean section (CS) rates to 10-15% is associated with improvements in maternal, neonatal, and infant mortality [11]. Nonetheless, CS rates have risen in both industrialized and developing nations during the past three decades [12]. Public health services are burdened by the rise in CS rates, especially when CS is conducted needlessly. As a result, there are service and economic gaps, which hurt mother and child health outcomes [13]. A higher incidence of postpartum infection, urinary tract infection, discomfort, headaches, anesthesia problems, maternal death, and postpartum depression has been linked to cesarean section (CS) compared to vaginal delivery [12].

According to our study results, 81.3% of participants had natural childbirth and 18.7% had a cesarean delivery.

Reasons to refuse cesarean section were 29.7% fear of surgery or surgery, 26.9% for delayed recovery after the operation, 2.8% for operation costs, and 4.1% because of the length of the clinical rest period. According to a previous study, CS was the most popular delivery method (59%), and, in this case, the doctor's advice was the most crucial determinant of the choice of delivery method [3]. Another study's findings in Iran revealed that 41.1% of pregnant women opted for CS and 45.3% preferred regular delivery. Fear of labor pain was the main factor in choosing CS, while lower complication rates were the main one in natural birth [14]. In Turkish research, more than 80% of pregnant women chose natural delivery, and less than 16% chose CS. Less maternal mortality, the joy of seeing the newborn right away, stronger emotional bonding between mother and child, quicker recuperation, a quicker return to normal daily activities, and lesser costs of this technique of delivery were

the main factors in choosing a normal delivery. Similar to this, the most significant factors influencing the decision to choose CS delivery included the expectation of healthier newborns, distaste for how women were positioned on labor beds, decreased pain during CS, fear of vaginal delivery, and requirement for tubal ligation during CS to prevent subsequent pregnancies [15]. According to research Kasai conducted on pregnant women in Brazil, the majority of them (70.8%) believed that choosing a natural birth was the best option since it would result in a quicker postpartum recovery. The two most significant criteria influencing the choice of this delivery method, according to pregnant women who had also selected CS, were the lack of pain experienced after labor and the requirement for tubal ligation [16]. Most study participants in Lee's study of South Korean women were more supportive of vaginal birth than CS. More than 95% of pregnant women favored vaginal birth and would advise others to do it [17]. Just 3.7% of Singaporean women surveyed in another study indicated that they would choose an elective CS. The main justification for selecting a CS was to prevent labor discomfort [18]. These results corroborate research from India that found pregnant women who favored CS thought the procedure was less unpleasant and risky [19]. Additionally, according to Rice *et al.* report, Thai women in Australia believed that CS delivery was a painless and safe operation [20]. Another survey showed that 41% of the cesarean deliveries were planned whereas 59% were emergency. And for awareness level, results before C-sections were that (58%) had enough information and (42%) were not fully aware of C-sections [20]. A descriptive study on primigravid women showed that (66.7%) had moderately adequate knowledge regarding the mode of delivery whereas (33.3%) had adequate knowledge. Regarding the attitude, toward normal vaginal delivery, the results showed (11.7%) had a neutral and (88.3%) had a positive attitude whereas toward the cesarean section was (13.3%) had a positive attitude while (86.7%) had a neutral attitude [21]. In a cross-sectional study conducted by Sima Janati, *et al.*, (4.9%) of participants had good knowledge, (66.2%) had intermediate knowledge, and (28.9%) had poor knowledge. And about the attitude, the results were that (2%) had a natural attitude, (98%) had a positive attitude and (0%) had a negative attitude toward normal vaginal delivery. In addition, (19.7%) had a neutral attitude, (79.8%) had a positive attitude, and (0.5%) had a negative attitude toward the cesarean section [22].

Theoretically and practically, women who gave birth to their previous child via CS delivery are more likely to be aware of the logic behind it and more likely to be educated about the results that come with it. According to this finding, primiparous women are not exposed to the necessary information on delivery methods. On the other hand, women who had previously had CS deliveries preferred it more, which can be explained by the fact that a CS may enable women to plan their maternity leave and have a more structured delivery schedule. Another cause could be that there haven't been any CS difficulties in the past, which has led some women to believe that all CS deliveries are risk-free.

In our study, knowledge scores of modes of delivery were significantly associated with the age of the mother, educational level, and number of previous pregnancies. Attitude towards the mode of delivery was significantly linked to a number of previous pregnancies. This was comparable to a previous study that reported a significant, positive relation between a woman's attitude and her level of education [23]. These findings concur with those of Lee, Biglari, and Ghadimi [10, 17, 24]. In this study, there was no discernible relationship between women's attitudes regarding natural childbirth and their jobs. These conclusions agreed with those of other investigations [25]. However, Mohammadi Tabar believed that the most significant element influencing the choice of delivery technique was the source of information acquisition, and she demonstrated a substantial relationship between a pregnant woman's career and the source of information acquisition [26]. In addition, a substantial relationship between a woman's attitude towards natural childbirth and her husband's profession was discovered [23], which contradicted Pourheidari's findings [27] due to variations in the study populations. In the United Arab Emirates, there was an inverse association between young age and lack of knowledge that could be attributed to the fact that young women are less likely to experience adverse maternal outcomes that could increase their knowledge [5]. To comprehend the reasons that might influence women who have previously had vaginal deliveries and CS deliveries to choose CS delivery for their present or next pregnancies, more research and exploration are required, perhaps using a qualitative or mixed-methods approach.

## CONCLUSION

Women in Saudi Arabia had poor knowledge with good attitudes towards modes of delivery. For women to make wise decisions about their reproductive health, there should be an increase in health literacy about decision-making with regard to modalities of delivery. Any health system must focus on empowering women by giving them the knowledge and skills necessary to make educated decisions. Further prenatal or antenatal sessions could assist in equipping women with the knowledge they need to make more educated decisions about their birth plans by educating them on CS, its benefits and drawbacks, as well as the clinical indications of CS delivery. Such structured classes may take place outside of and in addition to routine therapeutic appointments. Also, it has been demonstrated that online networks that deal with reproduction enable narratives about sharing knowledge about birthing.

**ACKNOWLEDGMENTS:** None

**CONFLICT OF INTEREST:** None

**FINANCIAL SUPPORT:** None

**ETHICS STATEMENT:** Ethical approval was obtained from the Research Ethical Committee at the Faculty of Medicine at Jeddah University, Saudi Arabia (Ethical approval number: UJ-REC-125). Participants were informed that their

participation is voluntary and filling the questionnaire indicates their consent to participate.

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