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Women's perspectives and knowledge of delivery methods in Saladin Governorate

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Abstract
Background: Normal vaginal delivery and caesarean section is among the most performed operations in the world and the rate and frequency of their operations is influenced by the knowledge and attitude of the women towards them.
Objectives: To assess knowledge and attitude of the women regarding mode of delivery and to find out mother preference on mode of delivery and its associated factors.
Patients and Methods: A cross sectional study of 200 women, all data was collected through a questionnaire that obtained information including demographic characteristics and obstetrical data, questions on subjects' knowledge and attitude towards intimate partner violence (IPV).
Results: Most of the participants were in the "20-24 years" age group and "40%" were employee. At least 3 previous pregnancies are 58 with 7. About 46% attended college, and most have average to good income. (69.5%) of women wish to be delivered normally and (28.5%) wants caesarean section.
Conclusion: The findings underscore the necessity of providing education for women, particularly those who are pregnant and their husbands on the benefits and risks associated with various delivery options; indications for various modes of delivery; and the advantages and risks of these options. Mothers should be assisted to make a decision on the mode of delivery in antenatal visit by well-trained health-care workers.

Keywords: Knowledge, attitude, mode of delivery, vaginal delivery, caesarean section

Introduction

The evolution of birth practices mirrors the development of human civilization through thousands of years from midwife supervision to become a fundamental science of modern times. Birth represents the most dangerous and thrilling experience women face during their lifetime [1]. The process of labor remains the primary reason women seek hospital care because 4.2 babies are born every second resulting in 385 thousand births worldwide each day which establishes its crucial importance. The process of vaginal delivery was traditionally viewed as the natural process of fetal expulsion from the womb during the term period [2].

The safest time for vaginal delivery occurs when the newborn reaches full-term status at gestational weeks 37 through 42. The advantages of vaginal delivery outweigh its discomfort because it results in minimal postpartum pain and brief hospital stays [3]. The new mother typically needs one to two days to recover before returning home with her newborn baby. The immediate capability to breastfeed and avoidance of CS side effects make vaginal delivery an attractive option for new mothers. The ability to be fully alert after vaginal delivery enables mothers to immediately feed their babies which creates an excellent opportunity for early bonding between parents and their newborns [4].

The main advantage of vaginal birth is that the child gets exposed to beneficial bacteria that are present in the mother's birth canal. The baby passes through the birth canal and this is accompanied by the passing of fluid through the nose and the mouth into the digestive system [5]. This fluid has beneficial bacteria that are known to contribute to the development of the baby's immune system while also helping to keep away harmful bacteria that could also enter the baby's digestive system at the same time [6]. The beneficial bacterium also has a role in coating the baby's skin which is important in preventing the growth of harmful bacteria outside the body and also vaginal delivery has a beneficial role caused by the

compressing effect of the birth canal on the lungs of the baby and clearing it, another thing is that vaginal delivery may cause subsequent fertility problems [7].

The reduction in postpartum and prenatal mortality and morbidity during vaginal delivery has not stopped Cesarean section from being one of the most performed major abdominal surgeries today because there is no increase in obstetric emergencies but the rate of CS has increased in many parts of the world to more than 50% in some countries [8]. The reasons for the increase in caesarean section rate are multifactorial and the decision to deliver by caesarean section is based on several factors including previous caesarean section, multiple gestation, malpresentation, fetal distress, failure of progress during labor and maternal medical conditions, but still significant percentage of these surgeries are performed without any medical indication and some of them are done on the mother request in so called cesarean delivery on mother's request (CDMR), and this type comprises about 8-14% of all CS deliveries [9].

The debate on elective Caesarean section in full-term pregnancy was first discussed in the media about 20 years ago with the aim of avoiding the risks of vaginal delivery. Since then, there have been very serious increases in the number of Caesarean sections performed on pregnancies. And even though this increase has given a false impression that it is almost totally safe, it is still just like any other surgery carries many risks that could be local wound infection or pelvic, respiratory, and urinary tract infections, or it could be a pulmonary embolism [10], not to mention anesthesia and its possible complications during CS and the repeated surgeries and the management of these possible complications form an economical burden and requires an intensive management, Thus morbidity and mortality rates are higher in CS compared to normal vaginal delivery (NVD) in both mother and child but still the general public shows increasing acceptance of CS as the safest method of delivery for the newborn child, without being aware of its adverse consequences. For example, in Iraq during 2009 the percentage of CS in Iraq was 24.5% increased to 25.8% during 2010 in public sectors whereas in the private sectors the percentage was very higher reaching 75.8% in 2009 and 79.5% in 2010 [11]. This study aimed at investigating women's knowledge and attitude towards the modes of delivery.

Patients and methods

Study design: The research used a hospital-based cross-sectional questionnaire survey at Salah Al-din hospital and Samarra general hospital to evaluate women's understanding and opinions about normal vaginal delivery and caesarean section. The research took place from November 7th 2022 through March 10th 2023.

Study tools and size: The researchers used self-administered questionnaires to gather data about women's socio-demographic characteristics and obstetric history as well as their knowledge and attitude toward vaginal delivery and CS through thirty statements (10 for knowledge about modes of delivery, 10 for attitude to vaginal delivery and 10 for attitude to cesarean section). The women completed the questionnaires after the researchers asked them to do so. The study tool underwent pretesting with 10 participants who were later removed from the study (pilot study) sample to evaluate its reliability and usability. The study needed 200 participants for its sample size during the period from December 1st 2022 to January 30th 2023.

Ethical and administrative issues

Permission was obtained from concerned authority and from participants after explaining the objectives and nature of the study.

Data management

The data collection and analysis involved manual counting procedures. The study used Chi Square and Fishers Exact tests to identify any significant relationships between variables after describing the variables. The study considered P values below 0.05 as statistically significant. For the scoring knowledge statement.

The assessment of knowledge consisted of three levels: poor knowledge for 0-3 true statements and intermediate or fair knowledge for 4-6 true statements and good knowledge for 7 correct statements. The assessment of NVD attitude used 6 agree statements as the threshold for positive attitude while less than 6 statements indicated negative attitude. The assessment of CS attitude used 6 agree statements as the threshold for positive attitude while less than 6 statements indicated negative attitude

Results

General Information

A total 200 women have been participated, for the age categories that is shown in Fig.1, nine (4.5%) participants were between the age of "15-19", and 80 (40%) were between the age of "20-24", 47 (23.5) of them between the age of "25-29", 19 (9.5%) of them between the age of "30-34" and 45 of them in the age 35 and above, the *p*- value is <.00001(Figure 1).

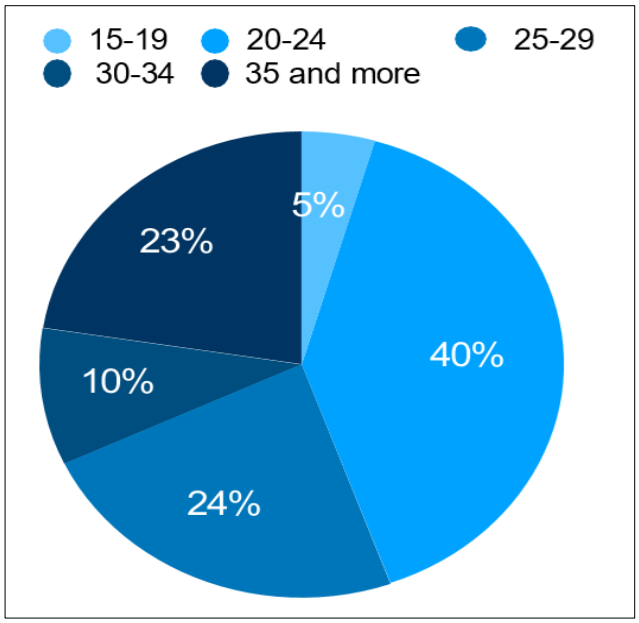

Fig 1: Age distribution of participants

For the occupational variation of participants, we found that 63 of them were housewives, 80 were employees and 57 where still students at the time questionnaire was taken. The Chi^2 value is 4.151. The p-value is <.00001 (Figure 2).

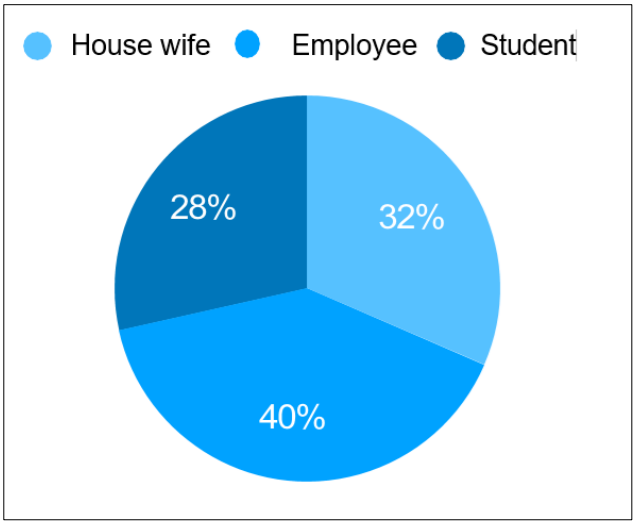

Fig 2: Occupation distribution of participants

For the obstetrical history three questions was designed, the first one is regarding the total pregnancies during the life time of the individual participant, the second one is for the number of normal vaginal deliveries and the third for the number of cesarean sections done. 77 women were having no single pregnancy, 30 having a single pregnancy, 35 being pregnant twice and 58 had 3 and more pregnancies. The Chi^2 value is 28.36. The *p*-value is <.00001 (Figure 3).

For the total number of women who had 0 normal vaginal delivery are 117, those who had experienced it one is 22, and those who delivered their babies in normal vaginal delivery for 2 times or more is 61. The Chi^2 value is 70.17. The *p*-value is < 00001. (Figure 4)

Regarding the number of cesarean sections, the majority of participants, 126 out of 200 had never done it before, meanwhile 40 of them had it done once and 34 had it done twice or more. The Chi^2 value is 81.68. The *p*-value is <.00001. (Figure 5)

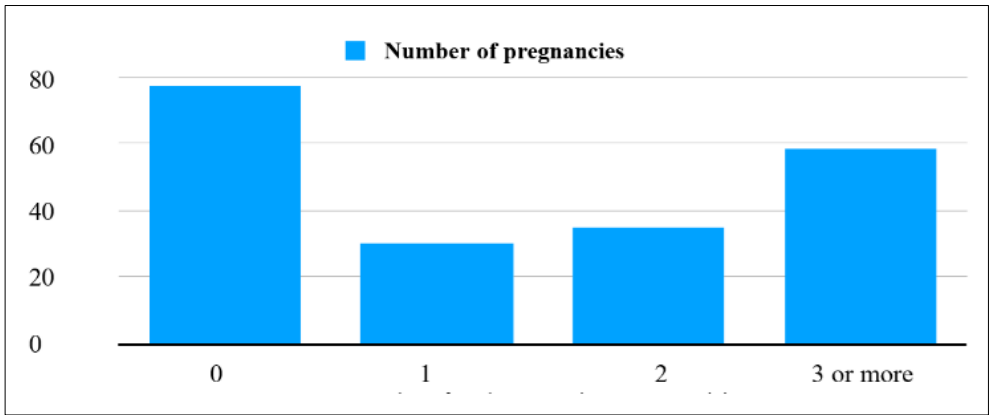

Fig 3: Number of total pregnancies among participants

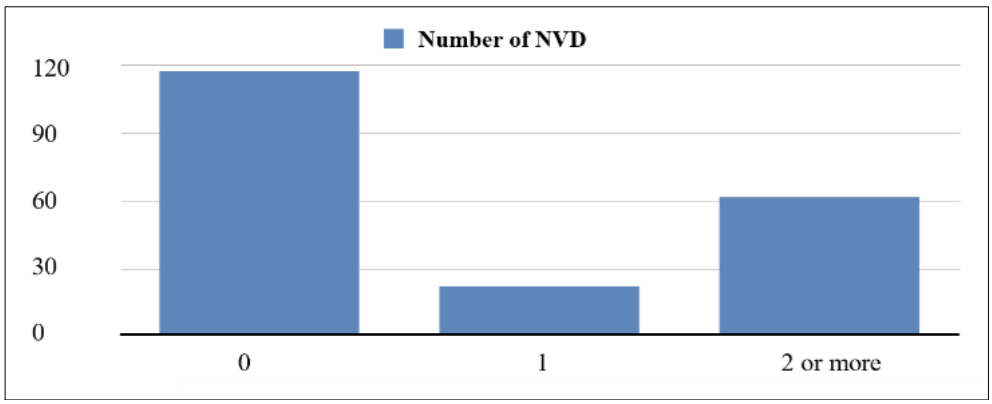

Fig 4: Number of total normal vaginal deliveries among participants

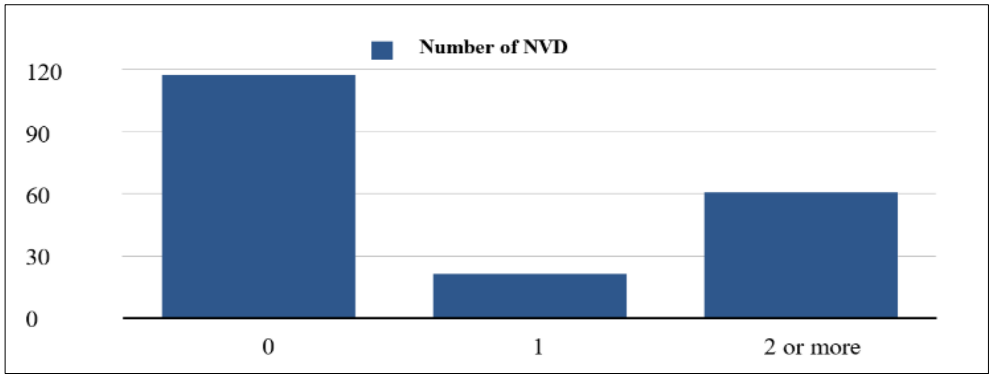

Fig 5: Number of total caesarean sections among participants

Another Demographic characteristic that has been taken is the age at marriage of both married participant women and her husband. For the age at marriage of participating women, from a sample of 135 married women, a relatively large proportion 38 (27.5%) were married in the age of 15 to 19, 65 (47.1%) between 20 to 24 years, 27 (20%) between 25-29 years, 5 (3.7%) were married in the age of 30-34. The Chi^2 value is 59.7. The *p*-value is <.00001. (Table 1)

Husband age at marriage, same age categories was prepared, 6 (4.4%) of husbands got married at the age of 15-19, 42 (31.1%) were in the age group of 20-24, 56 (41.4%) in the age of 25-29, 21(15.5) in the age of 30-34 and 10 (7.4%) were aged 35 or more at time of marriage. The Chi^2 value is 67.852. The *p*-value is < .00001. (Table 1).

Table 1: Women's age at marriage and their husbands age at marriage.

Age category	Participants age at marriage	Husband age at marriage
15-19	38 (27.5%)	6 (4.4%)
20-24	65 (47.1%)	42 (31.1%)
25-29	27 (20%)	56 (41.4%)
30-34	5 (3.7%)	21 (15.5%)
35 or above	0 (0%)	10 (7.4%)
Total	135	135

Educational level of women shows that 8 (4%) were illiterate, 32 (16%) receive a primary School education, 69(34.5%) reach the secondary School education and 91(44.5%) were in college whether graduated or still undergraduate. The Chi^2 value is 82.6. The *p*-value is <.00001. The economic level was divided into three categories, bad, intermediate and good, from which 13(6.5%) were bad, 98(49%) were intermediate and 89 (44.5%) were in good economic status. The Chi^2 value is 64.128. The *p*-value is <.00001 (Figure 6).

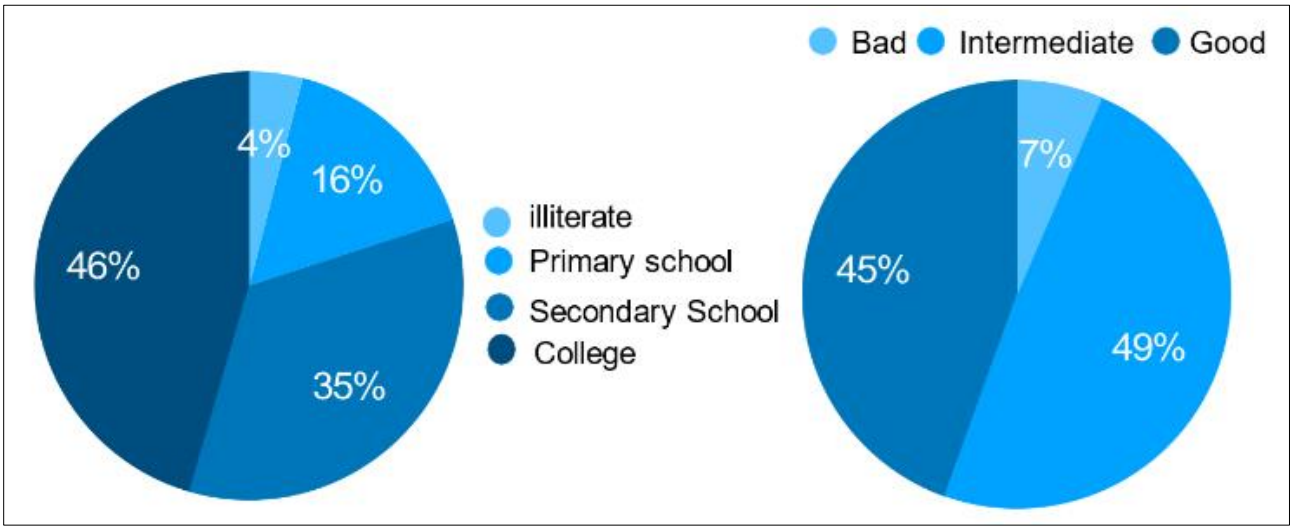

Fig 6: The educational level (on the left) and economic status (on the right) of participants

Knowledge Questions

Out of 200 participating women, 9 (4.5%) got a weak score which is between 0-3 on a scale of 10, 93 (46.5%) have a fairly good knowledge about modes of delivery and 98 (49%) have a good knowledge and scored 7-10 out of 10 (Table 2).

Table 2: Women's knowledge towards modes of delivery.

Knowledge	Number (%)	P value
Weak 0-3	9 (4.5).	The Chi^2 value is 73.66. The *p*-value is < .00001. The result is significant at *p*<.05
Intermediate 4-6	93 (46.5)	
Good 7-10	98 (49)	
Total	200	

The mean knowledge of participants according to certain characteristics were as follow, when searching for mean knowledge score according to occupation, housewives have a 5.746 score, for employed participant the mean score is 6.537 and for students the mean score is 6.929. Another characteristic of finding the mean knowledge score is by educational level, illiterates have a 5.5 score, those who received primary School education have a 5.7 score, and those who finished secondary School or college have 6.73 and 6.46 respectively. The last category in finding mean knowledge is the economic status, those with bad economic status scored 6.15, those with intermediate economic state scored 6.244 and those with good economic status scored 6.629 (Table 3).

Table 3: Women's mean knowledge according to certain characteristics.

Occupation	Average knowledge	Educational level	Average knowledge	Economic state	Average knowledge
Housewife	5.746	Illiterate	5.5	Bad	6.15
Employee	6.537	Primary school	5.7	Intermediate	6.244
Student	6.929	Secondary school	6.73	Good	6.629
		College	6.461		

The knowledge-based questions in Table 4 show participants' responses about delivery methods with correct and incorrect answers and statistical significance. The majority of participants (57.5%) correctly stated that cesarean delivery is less painful and they correctly identified higher maternal complications (79.5%) and infection risks (61.5%) compared to vaginal delivery with statistical significance (p<.05). The majority of participants (60%) believed that the emotional bond between mother and baby develops better after vaginal delivery and this finding was significant. Most participants (82%) correctly disagreed with the myth that cesarean-born babies are smarter and 60% correctly identified that bone fractures are not impossible in cesarean births both significant. The participants showed no significant difference (p =.3222) regarding their opinions about requesting a repeat cesarean delivery. The misconceptions about respiratory disorders and postpartum hemorrhage being less common after cesarean delivery did not reach statistical significance. The majority of participants (81.5%) correctly supported cesarean delivery for breech presentation cases which produced a strongly significant result.

Table 4: Knowledge question and participants responses.

Statement	Scientifically Accurate Answer	Correct Responses n (%)	Incorrect Responses n (%)	Chi² Value	P-Value
Cesarean section is associated with less pain compared to vaginal delivery	True	115 (57.5%)	85 (42.5%)	4.500	.03389
The rate of maternal complications is higher in cesarean delivery	True	159 (79.5%)	41 (20.5%)	69.620	<.00001
Cesarean birth carries a higher risk of infection than vaginal birth	True	123 (61.5%)	77 (38.5%)	10.580	.00114
Vaginal delivery promotes a stronger maternal-newborn emotional bond	True	120 (60.0%)	80 (40.0%)	8.000	.00468
Babies delivered via CS are more intelligent than those born vaginally	False	36 (18.0%)	164 (82.0%)	81.920	<.00001
Bone fractures cannot occur in cesarean-born babies	False	80 (40.0%)	120 (60.0%)	8.000	.00468
Choosing CS again is justifiable after a previous cesarean birth	True	107 (53.5%)	93 (46.5%)	0.980	.3222
The likelihood of respiratory problems is lower in cesarean-born infants compared to those born vaginally	False	87 (43.5%)	113 (56.5%)	3.380	.06599
Hemorrhage is less likely after cesarean delivery than after vaginal delivery	False	102 (51.0%)	98 (49.0%)	0.080	.7773
Cesarean section is medically justified in cases of breech presentation	True	163 (81.5%)	37 (18.5%)	79.380	<.00001

Attitude Questions

The survey results show that 142 out of 200 women have a positive view of normal vaginal delivery but 58 have a negative view while 57 women have a positive view of cesarean section and 143 have a negative view (Table 5).

Table 5: Attitude questions responses.

Statement	Agree	Neutral	Disagree	Chi² Value	P-Value
Vaginal birth is considered a natural and acceptable method of delivery	152	17	31	168.717	<.00001
Mothers experience great joy when meeting their newborn immediately after delivery	158	19	23	191.526	<.00001
Recovery after vaginal delivery is faster	175	12	13	268.687	<.00001
Vaginal delivery enhances emotional bonding between mother and baby	107	38	55	40.171	<.00001
Vaginal birth is preferable due to less use of anesthesia	131	42	27	97.224	<.00001
Vaginal delivery has better long-term outcomes	139	25	36	121.414	<.00001
I prefer vaginal delivery to avoid abdominal surgical scars	114	28	58	58.820	<.00001
Vaginal delivery is less risky for the mother	124	37	39	76.104	<.00001
Cesarean section is preferable if there are no financial constraints	57	24	119	69.182	<.00001
I prefer CS because I feel uncomfortable with the birthing position during vaginal delivery	70	30	100	36.929	<.00001
I choose CS because it is perceived as less painful than vaginal birth	74	23	103	49.209	<.00001
Babies delivered via CS are healthier than those born vaginally	39	61	100	27.836	<.00001
CS is preferable when planning for tubal ligation	89	52	59	12.329	.0021
Cesarean delivery helps prevent uterine and bladder prolapse	93	45	62	18.642	.00009
CS reduces the risk of genital tract deformation	126	36	38	81.441	<.00001
If I were aware of CS complications, I wouldn't have requested it	79	43	78	12.964	.00153
Knowing the complications, I would still choose CS again	50	36	114	51.192	<.00001
I believe women should have the right to choose CS upon request	147	18	35	150.528	<.00001
CS should only be performed if vaginal delivery is medically risky	68	49	83	8.717	.0128
Maternal mortality rates are higher with cesarean deliveries	68	49	83	8.717	.0128

Attitude of women towards normal vaginal delivery shows that 44% of women with weak knowledge have a positive attitude toward NVD and 55.5% have negative attitude, 55.9% of women with intermediate knowledge have positive

attitude toward NVD and 45.1% don't, 87.7% of women with good knowledge have positive attitude toward NVD and 11.2% have a negative one (Table 6).

The survey results indicate that women with weak knowledge about cesarean sections tend to have positive attitudes toward the procedure at 44% but negative attitudes at 55.5%. Women with intermediate knowledge levels show positive attitudes toward cesarean sections at 29% but negative attitudes at 70.9%. The survey shows that women with good knowledge about cesarean sections have positive attitudes at 26.5% but negative attitudes at 73.4% (Table 7).

Table 6: Relationship between mothers' knowledge and attitude towards normal vaginal delivery.

Knowledge score	Positive attitude Number (%)	Negative attitude Number (%)	Total	P value
Weak 0-3	4 (44)	5 (55.5)	9	The chi-square statistic is 29.0003. The *p*-value is < 0.00001. The result is significant at $p<.05$.
Intermediate 4-6	52 (55.9)	42 (45.1)	93	
Good 7-10	86 (87.7)	11 (11.2)	98	
Total	142 (69.5)	58 (28.5)	200	

Table 7. Relationship between mothers' knowledge and attitude towards cesarean section.

Knowledge score	Positive	Negative	Total	P value
Weak	4 (44)	5 (55.5)	9	The chi-square statistic is 1.3223. The *p*-value is.516264. The result is *not* significant at $p<.05$
Intermediate	27 (29)	66 (70.9)	93	
Good	26 (26.5)	72 (73.4)	98	
Total	57 (28.5)	143 (71.5)	200	

The relationship between socio-demographic characteristics of participating women and their attitude toward NVD and CS is shown in Table 8.

Table 8: Relationship between socio-demographic characteristics and attitude to the mode of delivery in current pregnancy.

Character	Group	Positive towards NVD No. (%)	Positive towards CS No. (%)	P Value
Age	15-19	3 (33)	3 (33)	The chi-square statistic is 2.9055. The p-value is.573758. The result is not significant at $p<.05$.
	20-24	57 (71.2)	17 (21.2)	
	25-29	27 (57.4)	13 (27.6)	
	30-34	12 (63)	4 (21)	
	>35	40 (88.8)	14 (31)	
Occupation	House wife	48 (76.1)	17 (26.9)	The chi-square statistic is 0.0063. The p-value is.996868. The result is not significant at $p<.05$.
	Employee	58 (72.5)	21(26.2)	
	Student	37 (64.9)	13 (22.8)	
Number of NV	0	78 (66.6)	29 (24.7)	The chi-square statistic is 0.1128. The p-value is.945155. The result is not significant at $p<.05$.
	1	16 (72.7)	5 (22.7)	
	>2	49 (80.3)	17 (27.8)	
Number of CS	0	83 (65.8)	26 20.6)	The chi-square statistic is 0.6322. The p-value is.728974. The result is not significant at $p<.05$.
	1	30 (75)	12 (30)	
	>2	29 (85.2)	12 (35.2)	
Age at marriage	15-19	28 (73.6)	15 (39.4)	The chi-square statistic is 3.4256. The p-value is.330541. The result is not significant at $p<.05$.
	20-24	53 (81.5)	20 (30.76)	
	25-29	15 (55.5)	2 (7.4)	
	30-34	4 (100)	1 (25)	
Husband age at marriage	15-19	4 (66.6)	1 (16.6)	The chi-square statistic is 3.8038. The p-value is.433206. The result is not significant at $p<.05$.
	20-24	32 (76.19)	16 (38)	
	25-29	42 (75)	12 (21.4)	
	30-34	15 (71.4)	7 (33.3)	
	>35	10 (100)	1 (10)	
Education	Illiterate	7 (87.5)	3 (37.5)	The chi-square statistic is 0.4021. The p-value is.939811. The result is not significant at $p<.05$.
	Primary	24 (75)	9 (28.1)	
	Secondary	45 (65.2)	18 (26)	
	College	65 (71.4)	21 (23)	

Income	Poor	9 (69.2)	5 (38.4)	The chi-square statistic is 0.7219. The p-value is.697009. The result is not significant at $p<.05$.
	Intermediate	72 (73.4)	24 (24.4)	
	Good	61 (68.5)	22 (24.7)	

We also noticed a decrease in positive attitude toward CS with increasing knowledge from (44%) in women with poor knowledge, (29%) in women with intermediate knowledge and (26.5%) in women with good knowledge, this is because of increasing knowledge about CS and its complications.

The attitude results are consistent with Samarra General Hospital records of delivers during the 3 months of our study (Table 9).

Table 9: Samarra general hospital delivery types records.

Month	Total	Total NVD	Total CS
December 2022	549	397 (72.3%)	152 (27.6%)
January 2023	501	353 (70.4%)	148 (29.5%)
February 2023	439	309 (70.3%)	130 (29.6)

Discussion: This study showed that 49% of women have good knowledge scored 7-10 regarding moods of delivery, similar result was found in Baghdad [12] and higher than that reported in Iran (36.5%) [13]. This difference might be caused by different health care services and awareness among communities.

The average knowledge score show a rising pattern with increased educational level and economic status, this is probably because NVD is the only available choice for those with lower economic state which makes gaining information about delivery moods unnecessary, meanwhile the highest average knowledge was among students, which scored a 6.929, higher than both housewives and employed women, this might be attributed to the fact that this group is the core of childbearing age which makes them more eager to learn about modes of delivery especially with high availability and accessibility to information that started in the past two decades.

The majority of (69.5%) of women with good knowledge had a positive attitude toward NVD, this finding is lower than the (90.3%) that was found in Baghdad [14] and also lower than what had been found in Jordan in which the positive attitude towards NVD was (88.5%) [15] and in United Arab Emirates that shows a (90.5%) positive attitude toward NVD [16], but when counting the attitude of women with good knowledge the positive attitude toward NVD increase to (87.7%) which is consistent with the results of the previously mentioned studies, this is for most is because NVD associated with faster recovery period that makes it has little interference with life activities like studying and working.

In this study we noticed increase acceptance of NVD with increased level of knowledge, the positive attitude increased from (44%) in those with poor knowledge to (55.9%) in those with intermediate knowledge and up to (87.7%) in those with good knowledge. On the other hand (28.5%) of participants have positive attitude toward CS, this is lower than what have been found in Kerman Iran in 2005 which (33%) have positive attitude toward it [17] but much higher than what have been found in United Arab Emirates in 2019 [18] which only (9.76%) preferred CS, this might be caused by improvement in health care and proper management of NVD that deviates women's attitude away from CS and cause decline in its acceptance.

In a research done in Tehran, Iran 2019 [19], (72%) of women agreed that cesarean section is less painful while in our study there was a surprising (42.5%) who disagreed on this statement, in our study (79.5%) of women said that maternal complications are greater in CS compared to only (58.8%) women said the same in Tehran research [20], and this increase in awareness of possible complications associated with CS is the cause that prevent (42.5%) of women in our study from saying CS is less painful.

The encouraging results regarding increased awareness and knowledge remain insufficient because participants demonstrated less than half of the total group understood that CS-related respiratory problems do not differ from NVD-related respiratory problems. The findings indicate that health professionals need to provide proper education to patients regarding their actual delivery risks.

The majority of women view vaginal delivery as a natural birth method which strengthens the emotional connection between mothers and their newborns. The survey results show that 88% of participants think NVD patients recover better than CS patients and 59.5% believe that financial considerations do not change the fact that CS is not a superior birthing option.

More than sixty-three percent of women agreed that cesarean section (CS) is better because it protects the female genital tract from malformation as Zakeri Hamidi *et al.* found in Iran [21] (73.5%) agreed that mothers have their right to request CS even if it wasn't indicated.

The relationship between women's knowledge and their views on NVD delivery is statistically significant ($p<0.00001$). Women's childbirth experience appeared to shape their understanding and perspectives regarding delivery options. The knowledge about vaginal delivery shows a significant increase with parity and previous CS history among nulliparous women (66%) and women who had 2 or more pregnancies (85%). Women in the study population held a positive view about vaginal delivery in particular when they had prior experience with it.

The study demonstrates that women aged 35 and above show a significant increase in their positive attitudes toward NVD up to 89%. Young women between the ages of 15 and 19 demonstrated the most positive attitude toward CS. The belief exists in certain families that young women at marriage have small pelvises which do not support vaginal delivery. Our study indicates that lower education levels correlate with better attitudes toward CS while the results for age at marriage and husband's age at marriage vary widely

Conclusion: Women's knowledge demonstrates an increasing pattern as their educational level rises after they transition from housewife to employee or student status. The topic of labor which occurs frequently in women's lives requires educational tools to enhance their knowledge despite their experience with labor. Women who possess better knowledge about normal vaginal delivery tend to accept this delivery method more. The relationship between

women's knowledge about NVD and their acceptance of this delivery method is statistically significant. The acceptance rate for caesarean section decreases as knowledge about it increases. The current rate of caesarean section remains high while positive attitudes toward this procedure also remain strong but normal vaginal delivery acceptance rates remain lower than global averages. The education of pregnant women along with their husbands about delivery methods' advantages and disadvantages and indications and adverse effects remains essential. Health-care workers who receive proper training should assist mothers during antenatal visits to select their delivery method.

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