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Women's preferences of mode of delivery in rural and urban communities- gharbia governorate, Egypt

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Abstract

Background: The birth process carries many risks for women during pregnancy, delivery, and the postpartum period. The delivery route choice is critical to the mother's and child's health. The increasing rate of CS worldwide is an alarming concern for public health and obstetricians.

Objective: To identify the frequencies and the determinants for the preferences of mode of delivery in urban and rural communities.

Methods: The study was a cross-sectional study carried out on 304 mothers attending vaccination sessions for the scheduled vaccines in the second and ninth months of child age at Said Primary Healthcare Center, and Shobar Primary Healthcare Unit in Al-Gharbia Governorate, Egypt. The data was collected by interviewing the mothers using a predesigned tested questionnaire.

Results: Regarding the preferred mode of delivery, CS were preferred by 40.2% and 15% of females in urban and rural communities. However, 83.6% were delivered by CS at the last pregnancy. Immediate contact with the baby, immediate breastfeeding, better care for the baby and hand no scar were the most significant determinants for VD. Being easier than VD and safer for the baby were the most significant determinants for CS. Urban residence, age >25 and living in a separate home, primiparity, no abortion, and previous CS delivery were the most significant determinants of delivery mode.

Conclusion: The frequency of CS was higher than VD. Urban residence, age group 25- and living in shared home were the most important determinants for CS.

Keywords: Women's preference, caesarean section, vaginal delivery

Introduction

Childbirth is a natural physiological event as well as a life-changing emotional experience for women [1]. Vaginal delivery (VD) is the most accepted mode of birth, being the natural mode and more safe for mother and fetus in the absence of contraindications, but it needs active participation from the pregnant woman [2].

According to the WHO, the CS rate in any population should be between 5 and 15%, and there is no reason for having more than 10% CS births in any geographic area [3].

According to the Egypt Family Health Survey 2021, there is an increase in CS deliveries in general, with an increase in urban areas in particular compared to the 2014 survey. The rate of CS births increased to 72% of all births compared to 52% in the 2014 survey. Urban areas in Lower Egypt recorded the highest CS rate, reaching 84% compared to 70.6% in 2014, while urban areas in Upper Egypt recorded 76% compared to 50.2% in 2014. While the lowest percentage in the border governorates was 53% compared to 41.1% in 2014 [4].

Caesarean section on maternal request is defined as a planned caesarean delivery that occurs prior to the onset of labour, at the request of the mother, and with no medical or obstetric indication [5]. It for 4–18% of all caesareans and 14–22% of elective caesareans [6].

Maternal requests of CS are mainly motivated by a desire to avoid incontinence, prolapse, perineal damage, sexual dysfunction, foetal trauma, and labour problems. Maternal fear of labour, a history of bad birth experiences, maternal age, plans for additional children, foetal size, and maternal anxiety are all important factors to consider [7]. Pain avoidance was stated by a few women as a reason for making the request [8].

Methodology

Study design and study setting

The current study was a cross-sectional study carried out in two healthcare facilities in Tanta district, Al Gharbia governorate, Egypt during the period from October 2020 to December

2022. The two healthcare facilities selected were Saied PHC and Shobar PHU.

Study population:

The current study targeted mothers attending both selected healthcare facilities for child vaccination within the Expanded Program on Immunization (EPI) scheduled for the second and ninth months of child age.

Both centers were visited by the researcher weekly (two times for Saied PHC and one time for Shobar PHU) during the period of data collection, and each visit lasted the whole time of the session.

Sample size and sampling technique

The sample size was calculated using Epi-Info 7, a software statistical package version 2007 prepared by WHO and the Center for Disease Control and Prevention, Atlanta, Georgia, USA. Using the following criteria [9]:

- Total population of (2520 from Saied PHC plus 554 from Shobar PHU) 3144 populations.
- Expected proportion for CS equal to 22% [10]
- Margin of error set at 0.05.
- The power of the study considered was 80%.
- Design effect considered to be one.

The minimal sample size calculated was (243) population and the sample collected was 304 population.

Sampling technique

Included participants were selected by the systematic sampling technique.

In Saied PHC, the researcher visited the center for 2 days each week, the total number of attendees was around 1744. So, the mother of every 6th child who attended was selected. In Shobar PHU, the total number of attendees during the period of data collection was 528. The mother of every 10th child registered was selected.

Exclusion criteria

1. Women accompanied a child who is not her sibling.
2. Mother attended to vaccinate her child with vaccines scheduled for child age other than 2nd and 9th months.
3. Mothers with a known pre-existing major disease or with a medical indication for elective CS in the past

Results

Table 1: Distribution of the studied women according to their socio-demographic characteristics and residence.

Socio-demographic Characteristics	Urban	Rural	Total	Test of significance	P value
	N (%) 251 (82.6%)	N (%) 53 (17.4%)	N (%) 304 (100%)		
Age					
<25	24 (9.6%)	28 (52.8%)	52 (17.1%)	MC	<0.001*
25-	179 (71.3%)	25 (47.2%)	204 (67.1%)		
35+	48 (19.1%)	0	48 (15.8%)		
Age					
Mean ±SD	29.46±4.99	24.53±4.13	28.6±5.19	6.719 ⁽⁰⁾	<0.001*
Range	20-42	19-33	19-42		
Age at marriage					
Mean ±SD	23.88±3.55	21.47±3.17	23.46 ±3.6	4.561 ⁽⁰⁾	<0.001*
Range	19-37	18-27	18-37		
Education					
Illiterate	6 (2.4%)	6 (11.3%)	12 (3.9%)	MC	<0.001*
Primary & Preparatory school	13 (5.2%)	11 (20.8%)	24 (7.9%)		
High school and technical	59 (23.5%)	31 (58.5%)	90 (29.6%)		

pregnancy.

Data collection

The required data was collected over two months period from 1ST September through November 2021, using a predesigned questionnaire. The questionnaire had been validated for internal consistency using Cronbach’s alpha, which was (0.808) and reviewed by three experts for face validation. The questionnaire included the following data:

1. Socio demographic data
2. Reproductive profile
3. Preferences of the mode of delivery
4. Complications after the last delivery

Data management and statistical analysis

After completion of data collection, it was reviewed for missing data, and entered to Statistical Package for the Social Sciences (SPSS), version 20, SPSS Inc, Chicago, IL, USA, software package version 2007 [11].

Chi-square test was used to study the association between two qualitative variables. Monte Carlo Exact Test, or Fisher’s exact test and Student t-test was used to identify the determinant factors, binary logistic regression analysis was used. The significance level was set at 0.05.

III. Operational Design

Pretest study

A pretest study was carried out before starting data collection.

IV. Ethical consideration

- Approval code for the research was obtained from the Ethical Committee of Tanta Faculty of Medicine before starting the study with number 34157/9/20.
- The ethical considerations of the study were carried out according to those of the ethical committee for research at Tanta Faculty of Medicine.
- Formal consent was obtained from mothers in the study groups, while those who refused to participate were not included.
- The purpose of the study was explained to all participants, and confidentiality of the data was ensured.

University	173 (68.9%)	5 (9.4%)	178 (58.6%)		
Work					
Working	103 (41%)	6 (11.3%)	109 (35.9%)	16.8 ^(a)	<0.001*
Housewife	148 (59%)	47 (88.7%)	195 (64.1%)		
Smoking					
Active or passive smoker	88 (35.1%)	39 (73.6%)	127 (41.8%)	26.701 ^(a)	<0.001*
Non-smoker	163 (64.9%)	14 (26.4%)	177 (58.2%)		
Husband Education					
Illiterate	0	6 (11.3%)	6 (2%)	MC	<0.001*
Primary & Preparatory school	0	9 (17%)	9 (3%)		
High school and technical	64 (25.5%)	28 (52.8%)	92 (30.2%)		
University	187 (74.5%)	10 (18.9%)	197 (64.8%)		
Husband Occupation					
Manual	16 (6.5%)	19 (35.8%)	35 (11.5%)	60.043 ^(a)	<0.001*
Technical	32 (12.7%)	17 (32.1%)	49 (16.1%)		
Employee	64 (25.5%)	1 (1.9%)	65 (21.4%)		
Private	40 (15.9%)	5 (9.4%)	45 (14.8%)		
Professional	99 (39.4%)	11 (20.8%)	110 (36.2%)		
Income					
Enough and saving	149 (59.3%)	24 (45.3%)	173 (56.9%)	8.212 ^(a)	0.016*
Just enough	94 (37.5%)	23 (43.4%)	117 (38.5%)		
Not enough	8 (3.2%)	6 (11.3%)	14 (4.6%)		
Living status					
Separate home	197 (78.5%)	13 (24.5%)	210 (69.1%)	59.646 ^(a)	<0.001*
Shared home	54 (21.5%)	40 (75.5%)	94 (30.9%)		

*Statistically significant (a) =Chi-square test MC=Monte Carlo test (t)= student's t test

Table (1) shows the socio-demographic characteristics of participants according to their residence, where urban participants represented 82.6%. Urban women were older, highly educated, more of them were working. Their husbands were highly educated, most

of their husbands were professionals with a higher percentage of enough and saving income. All these differences between urban and rural participants were statistically significant.

Table 2: Distribution of the studied women according to their obstetric characteristics and residence

Obstetric Characteristics	Urban	Rural	Total	Test of significance	P value
	N (%) 251 (82.6%)	N (%) 53 (17.4%)	N (%) 304 (100%)		
Parity					
Primipara	99 (39.4%)	28 (52.8%)	127 (41.8%)	3.22 ^(a)	0.091
Multipara	152 (60.6%)	25 (47.2%)	177 (58.2%)		
Abortion					
Yes	102 (40.6%)	8 (15.1%)	110 (36.2%)	12.36 ^(a)	<0.001*
No	149 (59.4%)	45 (84.9%)	194 (63.8%)		
Place of the last delivery					
Home	0	6 (11.3%)	6 (2%)	MC	<0.001*
Public hospitals	8 (3.2%)	7 (13.2%)	15 (4.9%)		
Private hospitals	243 (96.8%)	40 (75.5%)	283 (93.1%)		
Antenatal care during the last pregnancy					
Yes	243 (96.8%)	53 (100%)	296 (97.4%)	FE	0.359
No	8 (3.2%)	0	8 (2.6%)		
Place of antenatal care					
Private clinics	248 (98.8%)	46 (86.8%)	294 (96.7%)	FE	<0.001*
Governmental	3 (1.2%)	7 (13.2%)	10 (3.3%)		
Mode of delivery at the last pregnancy					
Vaginal	31 (12.4%)	19 (35.8%)	50 (16.4%)	17.58 ^(a)	<0.001*
CS	220 (87.6%)	34 (64.2%)	254 (83.6%)		
Preferred mode of delivery					
Vaginal	150 (59.7%)	45 (84.9%)	195 (64.1%)	12.02 ^(a)	<0.001*
CS	101(40.3%)	8 (15.1%)	109 (35.9%)		

*Statistically significant (a) =Chi-square test MC=Monte Carlo test FE= Fisher's exact test

Table (2) shows the obstetric characteristics of participants according to their residence. Where 87.6% and 64.2% of urban and rural females were delivered by CS at the last pregnancy. About 40% of urban women had previous abortions, most of

them delivered at private hospitals and most of them delivered by CS. All these differences between urban and rural participants were statistically significant except parity and ANC during the last pregnancy.

Table 3: Distribution of the studied women according to causes of preference of vaginal delivery at last pregnancy and residence

Causes of preference	Vaginal delivery			Test of significance	P value
	Urban N (%) 150 (76.9%)	Rural N (%) 45 (23.1%)	Total N (%) 195 (100%)		
Fear of surgery					
Yes	110 (73.3%)	36 (80%)	146 (74.9%)	0.818 ^(a)	0.366
No	40 (26.7%)	9 (20%)	49 (25.1%)		
Recommended by physicians					
Yes	80 (53.3%)	19 (42.2%)	99 (50.8%)	1.71 ^(a)	0.191
No	70 (46.7%)	26 (57.8%)	96 (49.2%)		
Safer for the baby					
Yes	87 (58%)	12 (26.7%)	99 (50.8%)	13.597 ^(a)	<0.001*
No	63 (42%)	33 (73.3%)	96 (49.2%)		
Preserve the postpartum sexual life					
Yes	64 (42.7%)	13 (28.9%)	77 (39.5%)	2.75 ^(a)	0.097
No	86 (57.3%)	32 (71.1%)	118 (60.5%)		
The effect of media					
Yes	96 (64%)	19 (42.2%)	115 (59%)	6.785 ^(a)	0.009*
No	54 (36%)	26 (57.8%)	80 (41%)		
Immediate contact with the baby					
Yes	126 (84%)	23 (51.1%)	149 (76.4%)	20.77 ^(a)	<0.001*
No	24 (16%)	22 (48.9%)	46 (23.6%)		
Immediate breastfeeding of the baby					
Yes	126 (84%)	28 (62.2%)	154 (79%)	9.887 ^(a)	0.002*
No	24 (16%)	17 (37.8%)	41 (21%)		
Better care of the baby					
Yes	126 (84%)	22 (48.9%)	148 (75.9%)	23.32 ^(a)	<0.001*
No	24 (16%)	23 (51.1%)	47 (24.1%)		
Short hospital stay					
Yes	102 (68%)	19 (42.2%)	121 (62.1%)	9.768 ^(a)	0.002*
No	48 (32%)	26 (57.8%)	74 (37.9%)		
Feeling childbirth					
Yes	103 (68.7%)	18 (40%)	121 (62.1%)	12.08 ^(a)	<0.001*
No	47 (31.3%)	27 (60%)	74 (37.9%)		
No scar					
Yes	127 (84.7%)	21 (46.7%)	148 (75.9%)	27.32 ^(a)	<0.001*
No	23 (15.3%)	24 (53.3%)	47 (24.1%)		
Performed in more sterile conditions					
Yes	102 (68%)	24 (53.3%)	126 (64.6%)	3.257 ^(a)	0.071
No	48 (32%)	21 (46.7%)	69 (35.4%)		

*Statistically significant (a)=Chi-square test

Table (3) shows the causes of preference of vaginal delivery at the last pregnancy according to residence.

Urban females preferred vaginal delivery because its more safer for the baby (58% compared to 26.7%), allow immediate contact with their babies (84% compared to 51.1%), better care of the baby (84% compared to 48.9%), feeling the childbirth (68.7% compared to 40%), and the

absence of the scar of the operation (84.7% compared to 46.7%).

The differences between the two groups were found to be statistically significant except for fear of surgery, physicians' recommendations, preserve postpartum sexual life, and performed in sterile conditions.

Table 4: Distribution of the studied women according to causes of preference of caesarean delivery and residence.

Causes of preference	Caesarean delivery			Test of significance	P value
	Urban N (%) 101 (92.6%)	Rural N (%) 8 (7.4%)	Total N (%) 109 (100%)		
Less painful					
Yes	101 (100%)	8 (100%)	109 (100%)	-	-
Recommended by physicians					
Yes	38 (37.6%)	5 (62.5%)	43 (39.4%)	FE	0.26
No	63 (62.4%)	3 (37.5%)	66 (60.6%)		
Easier than vaginal delivery					
Yes	101 (100%)	5 (62.5%)	106 (97.2%)	FE	<0.001*
No	0	3 (37.5%)	3 (2.8%)		
No vaginal injury					
Yes	77 (76.2%)	5 (62.5%)	82 (75.2%)	FE	0.388
No	24 (23.8%)	3 (37.5%)	27 (24.8%)		
Safer for the baby					

Yes	93 (92.1%)	5 (62.5%)	98 (89.9%)	FE	0.033*
No	8 (7.9%)	3 (37.5%)	11 (10.1%)		
Predefine the delivery date					
Yes	37 (36.6%)	5 (62.5%)	42 (38.5%)	FE	0.256
No	64 (63.4%)	3 (37.5%)	67 (61.5%)		
Preserve the postpartum sexual life					
Yes	85 (84.2%)	4 (50%)	89 (81.7%)	FE	0.256
No	16 (15.8%)	4 (50%)	20 (18.3%)		
The effect of media					
Yes	62 (61.4%)	3 (37.5%)	65 (59.6%)	FE	0.264
No	39 (38.6%)	5 (62.5%)	44 (40.4%)		
Immediate contact with the baby					
Yes	86 (85.1%)	5 (62.5%)	91 (83.5%)	FE	0.124
No	15 (14.9%)	3 (37.5%)	18 (16.5%)		
Immediate breastfeeding of the baby					
Yes	46 (45.5%)	3 (37.5%)	49 (45%)	FE	0.728
No	55 (54.5%)	5 (62.5%)	60 (55%)		
Better care for the baby					
Yes	47 (46.5%)	5 (62.5%)	52 (47.7%)	FE	0.475
No	54 (53.5%)	3 (37.5%)	57 (52.3%)		
Short hospital stay					
Yes	23 (22.8%)	0	23 (21.1%)	FE	0.199
No	78 (77.2%)	8 (100%)	86 (78.9%)		
Performed in more sterile conditions:					
Yes	77 (76.2%)	8 (100%)	85 (78%)	FE	0.196
No	24 (23.8%)	0	24 (22%)		

*Statistically significant FE= Fisher exact test

Table (4) shows the causes of preference of caesarean delivery at the last pregnancy according to residence. All the participants preferred CS because it's less painful. Rural females preferred it due to physicians' recommendation (62.5% compared to 37.6%), predefine the delivery date (62.5% compared to 36.6%), and performed in more sterile conditions (100% compared to 76.2%). On the

other hand, all urban females preferred CS because it's easier than vaginal delivery (100% compared to 62.5%), preserve the postpartum sexual life (84.2% compared to 50%), and shorter hospital stay (22.8% compared to 0%). The differences between the two groups regarding being easier and safer for the baby were found to be statistically significant.

Table 5: Logistic regression of the determinants for CS among the studied women regarding socio-demographic characteristics.

Sociodemographic Characteristics	B	S.E.	Wald	df	Sig.	Adjusted odds ratio	95% C.I. for EXP(B)	
							Lower	Upper
Urban	3.543	1.027	11.898	1	.001	34.575	4.617	258.897
Age:								
<25	1.508	1.168	1.668	1	.197	4.520	.458	44.589
25-	2.719	1.252	4.719	1	.030	15.166	1.304	176.321
Education:								
High school and technical	-.365	.677	.291	1	.589	.694	.184	2.616
University	-1.497	.736	4.135	1	.042	.224	.053	.947
Husband education:								
High school and technical	-4.630	1.466	9.976	1	.002	.010	.001	.173
University	-6.211	1.452	18.303	1	.000	.002	.000	.035
Husband occupation:								
Manual	-.782	.875	.799	1	.371	.457	.082	2.542
Technical	-1.144	1.025	1.245	1	.264	.319	.043	2.376
Employee	21.837	5109.692	.000	1	.997	.000	.000	.1090
Private	-2.078	1.104	3.543	1	.060	.125	.014	
Active smoking	-.841	.275	9.363	1	.002	.431	.252	.739
Working	-.871	.394	4.887	1	.027	.418	.193	.906
No medical diseases	.647	.341	3.607	1	.058	1.910	.980	3.723
Separate home	.915	.441	4.304	1	.038	2.497	1.052	5.929

Table (5) shows the logistic regression regarding the socio-demographic determinants, where urban residence, age 25 or older, and living in a separate home were the most significant determinants for CS.

Discussion

Vaginal birth is a natural and physiological process.

However, in certain circumstances, CS may be required to protect the woman and the baby's health. Conversely, overuse has not shown benefits and may create harm and waste of human and financial resources [12].

In many countries, CS rates have increased steadily during the past half-century. Since 1985, WHO has considered the acceptable rate for CS to be between 10–15% [13].

The results of the current study show that, regarding the age of marriage, urban women are older than rural women, highly educated and live in separate homes. This was similar to studies done in Bangladesh by Khan *et al.*, 2017(14) and in Egypt by Yassin *et al.*, 2012^[15].

The current study shows that most of the females delivered at private hospitals. This was similar to a study conducted by Bhasin *et al.*, 2007 in India^[16].

A study done was in Vietnam by de Loenzien *et al.*, 2019 indicates that there was a positive association between the private healthcare sector and CS prevalence only in urban areas^[17]. This was similar to a study done in Kenya and Tanzania by Ochieng *et al.*, 2020^[18] and a study done in Iran by Ardakani *et al.*, 2020.⁽¹⁹⁾

The present study shows that 87.6% and 64.2% of the mothers delivered by CS in urban and rural communities, respectively. This was similar to a study was done in Egypt by Fadl *et al.*, 2021^[20].

The prevalence of CS in the current study was higher than a study done at AL-Mansoura University Hospital by Helal *et al.*, 2013^[21], a study done by Ebrashy *et al.*, 2011 at Cairo University Hospital,^[2] and a study was done in Ain Shams Maternity Hospital by Manzour *et al.*, 2020^[23].

The higher prevalence of CS in our study could be explained by higher rates of maternal preference for CS, less time-consuming, high CS rates financially benefit doctors, hospitals, and increasingly high technology in medicine and increasing patients' perception of the safety of the procedure, change in health systems, the supposed benefits of protection against urinary incontinence, prolapse and sexual dissatisfaction, patient demand.

The present study showed that CS was preferred by 40.2% and 15.1% of females in urban and rural communities, while vaginal preference was 59.8% and 84.9%, respectively. This was similar to a study was done by Darwish *et al.*, 2019 in the Ismalia and Minia Districts of Egypt,^[24] and to a study was done by Ibrahim *et al.*, 2021^[25].

According to the results of the current study, immediate breastfeeding, will cause no scar, better care of the baby, immediate contact with the baby, feeling childbirth, short hospital stay, the effect of the media and safer for the baby are the most significant causes of preference of VD. This was similar to a study done by Ibrahim *et al.*, 2021(25) and a study was done in Ethiopia by Welay *et al.*, 2021^[26].

The present study showed that being less painful than vaginal delivery, being easier than vaginal delivery, being safer for the baby, and have no effect on postpartum sexual life were the most significant causes of preference of caesarean delivery. This was in line with a study done by Ibrahim *et al.*, 2021^[25], a study was done in Italy by Torloni *et al.*, 2013^[27]. and a study done by Zakherah *et al.*, 2019 in Assiut, Egypt^[28].

According to Ibrahim *et al.*, 2021 women chose CS because it is easier to get back to their sexual life after delivery^[25].

Conclusion

Although VD was preferred by the studied women, the frequency of CS was higher than VD. Urban residence, age group 25- and living in a separate home were the most important determinants for CS.

Recommendations

1. All pregnant women should be informed about the negative effects of elective CS on breastfeeding

practices.

2. Health education programs for the pregnant women should be implemented to modify the misconception regarding each mode of delivery.
3. Antenatal care, especially for primipara and those who had previous abortion should be maintained and strengthened.

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Author's Contribution

Not available

Conflict of Interest

Not available

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