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Original Article

Cesarean delivery in Zawia City, Libya prevalence and associated factors a cross-sectional study

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Abstract:

Background; A caesarean section is a surgical procedure that can save the lives of mothers and babies when certain complications arise during pregnancy or labour. Objective; To investigate the prevalence and factors associated with caesarean delivery in Zawia city, Libya. Methods: A cross-sectional study with data from 175 postpartum women interviewed between June and August, 2022. Multivariate logistic regression analysis was used to identify those factors associated with the Caesarean section. Results: Caesarean section rates were 70.9%. Factors associated with Caesarean section were: Significant evidence of an association was observed between mode of delivery and previous c-section. Mothers who didn't have previous c-section had lower odds of c-section than who had at least one c-section (OR =0.026, 95% CI 0.009, 0.073, p=0.000). Mothers who desired of c-section in early pregnancy had higher odds of c-section than mothers who didn't (OR =4.9, 95% CI 3.03, 7.9, p=0.000). Also, mothers who delivered in private facility had higher odds of c-section than mothers who delivered in public facility (OR =3.8, 95% CI 1.94, 7.65, p=0.000).

Conclusion: It is necessary to properly orientate all pregnant women who desire a Caesarean delivery, from both the private and public health system, about the inherent risks of the surgical procedure without indication. Guidelines should be focused on pregnant women with previous Caesarean delivery, with a per capita income higher than one minimum wage and those who are overweight or obese, as these women are more likely to have a Caesarean section

Keywords: Cesarean section, indication, Zawia City.

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Introduction

A caesarean section is a surgical procedure that can save the lives of mothers and babies when certain complications arise during pregnancy or labour [1]. Caesarean section rates have increased steadily worldwide over the last decades [1], According to the latest data from 150 countries, currently 18.6% of all births occur by caesarean section, ranging from 1.4% to 56.4% [2].

For nearly 30 years, the international health-care community has considered the ideal rate for caesarean section to be between 10% and 15%. ({3}). In April 2015, WHO released a new statement summarizing the results of systematic reviews and analysis of the available data on caesarean births. In light of the evidence, the panel of experts convened by WHO concluded in the statement that, at population level, caesarean section rates higher than 10% were not associated with reductions in rates of maternal and newborn mortality ({4,5}

More than 90% of pregnant women claim that they want to give birth in a natural way [6]. In contrast, recent studies suggest that the majority of planned caesareans are carried out for psychosocial or nonmedical reasons [7,8]. the factors contributing to the rise in caesarean section rates are complex, and identifying interventions to address them is challenging. Factors associated with caesarean births include changes in the characteristics of the population such as increase in the prevalence of obesity and of multiple pregnancies, and increase in the proportion of nulliparous women or of older women. These changes are unlikely, however, to explain the large increases and wide variations in caesarean section rates across countries. Other non-clinical factors such as women increasingly wanting to determine how and when their child is born, generational shifts in work and family responsibilities, physician factors, increasing fear of medical litigation, as well as organizational, economic and social factors have all been implicated in this increase. [9].

Little is known about the actual rate of C-section in Libya and what are the indications that are used by doctors to decide on cesarean delivery. This information is even scarce in small cities and regions distant from the capital or large hospitals; the Health Authority and Social Insurance in Libya estimated the rate of C-section as 7.6% in 1996.[10]

It has also been reported that the rate of C-section at a hospital in Benghazi in 2009 was 22.4%.[11] study published in January 2018, conduct by Raga A. Elzahaf and Soad Ajroud, on mothers who gave birth from 2013 to 2016 in the Al-Wahda Hospital in Derna city, making the overall C-section rate as 23.5% [12]. According to this limited available research, the cesarean section rate in Libya is considerably higher than the rate recommended by the WHO. The poor governmental supervision and regulation of health sector have raised concerns about a possible increase in cesarean sections. Hence, estimating the prevalence of cesarean and its indication can be helpful in planning appropriate strategies for decreasing rate of cesarean. Therefore, the purpose of the present study was to determine the prevalence of C-section and common indications in Zawia City, Libya

METHOD

An observational, cross-sectional analytical study was conducted between June and August, 2022. The main source of data was interviews with the hospitalized mother due to delivery, complemented by an audit of the mother's hospital records and prenatal booklet. by using pre-tested semi-structured questionnaire that inquired information on socio-demographic characteristics, were administered in native language (Arabic) of the respondents in Zawia city, through an active daily search in the Zawia general hospitals offering delivery service, and three poly clinic that offered deliveries through the private system. The mothers were approached at their maternity ward accommodation while still in the first 48 hours after delivery. Data collection was performed by three hired nurse. Data were checked daily during the collection period and corrected, when necessary, by returning to the medical records.

For the association of Caesarean section with maternal characteristics, the following independent socioeconomic and demographic variables of puerperal woman were considered: education level (none, primary, or secondary/higher); maternal working status (working, not working); husband/partner education level;(non, primary, secondary/higher) husband/partner working status;(working, not working) wealth index; (rich, middle or poor); bio-demographic factors; maternal age (< 20, 20-34 or ≥ 35); birth order; (1st , 2-3, 4 or more);

birth size (large, average or small); birth interval "preceding" (<24 months, 24or more months); birth type (multiple, or single);maternal body mass index (BMI) before pregnancy < 18.5 kg/m2 (underweight); 18.5 to 24 kg/m2 (normal); or ≥ 25 kg/m2 (overweight/obesity); rural-urban residence (rural or urban); desired type of delivery in early pregnancy (C-section or vaginal); previous caesarean section for multiparous woman (none or ≥ 1). Health-seeking/support factors antenatal visit; antenatal visit (none, 1-3 , or ≥4); health insurance (yes or no); place of delivery (private health facility ,public health facility, or home): Finally, complications during pregnancy: hypertension (yes or no); diabetes (yes or no); hospitalization (yes or no); depression (yes or no).

Presence of depression during pregnancy with a medical diagnosis and specific therapy was asked about in the interview. The logistic regression model (stepwise forward, using the SPSS software, version 20.1) was used with a confidence interval (CI) of 95%. Only variables with p-value < 0.05 in the univariate analysis were presented in the results and included in the logistic regression analysis.

Result

Sample characteristics;

Table 1 describes the characteristics of the study participants as well as the prevalence of caesarean delivery in Zawia City. A total of 175 deliveries (mother–child pair) in June and August, 2022. was included in this study. Of them 41.7% were 35 or more years. Close to 50% of deliveries were to women Obese or Overweight. Almost two-thirds 84,6% of deliveries were to women in middle wealth index category. The proportion of women with Previous c-section was 60%. Access to health insurance coverage was considerably low (16%). Notably, almost two-thirds 79.4% of all the deliveries occurred in women who had Secondary/higher education and 64,6% of the women achieved the recommended antenatal attendance of at least four times. and, ~66.9% of them were working. private facilities (58.3%) had a greater proportion of deliveries than public health facilities (41.7%).

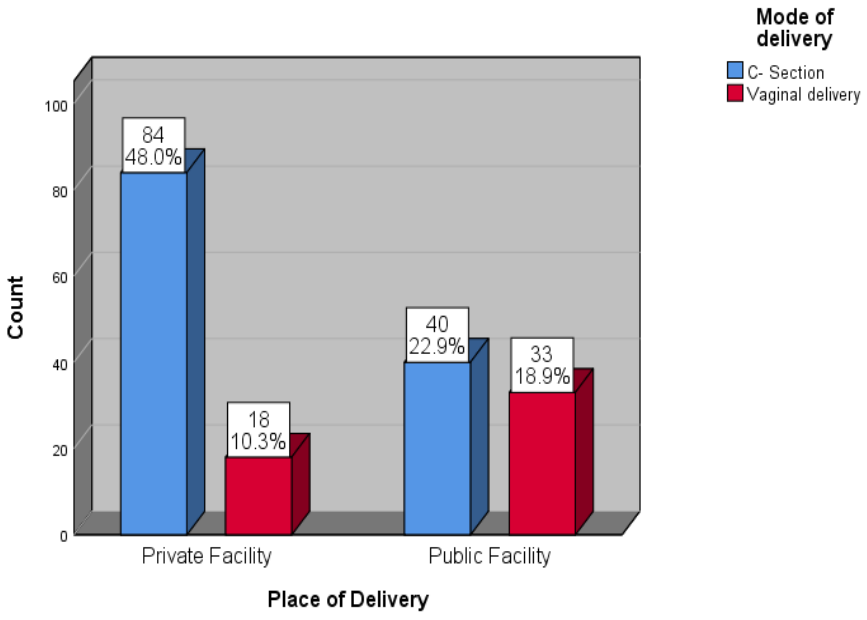
Table (1)Characteristics of study sample

Characteristics (N=175)	n	%
Mode of delivery		
Caesarean section	124	70.9
Vaginal delivery	51	29.1
Maternal education level		
Secondary/ higher	139	79.4
Primary	33	18.9
None	3	1.7
Maternal working status		
Working	117	66.9
Not working	58	33.1
Husband/partner education level		
Secondary/ higher	114	65.1
Primary	58	33.1
None	3	1.7
Husband/partner working status		
Not working	9	5.1
Working	166	94.9
Wealth index		
Rich	25	14.3
Middle	148	84.6
Poor	2	1.1
Maternal age		
35 or more years	73	41.7
20-34 years	100	57.1
Less than 20 years	2	1.1
Birth order		
First	27	15.4
Second or third	72	41.1
Forth or more	76	43.4
Birth size		
Large	14	8.0
Average	148	84.6
Small	13	7.4

Birth interval(preceding)		
Less than 24 months	52	29.7
24 or more months	123	70.3
Birth type		
Multiple	34	19.4
Single	141	80.6
Maternal body mass index (BMI)		
Obese (>30.0)	17	9.7
Overweight (25.0-29.9)	59	33.7
Underweight (<18.5)	17	9.7
Normal weight (18.5-24.9)	82	46.9
Rural – urban residence		
Rural	45	25.7
Urban	130	74.3
Previous c-section		
None	70	40.0
>= 1	105	60.0
Desired type of delivery in early pregnancy		
C-section	111	63.4
Vaginal	64	36.6
Antenatal visit		
None	2	1.4%
1-3	60	34%
4 or more	113	64,6%
Health insurance		
Yes	28	16.0
No	147	84.0
Place of delivery		
Private health facility	102	58.3
Public health facility	73	41.7
Hypertension		
Yes	29	16.6
No	146	83.4
Diabetes		
Yes	20	11.4
No	155	88.6
Hospitalization		
Yes	37	21.1
No	138	78.9
Depression		
Yes	77	44.0
No	98	56.0

Table 2 Distributed of c-section by place of delivery

Place of delivery	Mode of delivery				Total	
	C-section		Vaginal delivery			
	Count	%	Count	%	Count	%
Private health facility	84	48.0	18	10.3	102	**58.3**
Public health facility	40	22.9	33	18.9	73	**41.7**
Total	124	70.9	51	29.1	175	**100.0**



Fighter 1 private facility and public facility

Variable	Caesarean section				OR	p-value
	Yes (n=124)		No (n=51)			
	n	%	n	%		
Maternal education level						
Secondary/ higher	97	69.8	42	30.2	0.116(0.006,2.184)	0.150
Primary	26	78.8	7	21.2	0.092(0.005,1.796)	0.092
None	1	33.3	2	66.7	1	
Maternal working status						
Working	82	70.1	35	29.9	0.893(0.444,1.795)	0.750
Not working	42	72.4	16	27.6	1	
Husband/partner education level						
Secondary/ higher	77	67.5	37	32.5	2.990(0.085,105.593)	0.547
Primary	45	77.6	13	22.4	1.639(0.047,57.417)	0.785
None	2	66.7	1	33.3	1	
Husband/partner working status						
Not working	6	66.7	3	33.3	0.814(0.195,3.386)	0.776
Working	118	71.1	48	28.9	1	
Wealth index						
Rich	18	72.0	7	28.0	5.7(2.0,16.2)	0.000
Middle	104	70.3	44	29.7	4.2(1.9,9.1)	0.000
Poor	2	100.0	0	0.0	1	
Maternal age						
35 or more years	46	63.0	27	37.0	4.2(1.9,9.1)	0.000
20-34 years	76	76.0	24	24.0	2.1(1.5,4.3)	0.000
Less than 20 years	2	100.0	0	0.0	1	
Birth order						
First	20	74.1	7	25.9	0.682(0.224,2.074)	0.500
Second or third	56	77.8	16	22.2	0.519(0.227,1.188)	0.121
Forth or more	48	63.2	28	36.8	1	
Birth size						
Large	12	85.7	2	14.3	2.141(0.158,28.924)	0.567
Average	100	67.6	48	32.4	5.683(0.686,47.101)	0.107
Small	12	92.3	1	7.7	1	
Birth interval(preceding)						
Less than 24 months	42	80.8	10	19.2	2.10(0.958,4.604)	0.061
24 or more months	82	66.7	41	33.3	1	
Birth type						
Multiple	24	70.6	10	29.4	0.984(0.432,2.240)	0.969

Single	100	70.9	41	29.1	1	
Maternal body mass index (BMI)						
Obese (>30.0)	12	70.6	5	29.4	0.879(0.240,3.221)	0.846
Overweight (25.0-29.9)	45	76.3	14	23.7	0.545(0.238,1.247)	0.846
Underweight (<18.5)	14	82.4	3	17.6	0.331(0.078,1.405)	0.134
Normal weight (18.5-24.9)	53	64.4	29	35.4	1	
Rural – urban residence						
Rural	31	68.9	14	31.1	0.881(0.422,1.841)	0.736
Urban	93	71.5	37	28.5		
Previous c-section						
None	24	34.3	46	65.7	0.026(0.009,0.073)	0.000
>= 1	100	95.2	5	4.8		
Desired type of delivery in early pregnancy						
C-section	111	100.0	0	0.0	4.923(3.030,7.998)	0.000
Vaginal	13	20.3	51	79.7		
Antenatal visit						
None	2	100.0	0	0.0	0.111(0.056,1.258)	0.995
1-3	41	68.3	19	31.7	1.311(0.609,2.823)	0.489
4 or more	81	71.7	32	28.3	1	
Health insurance						
Yes	23	82.1	5	17.9	2.095(0.749,5.857)	0.152
No	101	68.7	46	31.3	1	
Place of delivery						
Private health facility	84	82.4	18	17.6	3.850(1.937,7.651)	0.000
Public health facility	40	54.8	33	45.2	1	
Hypertension						
Yes	25	86.2	4	13.8	2.967(0.977,9.013)	0.046
No	99	67.8	47	32.2	1	
Diabetes						
Yes	14	70.0	6	30.0	0.955(0.345,2.640)	0.929
No	110	71.0	45	29.0	1	
Hospitalization						
Yes	31	83.8	6	16.2	2.50(0.973,6.425)	0.051
No	93	67.4	45	32.6	1	
Depression						
Yes	60	77.9	17	22.1	1.875(0.949,3.703)	0.068
No	64	65.3	34	34.7		

Prevalence of caesarean delivery

Out of the total number of deliveries, 124 were through CS, representing a prevalence of 70.9%. (41.7%=73) underwent delivery using the public health system and (58.3%=102) using the private system. Regarding the place of delivery, the highest proportion of Caesarean section was observed among mothers who went through the private system (82.4% =84), however, the proportion of Caesarean section through public health system was also high (54.8% = 73) in bivariate analysis, some factors were associated with mode of delivery at 0.05 level of alpha (Table 2). Significant evidence of an association was observed with wealth index (for Rich: OR = 5.7, 95% CI 2.00, 16.1, p=0.000), (for middle: OR=4.2, 95% CI 1.9, 9.1). Mothers aged 35 years or more had higher odds of c-section than those who aged less than 20 years old. Also, Significant evidence of an association was observed between mode of delivery and previous c-section. Mothers who didn't have previous c-section had lower odds of c-section than who had at least one c-section (OR =0.026, 95% CI 0.009, 0.073, p=0.000). Mothers who desired of c-section in early pregnancy had higher odds of c-section than mothers who didn't (OR =4.9, 95% CI 3.03, 7.9, p=0.000). Also, mothers who delivered in private facility had higher odds of c-section than mothers who delivered in public facility (OR =3.8, 95% CI 1.94, 7.65, p=0.000). mothers with hypertension had higher odds of c-section than mothers with no hypertension (OR =2.97, 95% CI 0.977, 9.013, p=0.046).

Conclusion;

The public and private systems reveal differences in the factors associated to Caesarean section. The high occurrence of caesarean sections in the private system (82.4%) is mainly determined by the preference/desire of women for this type of delivery in early pregnancy (OR=4.9) and due to having a previous caesarean section (OR=11.27). Among women assisted by the SUS, there was a higher number of associated factors, including: family income per capita higher than one minimum wage (OR=2.03), previous caesarean section delivery (OR=3), pregestational overweight or obesity (OR=2.30), and the preference/desire for Caesarean section early in pregnancy (OR=3.38). Despite the occurrence of Caesarean section delivery being lower in the public health system (54.8%) compared to the private system (82.4%), this prevalence is still high considering the proposed incidence rates by national and international organizations. The results of this study corroborate the evidence reported in the literature, and may guide implementation of maternal and child health policies in Zawia City and other municipalities with similar characteristics so that prenatal care is performed within the technical criteria recommended by WHO and the Ministry of Health in order to provide greater security and fewer complications for women and their babies

The World Health Organization (WHO) stated in 2015 that caesareans are effective in saving maternal and infant lives only when they are required for medically indicated reasons and that CS rates higher than 10–15% at a population level not associated with reduced maternal and newborn mortality rates. [102-3] Recommended systematic counseling and support for women fearing vaginal delivery include repeated meetings with a psychosocial team during pregnancy, objective information about benefits and risks related to different delivery modes including the influence on future reproductive health as well as support during delivery and planned follow-up after a negative birth experience [65, 98, 99]

SUMMARY;

Rates of caesarean section are very high. however, Currently the major indications are Previous c-section, Maternal age and Desired type of delivery in early pregnancy. The risks to the mother of caesarean section are frequently unquantified but are usually justified in terms of the benefit to the fetus. The scale of this fetal benefit is usually also unquantified, and recommendation for a caesarean section is not evidence-based in many instances

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