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Exploring Childbirth Trends and Maternal Awareness in Libya: Cross Sectional Study and Narrative Review (2014-2023)

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Abstract

This study explores childbirth trends and maternal awareness in Libya through an online survey of 578 Libyan women of childbearing age. The survey explored their pre-existing knowledge as well as their experiences in undergoing delivery methods. The findings reveal that while many women rely on doctors for guidance, a considerable number seek information from the internet which risks disseminating misinformation. Additionally, communication from healthcare providers regarding delivery options was often deemed insufficient. The study highlights the psychological challenges associated with childbirth, with many women expressing lack of adequate mental health support and concerns over the financial burden of cesarean deliveries. Awareness of legal rights also emerged as a pivotal factor in shaping maternal decisions. The data also show a frequency of C-sections, as reported by participants, reaching 60.8% for the first baby, and 52% for the second baby. In conclusion, the study underscores the need for improved maternal education, better psychological support, and targeted policy interventions to improve childbirth experiences and outcomes across the country.

Key Words: Childbirth, Maternal Awareness, Cesarean Sections, Obstetrics Services, Fertility Rates, Health System, Libya.

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Background

Childbirth trends have evolved dramatically over time due to breakthroughs in medical technology, shifts in socio-cultural views, and changing healthcare regulations. Childbirth has always been a community-centered event managed by midwives. However, the advent of modern obstetrics in the twentieth century resulted in the medicalization of childbirth, with hospital deliveries becoming the norm. [1]

Concerns about medical interventions have sparked interest in natural and home births.[2] However, Cesarean sections (C-sections) are becoming more frequent. According to the World Health Organization (WHO) the global C-section rate has increased from 12% in 2000 to more than 21% in 2021, far exceeding recommended levels.[3] Factors contributing to this trend include maternal choices, awareness levels, convenience, and medico-legal challenges. Furthermore, evidence suggests that an increase in high-risk pregnancies due to advanced maternal age, obesity, and chronic medical conditions have contributed to an increase in surgical deliveries.[4]

Maternal awareness also plays a pivotal role in decision-making during childbirth. Women who have access to comprehensive prenatal educational programs are more likely to make informed birth decisions. Hence, antenatal education is associated with higher vaginal delivery rates, reduced anxiety, and greater satisfaction with childbirth experiences. [5]

Similarly, psychological factors play a role in the childbirth trend as childbirth is not only a physical experience but also deeply emotional which impacts maternal mental health. Research indicates that postpartum depression (PPD) affects an estimated 10-20% of new mothers worldwide.[6] Factors contributing to PPD include hormonal fluctuations, sleep deprivation, birth trauma, and lack of social support. [7] The mode of delivery can influence psychological well-being outcomes; women who undergo emergency C-sections or experience birth complications are at a higher risk of post-traumatic stress disorder (PTSD) related to childbirth. [8]

Promoting psychological preparedness for childbirth, offering postpartum mental health screenings, and providing emotional support networks can help mitigate the adverse psychological effects of childbirth. [9]

Healthcare expenditures related to childbirth vary significantly by country. In nations with universal healthcare, childbirth costs are generally lower, while in privatized health systems, hospital deliveries can place a heavier financial burden on families.[10] Additionally, rising C-section rates have led to higher medical expenses compared to vaginal delivery, putting pressure on healthcare systems.[11] Investments in maternal health policies such as free prenatal care and postnatal support, have demonstrated long-term economic benefits by reducing maternal and infant mortality while lowering long-term healthcare costs.[10, 11] Governments and policymakers continue to explore cost-effective strategies to enhance maternal health outcomes while ensuring economic sustainability.

International organizations advocate for evidence-based childbirth practices to optimize maternal and neonatal outcomes. The WHO's 2021 guidelines emphasize the importance of a patient's oriented maternity care, reducing unnecessary medical interventions, and promoting midwifery-led models.[3] Countries implementing such policies have reported improved maternal satisfaction and reduced healthcare costs. [11, 12]

Medicolegal awareness is another important influential factor in maternal decision-making regarding childbirth. Fear of litigation, medical malpractice concerns, and informed consent regulations have led to shifts in healthcare provider practices and influence of maternal preferences.[13,14] The rise in C-section rates has been partially attributed to defensive medicine, where obstetricians opt for surgical births to mitigate potential legal risks of complicated vaginal delivery.[15,16] Furthermore, healthcare policies emphasizing informed consent and patient autonomy have promoted shared decision-making between women and healthcare providers. Ethical considerations regarding consent and maternal rights play a critical role in childbirth experiences, ensuring that women feel empowered to make choices aligned with their values and medical needs.

In Libya, data from the Ministry of Health indicate a marked decline in the total fertility rate (TFR), falling from 7.28 in 1975–1980 to just 2.17 in 2016–2020 (Figure 1).[16] The country's current population pyramid reveals a shift toward an older demographic, suggesting a decrease in youth populations and an aging society.[17] Against this demographic backdrop, the present study aims to explore Libyan women's awareness and experiences regarding childbirth modes, with particular attention to the exceptionally high rates of C-sections and their implications for the nation's broader demographic trends.

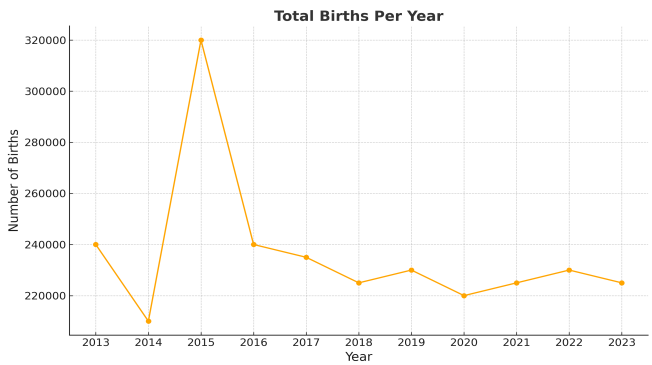

Figure 1: Total Births in Libya from 2013 to 2023. [16]

Methodology

An online survey targeting Libyan women aged 15–49 with at least one prior birth was conducted between December 2024 and January 2025. The survey was distributed via social media and online community groups, yielding a total of 578 responses providing insights into their knowledge, attitudes, and experiences regarding childbirth.

Inclusion Criteria

- Libyan females aged 15–49 years with at least one prior birth (para 1 or more).
- Willingness to provide informed consent and participate in an online questionnaire.

Survey Instrument

- The questionnaire encompassed socio-demographic data, knowledge sources about birth methods, perceived freedom of choice in delivery mode, and experiences across psychological, economic, and legal aspects of childbirth.

Data Collection and Ethical Considerations

- The survey link was shared across various social media channels to reach as many eligible respondents as possible.
- Participation was voluntary, with complete anonymity guaranteed.
- No identifying information was collected.
- Ethical approval was obtained from the ethics committee, UOB, adhering to principles of informed consent and data protection and confidentiality.

Data Analysis

- Quantitative data was analyzed using descriptive statistics (frequency, percentage, mean, standard deviation).
- ANOVA tests assessed statistically significant differences ($p < 0.05$ was considered significant).
- Results are presented in tables and figures for clarity.

Results

1- Socio-demographic Characteristics

A total of 578 women participated in the study. The majority (59.6%) were between 25 and 34 years of age. Educational attainment was notably high, with 68.5% holding a Bachelor's degree. Most respondents (97.2%) were married. These findings suggest a predominantly younger, educated, and married sample (Table 1).

2- Sources of Information on Birth Methods

Doctors were the most commonly cited source of information (41.4%), followed by the internet (28.2%) and family/friends (27.7%). Only 0.7% relied on published scientific research directly (Figure 2).

3- Communication and Autonomy in Choosing the Mode of Delivery

61.6% of the women stated that their doctor did not explain the differences between normal delivery and cesarean section at the outset of their pregnancy. Furthermore, 65.4% felt they lacked autonomy in choosing between birth methods, highlighting gaps in patient-provider communication and shared decision-making (Table 2).

4- Mode of Delivery and Birth Order

This survey showed a very high frequency of C-sections reported by participants, reaching 60.8% for the first baby, and 52% for the second baby. This rate signifies that cesarean deliveries may be disproportionately

frequent in Libya than most nations. While the percentage of cesarean deliveries decreases with higher birth order, it remains significantly high overall (Figure 3).

5- Association Between Mode of Delivery and Number of Children

Women who had only cesarean deliveries reported an average of 1.88 children, compared to 2.19 of those who had normal deliveries.. Interestingly, a mixed delivery history (both normal and cesarean) reported an average of 3.19 children. The difference in means was statistically significant ($p < 0.001$) between the three groups, suggesting that women with repeated cesarean sections may choose or be advised to limit family size (Figure 4).

6- Maternal Age at First Birth and Preferred Delivery Mode

Younger mothers (< 25 years) were almost equally likely to have a cesarean as a normal delivery (49.1% each). However, among those aged between 30 and 34 years, 64.2% had cesarean deliveries. This trend suggests that advancing maternal age may increase reliance on surgical intervention (Figure 5).

Table 1: Socio-demographic profiles of the study sample

Characteristics	Classification	Number	%
Age (in years)	<25	57	9.9
	25-29	169	29.2
	30-34	176	30.4
	35-39	75	13.0
	40-44	64	11.1
	45-49	37	6.4
Educational Level	Intermediate	3	0.5
	Secondary or equivalent	35	6.1
	Higher Diploma	60	10.4
	Bachelor's degree	396	68.5
	Master's degree	396	396
	PhD	18	3.1
Marital Status	Married	562	97.2
	Divorced	12	2.1
	Widowed	4	0.7
Total		578	100.0

7- Psychological Aspect of Caesarean Section

Psychological aspects were evident. Almost 29.7% of the sample believed that cesarean deliveries increase the likelihood of psychological issues, 40.6% reported limited psychological support during their birth experience and 25.9 of the sample were unaware of available mental health resources (Table 3).

8- Economic Aspect of Caesarean Section

A substantial majority (93.8%) claimed that deliveries incurred higher costs compared to vaginal births. 77.6% were aware of these additional costs before the delivery and 40.5% believed that awareness of cesarean costs are inadequate in encouraging natural births (Table 4).

9- Legal Aspect of Caesarean Section

68.7% of respondents were aware of their right to refuse a non-emergency cesarean section, and 63.1% reported that health risks and procedures were not explained adequately before the surgery. 87.4% believed that the medical team should obtain the patient's consent before C-section (Table 5).

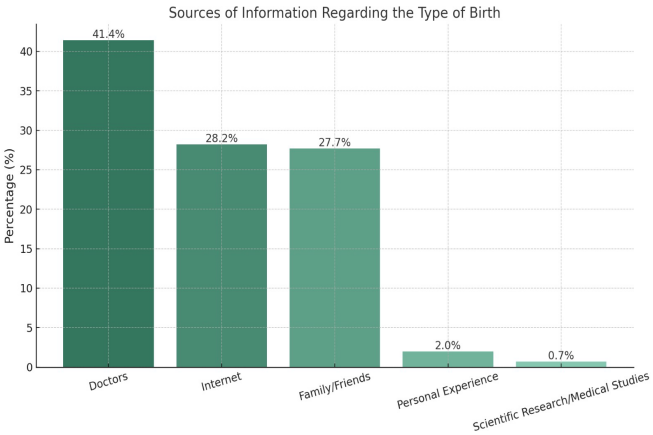

Figure 2: Primary Sources of Information on Birth Type Among Women

Table 2: Did the Doctor Explain the Difference Between Natural Birth and Cesarean at the Beginning of Pregnancy?

Question	Response	Number	%
Did the Doctor Explain the Difference Between Natural Birth and Cesarean at the Beginning of Pregnancy?	No	28.2	61.6
	Yes	27.7	38.4
Freedom to Choose Between Natural Birth and Cesarean at the Beginning of Pregnancy	No	2.0	65.4
	Yes	0.7	34.6
Total		578	100.0

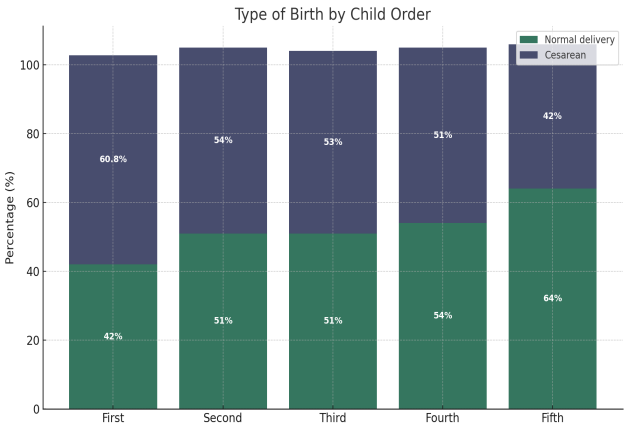

Figure 3: Type of Birth According to the Order of the Child

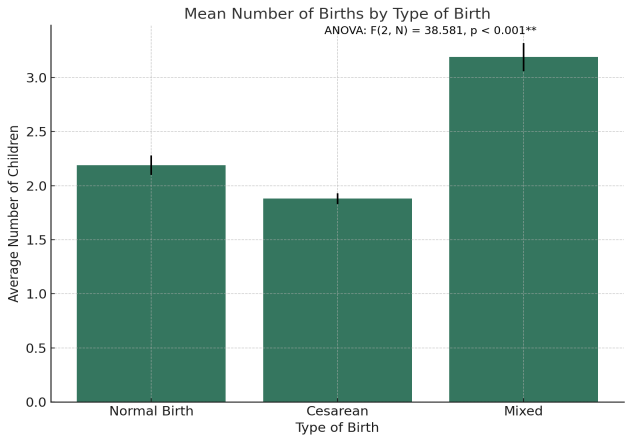

Figure 4: Comparison of Average Number of Births by Delivery Method

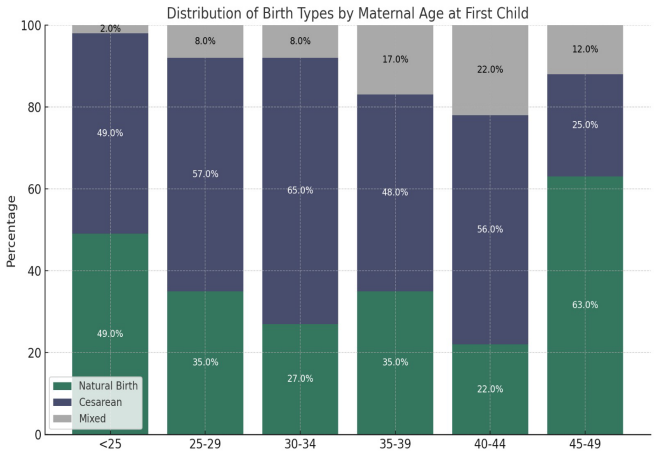

Figure 5: Age of Mother at the First Child and Type of Birth

Table 3: Results of Psychological Questions

Question	Response	%
Do you think cesarean increases the likelihood of psychological problems compared to natural birth?	No	30.0
	Yes	28.9
	I don't know	41.1
Did you feel sufficient psychological support from doctors and those around you during the birth experience?	No, I received no support	14.3
	It was limited	40.6
	Support was sufficient	45.1
If you faced psychological challenges after birth, did you seek help?	No	34.0
	Yes	40.1
	I didn't know about available resources	25.9

Table 4: Results of Economic Questions

Question	Response	%
Do you think cesarean increases costs compared to natural birth?	No	6.2
	Yes	93.8
Were you aware of the additional costs of cesarean before the procedure?	No	22.4
	Yes	77.6
In case of cesarean, did health insurance cover the costs of your cesarean?	No	47.2
	Yes	52.8
Do you think awareness of the high costs of cesarean is enough to encourage natural birth?	No	40.5
	Yes	59.5

Table 5: Results of Legal Questions

Question	Response	Number	%
Were you aware of your right to refuse a cesarean if it was not an emergency?	No	28.2	61.6
	Yes	27.7	38.4
Did the doctor explain the difference between natural birth and cesarean at the beginning of pregnancy?	No	2.0	65.4
	Yes	0.7	34.6
Total		578	100.0

Discussion

Cesarean Section Trends and Fertility Implications in Libya

This study highlights Libya's exceptionally high cesarean section rate of 60.8% of first births being surgical (Figure 3). Such a high reliance on operative delivery carries significant demographic consequences. Women undergoing C-sections in our sample had fewer children (mean=1.88) compared to vaginal deliveries (mean=2.19), suggesting that C-sections reduce subsequent pregnancies and prolong birth intervals– an observation consistent with findings from other studies.[17, 18] This novel finding may be a significant contributing factor to the decline in Libya total fertility rate (from 7.28 in the period 1975-1980 to 2.17 in the period 2016-2020).[19-21]

Libya in the Regional Context: North African Comparisons

Libya shares significant similarities with several North African and Middle Eastern nations, particularly in terms of demographic structure and urbanization patterns. Among comparable countries, Tunisia (population ~12 million) mirrors Libya's young population structure and Arab-Berber ethnic composition, though with a slightly older age profile.[20,22,23,24] Algeria (~44 million) demonstrates parallel trends with its youthful demographic and high urbanization rates (82% urbanized vs. Libya's 78%) Egypt's substantially larger population (>100 million) maintains similar youth-dominated age structures (65% under 30) concentrated in major urban centers like Cairo.[23,24] Three key unifying features emerge from this comparison:

- Youth population structures: all featured nations exhibit pronounced youth demographics (with the median age being 24-28 years), creating shared socioeconomic challenges in employment generation.[25]
- High urbanization rates: urbanization patterns show remarkable consistency, with 70-90% of population concentrated in cities. [25]
- Shared ethnic composition: the predominance of Arab-Berber ethnicity across Libya, Tunisia and Algeria.[26] This contrasts with Egypt's more diverse cultural composition (14% minorities per Egypt's 2017 census).

Cesarean section rates across North Africa have sharply increased over the past two decades, with Libya representing a particularly important case. Recent data show Libya's C-section rate reached 38% in 2023 exceeding both the WHO-recommended 10-15% threshold and the North African average of 32%.[27] Similarly in 2022, Algeria's rate climbed to 34% (up from 18% in 2010), and Egypt reports urban rates as high as 42%.[28-31]

Several factors drive Libya's elevated rates. Medical contributors include high gestational diabetes prevalence (24% vs regional 20%) and increasing maternal age (median 28 years).[30] Non-medical factors include significant urban-rural disparities (45% in Tripoli vs 22% in Fezzan) and defensive medicine practices.[31, 32] Regional policy comparisons highlight Libya's unique position. While Tunisia implemented C-section audits and Morocco achieved 8% reductions through midwifery-led care , Libya lacks standardized protocols, maintaining its outlier status in the region.[33, 34]

Psychological and Economic Impacts of C-Sections

Our findings reveal significant psychological and economic concerns surrounding cesarean deliveries. Approximately one-third of participants associate C-sections with increased psychological risks, while 40.6% report inadequate mental health support during childbirth, potentially contributing to postpartum distress as previously reported.[6-8] This is particularly concerning given evidence linking negative birth experiences to long-term psychological consequences affecting mothers, whereas midwife-led care and shared decision-making correlate with better outcomes.[35]

Economically, while most respondents recognize C-sections as costlier than vaginal births, 40.5% believed that cost-awareness campaigns fail to influence delivery choices. The financial implications extend beyond healthcare, affecting workforce participation and family stability—paid maternity leave improves workforce retention, while its absence exacerbates economic hardship, especially for low-income families.[36, 37]

Legal Awareness and Patient Autonomy

Two-thirds of women report insufficient explanations of C-section risks, despite 87.4% emphasizing the necessity of informed consent for non-emergency procedures. These findings underline a greater need to enhance legal knowledge to empower women to demand transparency, clarity and accountability. However, whilst empowering women in this light is crucial, excessive medicolegal caution may drive unnecessary interventions. [38,39]

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