

*Research Article***Cesarean section delivery in Minia district: rate and determinants.****Radwa A. Gamal***, **Mona A. Khalifa****, **Eman R. Ghazawy****, and **Eptesam E. Hassan****

* Department of family planning Minia general hospital

** Department of Public Health and Preventive Medicine, Minia Faculty of Medicine

Abstract

Background: Caesarean sections (CS) are one of the most frequently performed operations in women. The rates of CS performed worldwide are increasing and this rising trend is seen in both developed as well as developing countries including Egypt. Hence, the present study aimed to determine the rate of CS and to detect the medical and non-medical reasons behind the CS. **Methods:** A cross-sectional study of 400 women who had given birth within the past two years attending health centers were recruited during the period from April to October 2017. A structured interview questionnaire was used to determine the prevalence of CS and medical and non-medical reasons behind this it. **Results:** It was found that 37% of mothers were delivered by CS. About 90% of them reported medical reasons behind their CS, (25.9%) of mothers with medical reasons reported a history of CS as the main medical reason. Regarding the non-medical reasons 75% of the mothers reported fear of vaginal delivery as the main reason. **Conclusion:** The rate of caesarean section was high. Most of caesarean sections were medically indicated.

Key words: Caesarean sections, delivery, women, Minia, Egypt.**Introduction**

The childbirth experience is considered one of the most important and unique event in women's life. Generally, spontaneous vaginal delivery (VD) is the main form of delivery, but when it is not judicious, caesarean is carried out. A caesarean section (CS) is a life-saving surgical procedure when it is medically justified and it can effectively prevent maternal and perinatal mortality and morbidity (Hannah et al., 2001, Zwelling, 2008). However, it has been evident that an unnecessary CS particularly in low-resource settings are associated with short and long term maternal and perinatal risk (Souza et al., 2010, Briand et al., 2012), in addition to the considerable economic burden for society (Khan and Zaman, 2010).

CS becomes increasingly the procedure of choice in high risk pregnancies to prevent perinatal morbidity and mortality. This has become possible due to improved patient care, availability of effective antibiotics, blood transfusion services, safer anaes-

thesia, improved surgical technique and sophisticated neonatal care services even in rural areas (Joshi et al., 2017).

The U.S. Healthy People 2020 initiative revised its recommended rates from 15% of all births in 2000 to a new target of 23.9% among nulliparous, singleton, vertex, full-term pregnancies with no previous CS (Degani and Sikich, 2015).

It is difficult to pinpoint an exact cause for the rising rates of CS. Medical, Institutional, legal, psychological and sociodemographic factors play a contributing role. Also having a history of CS and referral place for control of pregnancy were significantly associated with selection of the labor type. The reasons for selection of CS were fear of labor pain, physician recommendation and experience of recent CS (Mohammad pourasl et al., 2009).

However, nowadays, the incidence of CS performed on request without medical indications is increasing as the traditional

view about CS being conducted in critical situations has changed and it is currently performed even when such danger is minimal (Muula, 2007).

In Egypt the rate is 80% higher than the recommended CS rate by the WHO to be (51.8%) instead of 15%. In Upper Egypt, till now there is a few published works about the actual rate of CSDs. Thus, we aimed to determine prevalence of cesarean section among women in childbearing period in Minia district, to identify the medical and non-medical causes of CS and to detect determinants of un-indicated CS.

Subjects and method

Study design and population

This study is a descriptive cross-sectional study among married women of child-bearing age (19-49 years old) in Minia district from April 2017 to October 2017.

Minia district was randomly selected from the nine districts in Minia governorate. Minia general hospital and Damares village were randomly chosen for the urban and rural sample respectively.

The criteria for inclusion in this study were all women in the reproductive age 19-49 years old who had given birth within the past two years and seeking services in the above mentioned health centers during the study period. A total 400 women were included.

Data collection: A structured interview questionnaire was designed and included questions about socio-demographic data, full obstetric history, questions regarding causes of CS and determinants of un-indicated CS.

Results

The age of the study participants ranged between 18-49 years with a mean of 32.19±8.1 years. 50.5% of participants were

>30 years old, 33.3% of the women were rural residents. About 21% were illiterate; while, 10.3% could just read and write. Unemployment was documented in 71.5% of women. Figure 1 illustrates that 63% of participants gave the last birth vaginally and 37% gave the last birth via CS.

It was found that 61.5% of women who gave last birth via CS were aged below 30 years compared to (42.5%) of those who gave last birth vaginally and this difference was statistically significant. Wife and her husband education were significantly higher among women delivered by CS, 39.2% and 31.7% had university education compared to 9.1% and 14.3% of wives who delivered vaginally and their and husbands. More than three-quarters (78.6%) of women gave last birth vaginally were housewives compared to 59.5% of those delivered via CS (Table 1).

Regarding the CS profile table 2 shows that 60.8% of women were having repeated CS deliveries, 42.5% of cesarean sections were performed in private clinics and the majority (89.2%) was done for medical reasons.

The most reported medical causes of CS were failure of labor progress (33.3%) and cephalopelvic disproportion (25.8%), followed by malpresentation (15.2%). The least reported causes were fetal distress (6.8%) and were post-date (6.1%). While other causes related to medical conditions of the women represented (12.8%), (Table 3).

Regarding non-medical causes fear of labor pain was cited as the main cause of CS upon maternal request as reported by (75%) of women. Safeties of the baby and to have tubal ligation during CS operation were reported by 12.5% of women (Table 4).

Table 1: Sociodemographic characteristics of participants by mode of last birth

Variables	Gave last birth vaginally (no=252) No (%)	Gave last birth via CS (no= 148) No (%)	Total (no= 400) No (%)	χ^2 value	p-value
Age					
≤ 30	107 (42.5)	91 (61.5)	198 (49.5)	13.5	0.0001
> 30	145 (57.5)	57 (38.5)	202 (50.5)		
Residence					
Rural	86 (34.1)	47 (31.8)	133 (33.3)	0.24	0.6
Urban	166 (65.9)	101 (68.2)	267 (66.8)		
Education					
Illiterate	66 (26.2)	17 (11.5)	83 (20.8)	58.6	0.0001
Read and write	31 (12.3)	10 (6.8)	41 (10.3)		
Basic	22 (8.7)	17 (11.5)	39 (9.8)		
Secondary	110 (43.7)	46 (31.1)	156 (39.0)		
University	23 (9.1)	58 (39.2)	81 (20.3)		
Occupation					
House wife	198 (78.6)	88 (59.5)	286 (71.5)	16.7	0.0001
Worker	54 (21.4)	60 (40.5)	114 (28.5)		
Husband education					
Illiterate	41 (16.3)	17 (11.5)	58 (14.5)	25.8	0.0001
Read and write	22 (8.7)	5 (3.4)	27 (6.8)		
Basic	23 (9.1)	16 (10.8)	39 (9.8)		
Secondary	130 (51.6)	25 (39.7)	189 (47.3)		
University	36 (14.3)	20 (31.7)	87 (21.8)		
Husband occupation					
Farmer	55 (21.8)	21 (14.2)	76 (19.0)	4.51	0.1
Private sector/free worker	66 (26.2)	36 (24.3)	102 (25.5)		
Employee	131 (52.0)	91 (61.5)	222 (55.5)		

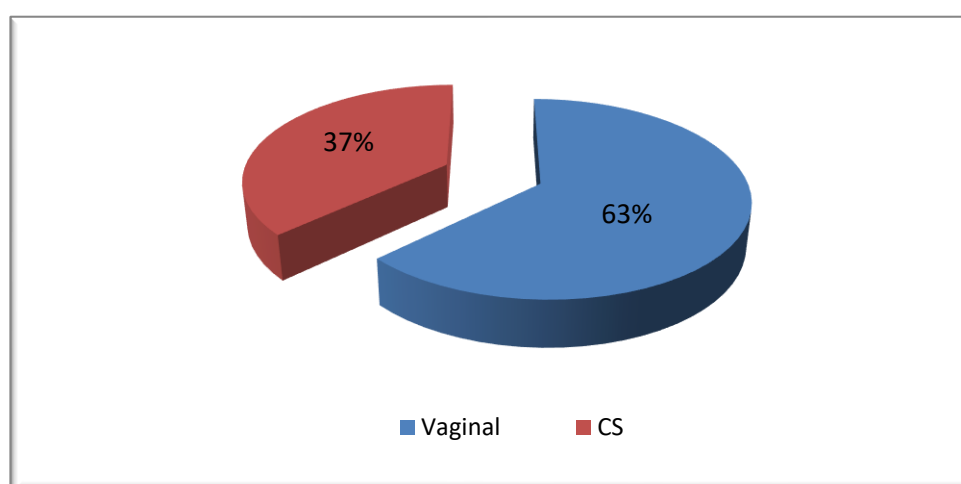
**Figure 1: distribution of the studied females according to mode of last delivery**

Table 2: Profile of CS deliveries (n=148)

Variables	No	%
Number of CS		
1st CS	58	39.2
Repeated	90	60.8
Place of delivery		
Governmental hospital	55	37.2
Private hospital	30	20.3
Private clinic	63	42.5
Causes of CS		
Medical	132	89.2
Non-medical	16	10.8

Table 3: Medical reasons for the CS (n=132)

Reasons for the mode of birth preference	No	(%)
Failure of labor progress	44	33.3
Cephalopelvic disproportion	34	25.8
Malpresentation	20	15.2
Fetal distress	9	6.8
Post-date	8	6.1
Other causes	17	12.8

Table 4: Non-medical reasons for the CS (n=16)

Reasons for the mode of birth preference	No	(%)
Fear of labor pain	12	75
For safety of the baby	2	12.5
To have tubal ligation	2	12.5

Discussion

This study disclosed that maternal age was significantly associated with CS. It was found that 61.5% of women who gave last birth via CS were aged below or equal to 30 years [table 1]. This finding was similar to Yassin and Abu Saida (2012) who found that there is an inverse relation between age of women and CS (Yassin and Abu Saida, 2012). On contrary, many studies conducted in UK, Australia, Canada and Iraq reported increased risk of CS among older women (Habib et al., 2011, Bayrampour and Heaman, 2010, Fitzpatrick et al., 2017, Carolan et al., 2013). These studies argued that higher maternal age is more often associated with prolonged labor, fetal

distress and failure to advance at the time of delivery, which may indicate a CS.

Many studies showed wide variations in CS rate among rural and urban areas. In (Yassin and Saida, 2012), residence showed a statistically significant association with cesarean delivery. Women residing the urban areas were shown to have a 1.7 higher chances of cesarean delivery than women residing in the rural areas but in the present study we found that no relationship between residence and CS rate [table 1].

In the current study it was found that the rate of CS was significantly higher among highly educated and employed women

(39.2%) and (40.5%) respectively [table 1]. This was consistent with Shaaban et al., 2014 who studied 509 women attending postnatal clinics in three primary care units in Ismailia governorate, Egypt and found that (56.5%) of women who delivered via CS were highly educated, and 49.4% of women who gave birth via CS rates were employed (Shaaban et al., 2014).

In the current study the CS rate among the studied women was (37%), [figure 1]. This was lower than another Egyptian study in Ismailia (Shaaban et al., 2014) where the CS rate was 52.3%, this could be attributed partially to the place of the study. Ismailia governorate is one of the Lower Egypt governorates with higher socioeconomic level. However another study conducted in El Fayom (Mahfouz et al., 2017) found that 58.9% of studied pregnant women had CS in their last pregnancy and when they were followed up till labor the rate of CS was 70.6%. This is matching the trends reported by the 2014 EDHS which showed that more than one-half of deliveries were by CS and the rate of CS in Upper Egypt was (39.7%). It's worth mentioning here that, in Egypt, the rate CS is higher than the rate of 15% which is the recommended by the World Health Organization (Gibbons et al., 2010).

The rate of repeated CS in the current study was 60.8% of CS deliveries [Table 2], this was consistent with Arikian et al., (2011) who found that 61.8% of Turkish women had undergone at least one previous CS (Arikian et al., 2011). However, the rate was much higher than reported by Shaaban et al., who found that (14.9%) of women had a previous one or more CS (Shaaban et al., 2014).

This study shows that 62.8% of CS were performed in private sector [Table 2], this was consistent to what was mentioned in EDHS 2014 that 52% of babies born via CS and Caesareans are more common at private health facilities (66%) (Demographic, 2014). However this was lower than CS rate among Brazilian women attending private hospitals, where the rate was 86.2%, while in Peru, the CS rate has climbed to 52.9% in private hospitals following the health improvement (Beogo et al., 2017).

This study revealed that the majority of mothers (89.2%) reported medical reasons behind their CS [table 3]. Failure of labor progress, fetal distress and previous CS were the main medical reasons behind the CS. This was consistent to many studies in which fetal distress followed by history of CS were reported as the main medical reasons of CS (Dursun et al., 2011, Gibbons et al., 2010, El-Zanaty and Way, 2001)

About 11% gave birth via CS upon their request. The rate of elective CS was comparable to that in Turkey, 18.5% (Yilmaz et al., 2013), Australia, 18.2 and Sweden, 8.7% (Haines et al., 2012). However, it was higher than reported by Akintayo et al. who found that 4.4% of CS among Nigerian women performed on maternal request (Akintayo et al., 2014).

In the present study, fear of labor pain was stated as the main reason for the request of CS [table 4]. The fear of birth is an important factor in CS choice. Serçekuş and Başkale found that child birth training reduces the fear of birth, and increases the maternal self-sufficiency in the means of child birth and found that VD rates increased for the women who participated in the child birth training program (Serçekuş and Başkale, 2016).

Additionally, our finding was lower than what reported by Al-Mousa study which showed that 58.4% of the women had previous CS and two thirds of them was done without definite medical indication. Almost similar findings were found in a study conducted in China where Ji et al., 2015 revealed that 58.1% of Chinese women underwent CS. However, 34.9% of women undergoing CS did not have any indications listed in the clinical guidelines nor based on maternal request (Ji et al., 2015) as experiencing previous CS seems to give the mothers full idea about the procedure and its consequences.

Conclusion

The rate of caesarean section was high. Most of caesarean sections were medically indicated. The age of women and previous mode of delivery were significant predi-

ctors. The most reported medical causes of CS were failure of labor progress. While the most reported non-medical causes was CS upon maternal request due to fear of labor pain

References

1. Akintayo A. A., Ade-Ojo I. P., Olagbuji B. N., Akin-Akintayo O. O., Ogundare O. R. and Olofinbiyi B. A. 2014. Cesarean section on maternal request: the viewpoint of expectant women. *Archives of Gynecology and Obstetrics*, 289, 781-785.
2. Arikan D. C., Özer A., Arikan I., Coskun A. and Kiran H. 2011. Turkish obstetricians' personal preference for mode of delivery and attitude toward cesarean delivery on maternal request. *Archives of Gynecology and Obstetrics*, 284, 543-549.
3. Bayrampour H. and Heaman M. 2010. Advanced maternal age and the risk of cesarean birth: a systematic review. *Birth*, 37, 219-226.
4. Beogo I., Mendez Rojas B. and Gagnon M.-P. 2017. Determinants and materno-fetal outcomes related to cesarean section delivery in private and public hospitals in low- and middle-income countries: a systematic review and meta-analysis protocol. *Systematic Reviews*, 6, 5.
5. Briand V., Dumont A., Abrahamowicz M., Sow A., Traore M., Rozenberg P., Watier L. and Fournier P. 2012. Maternal and perinatal outcomes by mode of delivery in Senegal and Mali: a cross-sectional epidemiological survey. *PLoS One*, 7, e47352.
6. Carolan M. C., Davey M.-A., Biro M. and Kealy M. 2013. Very advanced maternal age and morbidity in Victoria, Australia: a population based study. *BMC pregnancy and childbirth*, 13, 80.
7. Degani N. and Sikich N. 2015. Cesarean Delivery Rate Review: An Evidence-Based Analysis. *Ont Health Technol Assess Ser*, 15, 1-58.
8. Demographic N. 2014. Health Survey. 2013. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF International. National Population Commission (NPC)[Nigeria] and ICF International, 127-54.
9. Dursun P., Yanik F. B., Zeyneloglu H. B., Baser E., Kuscu E. and Ayhan A. 2011. Why women request cesarean section without medical indication? *The Journal of Maternal-Fetal & Neonatal Medicine*, 24, 1133-1137.
10. El-Zanaty F. and Way A. A. 2001. *Egypt Demographic and Health Survey 2000*.
11. Fitzpatrick K., Tuffnell D., Kurinczuk J. and Knight M. 2017. Pregnancy at very advanced maternal age: a UK population-based cohort study. *BJOG: An International Journal of Obstetrics & Gynaecology*, 124, 1097-1106.
12. Gibbons L., Belizán J. M., Lauer J. A., Betrán A. P., Meriáldi M. and Althabe F. 2010. The global numbers and costs of additionally needed and unnecessary caesarean sections performed per year: overuse as a barrier to universal coverage. *World health report*, 30, 1-31.
13. Habib H. A., Abdulla M. M. and Yacoub S. E. 2011. Knowledge and preference of mothers delivering at ALKadhomyia Teaching Hospital regarding caesarean section and normal vaginal delivery. *Iraqi Postgrad Med J*, 10, 512-8.
14. Haines H., Rubertsson C., Pallant J. F. and Hildingsson I. 2012. Womens' attitudes and beliefs of childbirth and association with birth preference: A comparison of a Swedish and an Australian sample in mid-pregnancy. *Midwifery*, 28, e850-e856.
15. Hannah M. E., Hannah W. J., Hewson S. A., Hodnett E. D., Saigal S., Willan A. R. and Group T. B. T. C. 2001. Planned Caesarean Section Versus Planned Vaginal Birth for Breech Presentation at Term: A Randomised Multicentre Trial. *Obstetrical & Gynecological Survey*, 56, 132-134.
16. Ji H., Jiang H., Yang L., Qian X. and Tang S. 2015. Factors contributing to the rapid rise of caesarean section: a prospective study of primiparous Chinese women in Shanghai. *BMJ open*, 5, e008994.
17. Joshi A. S., Joshi K. K., Joshi S. B. and Joshi K. S. 2017. Changing Trends in the Rate of Caesarean Section Over

- A Decade in Rural Maharashtra. *International Journal of Scientific Research*, 5.
18. Khan A. and Zaman S. 2010. Costs of vaginal delivery and Caesarean section at a tertiary level public hospital in Islamabad, Pakistan. *BMC pregnancy and childbirth*, 10, 2.
 19. Mahfouz E H. N., Elsherbiny N , Abdel Wahid W 2017. Assessment of the effect of Inter-pregnancy Interval on Maternal and Pregnancy Outcome in Fayoum District. *Fayoum University*, Egypt.
 20. Mohammad Pourasl A., Asgharian P., Rostami F., Azizi A. and Akbari H. 2009. Investigating the Choice of Delivery Method Type and Its Related Factors in Pregnant Women in Maragheh. 2009.
 21. Muula A. S. 2007. Ethical and practical consideration of women choosing cesarean section deliveries without “medical indication” in developing countries. *Croatian medical journal*, 48, 94.
 22. Serçekuş P. and Başkale H. 2016. Effects of antenatal education on fear of childbirth, maternal self-efficacy and parental attachment. *Midwifery*, 34, 166-172.
 23. Shaaban M., Ahmed W. S., Khadr Z. and El-Sayed H. 2014. Rising cesarean section rates, a patient’s perspective: experience from a high birth rate country. *Age*, 16, 4.5.
 24. Shaaban M., Sayed Ahmed W., Khadr Z. and El-Sayed H. 2014. Rising cesarean section rates, a patient’s perspective: Experience from a high birth rate country.
 25. Souza J. P., Gülmezoglu A., Lumbiganon P., Laopaiboon M., Carroli G., Fawole B. and Ruyan P. 2010. Caesarean section without medical indications is associated with an increased risk of adverse short-term maternal outcomes: the 2004-2008 WHO Global Survey on Maternal and Perinatal Health. *BMC medicine*, 8, 71.
 26. Yassin K. and Saida G. 2012. Levels and Determinants of Cesarean Deliveries in Egypt: Pathways to Rationalization. *The Internet Journal of World Health and Societal Politics*, 7.
 27. Yilmaz S. D., Bal M. D., Beji N. K. and Uludag S. 2013. Women’s preferences of method of delivery and influencing factors. *Iranian Red Crescent Medical Journal*, 15, 683.
 28. Zwelling E. 2008. The emergence of high-tech birthing. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, 37, 85-93.