PDF version

Report

Abdel-Fattah Salem[1]

[1]Department of Obstetrics and Genecology, Mu'tah University, Mu'tah, Jordan
(Correspondence to: A-.F. Salem: Abdelfattahgyn@hotmail.com)

Abstract

Background: According to the World Health Organization, the ideal caesarean section rate is 10–15% but rates have increased worldwide over the past few decades. Data on caesarean section rates across all Jordanian health sectors over a long period, including recent data that could guide future healthcare policy and interventions, are currently unavailable.

Aims: To investigate caesarean sections trends and identify indications (medical and sociodemographic) associated with caesarean sections in Jordanian health sectors.

Methods: Medical records of 2.8 million births in Jordan in 1982–2017 were retrieved and analysed. CS trends were compared across health sectors (governmental, university, private, and military hospitals) and with trends in England, Lebanon and Islamic Republic of Iran. CS indications were established from retrospective data, based on 3799 CS births, in 2 hospitals (governmental and private).

Results: The CS rate in Jordan increased over the study period from 5.8 (±1.9)% in 1982–1987 to 31.0 (±0.7)% in 2015–2017. The caesarean sections rate in Jordan was initially lower (1983–2006) then became comparable (2007–2014) to that in England, but lower compared to that in Lebanon (2011–2016). In 2015–2017, caesarean sections rates in Jordanian health sectors were: 40.4 (±2.6)% (university), 39.1 (±1.8)% (private), 36.1 (±0.2)% (military) and 27.4 (±0.7)% (governmental). Previous CS (33.6%), abnormal presentation (20.3%), and patient

request (16%) were the most common indications.

Conclusions: The CS rate in Jordan is on an alarming upward trend. Urgent action is needed to prevent further increase in CS rate, including provision of clear information, advice, and counselling to pregnant women, as well as strict adherence to high-quality medical guidelines.

Keywords: Caesarean section; Jordan; epidemiology; indications; trends

Citation: Salem A-F. Trends in Caesarean section deliveries in Jordan from 1982 to 2017: retrospective analyses of annual hospital reports. East Mediterr Health J. 2021;27(2):195-201 https://doi.org/10.26719/2021.27.2.195

Received: 07/12/18; accepted: 19/01/20

Copyright © World Health Organization (WHO) 2021. Open Access. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO license (https://creativecommons.org/licenses/by-nc-sa/3.0/igo)

Introduction

Caesarean section (CS) is a life-saving intervention if medically indicated. However, if performed without medical indication, it is associated with higher maternal and neonatal mortality and morbidity, such as maternal uterine rupture, abnormal placentation, and ectopic pregnancy, and neonatal altered immune development, increased likelihood of allergy, and atopy) (1). Children delivered by elective CS are at increased risk of hospitalization with paediatric infections, compared to their vaginally delivered counterparts (2). Indications for CS include cephalopelvic disproportion, chorioamnionitis, maternal pelvic deformity, malpresentation, uterine rupture, select multiple gestation, fetal distress, obstructed labour, and failed induction (3). Additional nonmedical reasons include maternal fear of vaginal delivery, and staff time constraints, fear of litigation, and potential financial gain in private hospitals. The ideal CS rate is 10–15% according to the World Health Organization (4).

In the Eastern Mediterranean region, Egypt had the highest reported CS rate in 2003 (26.2%) (5). Worldwide, rates have been increasing significantly over the years, signifying a global CS epidemic. Based on data from 169 countries (which included 98.4% of the worlds' births), it was estimated that 29.7 million (21.1%) births occurred through CS in 2015. This is significantly higher than the rate of 12.1% reported in 2000 (6). The highest CS rate worldwide in 2015 was seen in the Dominican Republic (58.1%).

Table 1 shows studies reporting CS rates in the Eastern Mediterranean Region. The Lebanese Ministry of Public Health annual bulletins from 2011 to 2016 showed a steady CS delivery rate of around 46.6%. The Jordan Population and Family Health Survey (JPHFS) of 28 234 women showed that the CS delivery rate increased significantly from 18.2% in 2002 to 30.3% in 2012 (7). The 2017–2018 JPFHS report revealed that the CS rate for all births was 26%. This report also showed a higher CS rate among women aged 35–49 years (32%) compared to those aged

In this study, we investigated CS trends and identify indications (medical and sociodemographic) associated with CS deliveries in all health sectors in Jordan to guide future healthcare policy and interventions.

Methods

Study design

This was a cross-sectional study of 2 782 029 births in governmental, military, private and university hospitals in Jordan between 1982 and 2017. Temporal trends

(4-year intervals) in CS rates were compared across health sectors in Jordan and compared to CS rates in England (BirthChoiceUK data) until 2014 (data from England unavailable after 2014). CS rates were also compared to those reported in Lebanon by the Ministry of Public Health from 2011 to 2016 (10).

Data collection

Data analysed represented all births in all governmental hospitals (1993–2017) and all military hospitals (1982–2017; except 1984, 1988, 1989 and 1991), based on official annual reports from respective organizations. The total numbers of births analysed for the governmental and military sector were 1 748 997 and 796 800, respectively (11,12). Data analysed for university and private hospitals represented a proportion of all births that occurred in these sectors over the study period. University hospitals were represented by the two largest centres: University of Jordan Hospital, Amman (2003–2017; 58 726 births) and King Abdullah University Hospital, Al-Ramtha (2004–2010; 13 198 births). The private sector was represented by four hospitals in

Amman: Islamic Hospital (1993–2017; except 2003; 138 455 births), Ibn Al-Haytham Hospital (2008–2013; 5643 births), Speciality Hospital (2011–2014; 10 283 births), and Al-Amal Maternity Hospital (2015–2017; 9927 births). Data for university and private hospitals were based on official but unpublished records, acquired following the author's request to these organisations. The CS rate in Jordan was established by quantifying the weighted average using all available health sector data.

The indications for CS were established from retrospective data, based on 3799 CS births in 2016, in Al-Bashir hospital (governmental; n = 2291) and Al-Amal Maternity hospital (private; n = 1508), Amman. Data were acquired following the author's request to these organisations. The author was unable to retrieve the indications for CS from other institutions due to lack of data.

Ethical considerations

Research and ethical approval was granted from military hospitals (approval number 3/1, dated 11 May 2012). In governmental, university and private hospitals, institutional approval was granted to provide data but research and ethical review was waived due to the aggregated anonymised nature of the data.

Statistical analysis

Data were collated and quality checked using a predefined Excel sheet generated by the author. Student's t test was used to analyse the differences between CS rates in Jordan and England and among health sectors in Jordan. P

Results

Trends in caesarean section rate in Jordan compared with England and Lebanon

Figure 1 compares the CS rates between Jordan and other countries. The CS rates in Jordan demonstrated an upward trend between 1983 and 2006: 6.0 (standard deviation 2.2)% in 1983–1986, 6.5 (1.1)% in 1987–1990, 7.1 (0.8)% in 1991–1994, 9.4 (0.7% in 1995-1998, 12.1 (1.0)% in 1999–2002 and 16.1 (2.0)% in 2003–2006. These rates were significantly lower than those in England during the same periods: 10.2 (0.3)% (P = 0.010), 11.0 (0.3)% (P = 0.001), 13.5 (1.1)% (P ≤ 0.001), 16.8 (1.3)% (P ≤ 0.001), 20.8 (1.3)% (P ≤ 0.001) and 23.1 (1.0)% (P ≤ 0.001), respectively. Between 2007–2010 and 2011–2014, the CS rates in Jordan [22.0 (2.3)% and 27.3 (1.5)%] increased to become comparable with those in England [24.5 (0.2)% and 25.4 (0.6)%;

P = 0.067 and 0.074, respectively]. Since 2014, the CS rates in Jordan showed a steep rising trend (2015: 30.4%, 2016: 30.9%, 2017: 31.8%). No comparable data are available from England.

Between 2011 and 2016, CS rates in Lebanon were steady. Between 2011 and 2013, CS rates in Lebanon were significantly lower than in Jordan (P ≤ 0.001): 46.1% (75 635 total births) in 2011, 47.6% in 2012 (77 924 births) and 46.5% in 2013 (87 648 births). During the following 3 years, the CS rate in Lebanon reached a plateau: 45.6% (104 671 total births), 46.7% (109 724 births) and 47.1% (114 025 births) in 2014, 2015 and 2016, respectively. Despite reaching a plateau, the CS rate in Lebanon remained significantly higher compared with that in Jordan. Nonetheless, with the current trend observed in Jordan and lack of data for previous years in Lebanon, it is impossible to predict when and if Jordan will reach the same levels as its neighbouring country.

Caesarean section trends across health sectors in Jordan

Table 2 shows the CS rates between 1982 and 2017 in all Jordanian health sectors.

According to the latest available data, the CS rate in 2015–2017 was 39.1 (1.8)% in private, 40.4 (2.6)% in university, 36.1 (0.2)% in military, and 27.4 (0.7)% in governmental hospitals. During 2013–2017, CS births were significantly higher in private versus governmental (P **Caesarean section indiciations**

The most common CS indications were previous CS (33.6%, ≥ 2 previous CSs: 24%), abnormal presentation (20.3%) and patient request (16% in private hospitals only). The complete list of CS indications for Al-Bashir and Al-Amal Maternity hospitals is shown in Table 3.

Discussion

In this cross-sectional study of 2.8 million births in Jordan between 1982 and 2017 we showed an alarming increase in CS rate. We demonstrated that the CS rates were highest in university and private hospitals and lowest in military and governmental hospitals, and outlined the indications for CS in private and governmental hospitals. The JPFHS (data on 28 234 women from 2002, 2007 and 2012) showed that CS delivery was 2.29 and 2.31 times higher in university compared with private and governmental hospitals (7). Our study represents the most complete effort to date (longest timeline, most recent data, and largest population) to study CS trends in Jordanian health sectors and could guide future healthcare policy and intervention. The latest delivery data for Jordan come from the 2017–2018 JPFHS report that showed that the CS rate for all births was 26%. The CS rate in Jordan in oImprovements in healthcare in Jordan over the study period could partially explain why CS rates were initially significantly lower than in England in 1983–2006 and then comparable in 2007–2014. Based on our findings, the high CS rate in Jordan is partially explained by previous CS, breech deliveries being no longer vaginally delivered, and patient request (the latter in private hospitals only). We also

found that fetal distress is a common CS indication in Jordan. This could be due to the widespread use of fetal monitoring, which is not routinely backed by scalp pH in most Jordanian hospitals. Several studies have previously shown the potential for decreasing CS rates by fetal scalp sampling protocols (13). Additional potential CS causes not addressed in our study include fear of litigation, staff time constraints, and increasing learning opportunities in university hospitals and potential financial gain in university and private hospitals. Researchers have reported a direct relationship between increasing CS rate and the healthcare reimbursement system, indicating that obstetricians and gynaecologists have significant financial motivation to perform CS deliveries without medical necessity (14). However, this requires further investigation.

Table 1 shows the top CS indications in published studies reporting on CS rates in the Eastern Mediterranean Region. There are limitations to comparing the CS rates in Jordan with those in published studies. We highlight that the CS rates reported in our study represent hospital-based rates in Jordan. This varies from population-based CS rates, which take into account home births. Repeated CS, failure of progress of natural labour, and fetal distress were the main CS indications in a Saudi Hospital (15). Similarly, one study showed that previous CS, multiple gestation and single cephalic preterm labour were the largest contributors to the CS rate in Gaza Strip, Palestine (16). The prevalence of emergency CS varied across 6 governmental hospitals in Palestine, ranging from 5.8% to 22.6% among primiparous women and between 4.8% and 13.1% among parous women (17).

In our study, 16% of CSs performed in private hospitals were due to patient request. This is in agreement with other studies showing that the number of CSs performed at the mothers' request is increasing worldwide (18, 19). Cultural beliefs have a strong influence on the decision regarding mode of delivery [20]. In a cross-sectional study in China, 8.8% of 1169 pregnant women at ≥ 28 weeks' gestation stated that they preferred CS delivery. The most commonly mentioned reason was their belief that CS is safer and associated with less pain, compared to vaginal delivery (20). In Ghana, women who have household heads with high levels of education are more likely to have CS delivery (21). However, such an association is not consistent across studies (22). The reasons behind patient request for CS in our study were unavailable. One area requiring future investigation is the satisfaction of Jordanian mothers following CS. At least 1 study has revealed dissatisfaction of the mothers undergoing CS during their stay in the hospital (23). It is unknown whether this is also true in Jordan.

It is the duty of obstetric teams to provide clear information on the benefits and hazards of CS to the mothers (19). Potentially avoidable CS deliveries should be reduced by following guidelines and checklists (24). Vaginal birth following previous CS is safe according to high-quality medical evidence (25), including a study performed in Jordan (26). However, strict adherence to guidelines is essential to reduce maternal and fetal mortality in this situation (27). Establishment

of counselling sessions to eliminate maternal fear about vaginal delivery could be useful.

The limitations of the present study include the lack of complete data across all health sectors during the entire study period, and the small and limited amount of CS indication data, with none available from university and military hospitals. Therefore, our results cannot be generalized to the entire population. Furthermore, we were unable to compare CS rates in Jordan and England after 2014 due to lack of corresponding data from England.

Conclusion

The CS rate in Jordan is on an alarming upward trend. Urgent action is needed to prevent further increase, including provision of clear information, advice, and counselling to pregnant women, as well as strict adherence to high-quality medical guidelines.

Acknowledgement

We would like to thank the Jordanian Ministry of Health (Department of Information and Research), Royal Medical Services (Directorate of Planning and Information), Jordan University Hospital, King Abdullah University Hospital, Islamic Hospital, Al-Amal Maternity Hospital, Speciality Hospital and Ibn Al-Haytham Hospital for providing data for this study.

Funding: None.

Competing interests: None declared.

Tendances des accouchements par césarienne en Jordanie de 1982 à 2017 : analyses rétrospectives des rapports hospitaliers annuels

Résumé

Contexte : Selon l'Organisation mondiale de la Santé, le taux idéal de césarienne est de 10 à 15 %, mais les taux ont augmenté dans le monde entier au cours des dernières décennies. Les données sur les taux de césariennes dans tous les secteurs de la santé jordaniens sur une longue période, y compris les données récentes qui pourraient orienter les futures politiques et

WHO EMRO | Trends in Caesarean section deliveries in Jordan from 1982 to 2017: retrospective analyses

interventions en matière de soins de santé, sont actuellement indisponibles.

Objectifs : Étudier les tendances en matière de césarienne et identifier les indications (médicales et sociodémographiques) associées à cette intervention dans les secteurs de la santé jordaniens.

Méthodes : Les dossiers médicaux de 2,8 millions de naissances survenues en Jordanie entre 1982 et 2017 ont été récupérés et analysés. Les tendances relatives à la césarienne ont été comparées entre les secteurs de la santé (hôpitaux publics, universitaires, privés et militaires) et avec celles de l'Angleterre, du Liban et de la République islamique d'Iran. Les indications de la césarienne ont été établies à partir de données rétrospectives, basées sur 3799 naissances par césarienne, dans deux hôpitaux (publics et privés).

Résultats : En Jordanie, le taux de césariennes a augmenté au cours de la période étudiée, passant de 5,8 % (± 1,9) entre 1982 et 1987 à 31,0 (± 0,7) % entre 2015 et 2017. En Jordanie, le taux de césariennes était initialement plus faible (1983 et 2006), puis il est devenu comparable (2007 et 2014) à celui de l'Angleterre, mais inférieur à celui du Liban (2011 et 2016). Durant la période 2015 et 2017, les taux de césarienne dans les secteurs de la santé en Jordanie étaient les suivants : 40,4 % (± 2,6) [université], 39,1 % (± 1,8) [privé], 36,1 % (± 0,2) [militaire] et 27,4 % (± 0,7) [gouvernemental]. Les indications les plus fréquentes étaient la césarienne antérieure (33,6 %), la présentation anormale (20,3 %) et la demande du patient (16 %).

Conclusions : Le taux de césariennes en Jordanie connaît une tendance à la hausse alarmante. Des mesures urgentes sont nécessaires pour empêcher une nouvelle augmentation du taux de césarienne, y compris la fourniture d'informations claires, de conseils aux femmes enceintes, ainsi que le respect strict de directives médicales de haute qualité.

اتجاهات الولادة بالعمليات القيصرية في الأردن خلال الفترة **1982 - 2017:**
تحليلات استرجاعية لتقارير المستشفيات السنوية

عبد الفتاح سالم

الخلاصة

8 / 13

[illegible] [illegible] [illegible] [

effects of caesarean section on the health of women and children. Lancet. 2018 Oct 13;392(10155):1349–57. 10.1016/S0140-6736(18)31930-5 PMID: 30322585

2. Wainstock T, Walfisch A, Shoham-Vardi I, Segal I, Sergienko R, Landau D, et al. term elective cesarean delivery and offspring infectious morbidity - a population based cohort study. Pediatr Infect Dis J. 2019 Feb;38(2):176–80. http://dx.doi.org/10.1097/INF.0000000000002197 PMID:30256312

3. Mylonas I, Friese K. Indications for and risks of elective cesarean section. Dtsch Arztebl Int. 2015 Jul 20;112(29–30):489–95. http://dx.doi.org/10.3238/arztebl.2015.0489 PMID: 2624925

4. Betrán AP, Torloni MR, Zhang J-J, Gülmezoglu A, WHO Working Group on Caesarean Section. WHO statement on caesarean section rates. BJOG. 2016 Apr;123(5):667–70. http://dx.doi.org/10.1111/1471-0528.13526 PMID:26681211

5. Khawaja M, Choueiry N, Jurdi R. Hospital-based caesarean section in the Arab region: an overview. East Mediterr Health J. 2009 Mar–Apr;15(2):458–69. PMID:19554995

6. Boerma T, Ronsmans C, Melesse DY, Barros AJD, Barros FC, Juan L, et al. Global epidemiology of use of and disparities in caesarean sections. Lancet. 2019 Jul 6;392(10155):1341–8. http://dx.doi.org/10.1016/S0140-6736(19)30717-2 PMID:31282354

7. Al Rifai R: Rising cesarean deliveries among apparently low-risk mothers at university teaching hospitals in Jordan: analysis of population survey data, 2002-2012. Glob Health Sci Pract. 2014 May;2(2):195–209. http://dx.doi.org/10.9745/GHSP-D-14-00027 PMID:25276577

8. Jordan Population and Family Health Survey 2017–18. Amman: Department of Statistics; 2019 (https://dhsprogram.com/pubs/pdf/FR346/FR346.pdf, accessed 8 June 2020).

9. Saleh SS: The changing trend in the rate of caesarean section at a teaching hospital. J

Obstet Gynaecol. 2003 Mar;23(2):146–9. http://dx.doi.org/10.1080/0144361030000074664 PMID:12745557

10. Statistical bulletin 2011–2016 [website]. Republic of Lebanon Ministry of Public Health (https://www.moph.gov.lb/en/Pages/8/327/statistical-bulletins, accessed 8 June 2020).

11. Annual statistical reports 2005–2018 [website]. Jordan Ministry of Health (https://www.moh.gov.jo/Pages/viewpage.aspx?pageID=185, accessed 8 June 2020).

12. Royal Medical Services. Annual statistics data. 1982–2016 (personal communication) .

13. Derom R, Patel N, Thiery M. Implications of increasing rates of caesarean section. In: Progress in Obstetrics and Gynaecology. London: Churchill Livingstone; 1987:176–91.

14. Tadevosyan M, Ghazaryan A, Harutyunyan A, Petrosyan V, Atherly A, Hekimian K. Factors contributing to rapidly increasing rates of cesarean section in Armenia: a partially mixed concurrent quantitative-qualitative equal status study. BMC Pregnancy Childbirth 2019;19,2. https://doi.org/10.1186/s12884-018-2158-6

15. Elhag BI, Milaat WA, Taylouni ER. An audit of caesarean section among Saudi females in Jeddah, Saudi Arabia. J Egypt Public Health Assoc. 1994;69(1–2):1–17. PMID:7775890

16. Zimmo MW, Laine K, Hassan S, Bottcher B, Fosse E, Ali-Masri H, et al. Caesarean section in Palestine using the Robson Ten Group Classification System: a population-based birth cohort study. BMJ Open 2018;8(10):e022875. http://dx.doi.org/10.1136/bmjopen-2018-022875 PMID:30361403

17. Zimmo M, Laine K, Hassan S, Fosse E, Lieng M, Ali-Masri H, et al. Differences in rates and odds for emergency caesarean section in six Palestinian hospitals: a population-based birth cohort study. BMJ Open 2018 Mar 2;8(3):e019509.

http://dx.doi.org/10.1136/bmjopen-2017-019509 PMID:29500211

18. Mariani GL, Vain NE. The rising incidence and impact of non-medically indicated pre-labour cesarean section in Latin America. Semin Fetal Neonatal Med. 2019 Feb;24(1):11–7. http://dx.doi.org/10.1016/j.siny.2018.09.002 PMID:30291045

19. Sharpe AN, Waring GJ, Rees J, McGarry K, Hinshaw K. Caesarean section at maternal request--the differing views of patients and healthcare professionals: a questionnaire based study. Eur J Obstet Gynecol Reprod Biol. 2015 Sep;192:54–60. http://dx.doi.org/10.1016/j.ejogrb.2015.06.014 PMID:26151240

20. Liang H, Fan Y, Zhang N, Chongsuvivatwong V, Wang Q, Gong J, et al. Women's cesarean section preferences and influencing factors in relation to China's two-child policy: a cross-sectional study. Patient Prefer Adherence 2018 Oct 11;12:2093–101. http://d.doi.org/10.2147/PPA.S171533 PMID:30349203

21. Manyeh AK, Amu A, Akpakli DE, Williams J, Gyapong M. Socioeconomic and demographic factors associated with caesarean section delivery in Southern Ghana: evidence from INDEPTH Network member site. BMC Pregnancy Childbirth 2018 Oct 16;18(1):405. http://dx.doi.org/10.1186/s12884-018-2039-z PMID:30326869

22. Khawaja M, Al-Nsour M. Trends in the prevalence and determinants of caesarean section delivery in Jordan: evidence from three demographic and health surveys, 1990--2002. World Health Popul. 2007 Dec;9(4):17–28. http://dx.doi.org/10.12927/whp.2007.19395 PMID:18567949

23. Tatar M, Gunalp S, Somunoglu S, Demirol A. Women's perceptions of caesarean section: reflections from a Turkish teaching hospital. Soc Sci Med. (1982) 2000 May;50(9):1227–33. http://dx.doi.org/10.1016/s0277-9536(99)00315-9 PMID:10728843

24. Toumi M, Lesieur E, Haumonte JB, Blanc J, D'Ercole C, Bretelle F. Primary cesarean delivery rate: Potential impact of a checklist. J Gynecol Obstet Hum Reprod 2018

Nov;47(9):419–24 http://dx.doi.org/10.1016/j.jogoh.2018.08.006 PMID:30149208

25. Lindblad Wollmann C, Ahlberg M, Saltvedt S, Johansson K, Elvander C, Stephansson O. Risk of repeat cesarean delivery in women undergoing trial of labor: a population-based cohort study. Acta Obstet Gynecol Scand 2018 Dec;97(12):1524–9. http://dx.doi.org/10.1111/aogs.13447 PMID:30132803

26. Abu-Heija AT. Vaginal birth after one previous caesarean section: a Jordanian experience. J Obstet Gynaecol (Tokyo, Japan) 1995 Feb;21(1):9–12. http://dx.doi.og/10.1111/j.1447-0756.1995.tb00890.x PMID:8591117

27. Mu Y, Li X, Zhu J, Liu Z, Li M, Deng K, et al. Prior caesarean section and likelihood of vaginal birth, 2012-2016, China. Bull World Health Organ. 2018 Aug 1;96(8):548–57. http://dx.doi.org/10.2471/BLT.17.206433 PMID:30104795

Thursday 11th of July 2024 10:19:23 AM