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PERSPECTIVE

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Global increased cesarean section rates and public health implications: A call to action

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Abstract

Over the years; global caesarian section (CS) rates have significantly increased from around 7% in 1990 to 21% today surpassing the ideal acceptable CS rate which is around 10%–15% according to the WHO. However, currently, not all CS are done for medical reasons with rapidly increasing rate of nonmedically indicated CS and the so-called "caesarian on maternal request." These trends are projected to continue increasing over this current decade where both unmet needs and overuse are expected to coexist with the projected global rate of 29% by 2030. CS reduces both maternal and neonatal morbidity and mortality significantly when it is done under proper indications while at the same time, it can be of harm to the mother and the child when performed contrary. The later exposes both the mother and the baby to a number of unnecessary short and long-term complications and increase the chances of developing different noncommunicable diseases and immune-related conditions among babies later in life. The implications of lowering SC rate will ultimately lower healthcare expenditures. This challenge can be addressed by several ways including provision of intensive public health education regarding public health implications of increased CS rate. Assisted vaginal delivery approaches like the use of vacuum and forceps and other methods should be considered and encouraged during delivery as long as their indications for implementation are met. Conducting frequent external review and audits to the health facilities and providing feedback regarding the rates of CS deliveries can help to keep in check the rising CS trends as well as identifying the settings with unmet surgical needs. Moreover, the public especially expectant mothers during clinic visits and clinicians should be educated and be informed on the WHO recommendations on nonclinical interventions towards reduction of unnecessary CS procedures.

KEYWORDS

caesarian section, global health, healthcare expenditures, maternal and child health

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1 | INTRODUCTION

Caesarian section (CS) is a surgical procedure performed to facilitate delivery of the baby through an incision made on the mother's abdomen. Ideally, it is recommended in situations where normal vaginal delivery (VD) can pose risks to either the mother, baby, or both.[1,2] These situations include prolonged or obstructed labor, fetal distress, elevated blood pressure or glucose, multiple pregnancies, or abnormal presentation/position of the baby among others.[1,3] For many years, this surgical procedure has been done on account of these factors either scheduled or on emergency basis with proven advantages. CS reduces both maternal and neonatal morbidity and mortality significantly when it is done under proper indications while at the same time, it can be of harm to the mother and the child when performed contrary.[4,5]

However, currently, not all CS are done for medical reasons with rapidly increasing rate of non-medically indicated CS and the so-called "caesarian on maternal request."[3,6–8] There are several nonmedical reasons which have been outlined to contribute to this rapid rise in CS rates. They include increased maternal request due to presumed anxiety or fear of pain from VD or desire to have a baby on a specific day,[9] physician's preference or convenience and financial incentives for physicians or hospitals with higher CS rates compared with VD explaining the higher CS rates in private than in public hospitals.[10–14] Different social-cultural and religious reasons have been found to both influence and discourage caesarian on maternal request in some societies.[15–17] Moreover, fear of legal consequences and litigation secondary to VD adverse outcomes have been found to be among the major and significant factors which influence clinicians' decision to perform CS as a defense which in turn increase CS deliveries.[15,18–21]

Over the years, global CS rates have significantly increased from around 7% in 1990 to 21% today surpassing the ideal acceptable CS rate which is around 10%–15% according to the WHO.[1,6] These trends are projected to continue increasing over the current decade where both unmet needs and overuse are expected to coexist with the projected global rate of 29% by 2030.[1,22] As a result, the women and children are exposed to unnecessary short- and long-term risks if the surgeries are done with no medical indication with concomitant unmet demands in some settings. There is a need to emphasize on the effects of CS to the public as well as healthcare professionals so as to encourage on the effective, ethical and justifiable conduction of this surgical procedure. This article aims at shading light to the public and relevant stakeholders on health implications of CS and hence raise awareness particularly among healthcare professionals and the public generally.

2 | PUBLIC HEALTH IMPLICATIONS OF CESAREAN SECTION

Despite its proven benefits in the reduction of maternal and infant mortality when done with medical indication, CS is not without risks to the mother and infant, therefore a cautious medical evaluation is needed for justification of the procedure keeping in account the consequences.[23] Many years back, the WHO recommended an acceptable CS rate of 15% above which there were no proven advantages of decreased maternal and neonatal mortality and morbidity over normal VD.[1,6] In fact, studies have shown a significant increase in the maternal and neonatal mortality and morbidity with higher CS rates due to the short- and long-term effects it poses to the mother, baby, and the subsequent pregnancies risks.[3,24,25] A number of epidemiological studies have been conducted to evaluate the impact of CS on maternal and infants' health.

Increased CS rate beyond the expected values is thought to have a significant contributory role in the rapidly increasing frequency of noncommunicable diseases (NCDs) worldwide. Although the link to these diseases remain controversial, epidemiological studies have stipulated that caesarian delivery is associated with higher risk of developing NCDs like asthma, food allergy, type 1 diabetes, and obesity.[4] It is hypothesized that babies born by CS have altered neonatal physiology on account of different hormonal, physical, bacterial, and medical exposures compared with naturally occurring VD.[26,27] Moreover, it has been shown that babies born under normal VD will acquire variety of microorganisms responsible for boosting up and preparing their immunity while for the babies born by CS will acquire less diversified microorganisms similar to the maternal skin and hospital settings with increased risk of developing infections.[28] Several studies have confirmed that the mode of delivery is the major determinant of neonatal gut microbiome establishment and reported an increased risk of dysbiosis of gut microbiota in CS.[29,30] These exposures have been postulated to affect greatly different infantile health outcomes. They bring about altered immunity, increased likelihood of respiratory distress, metabolic and immune diseases among the babies born by CS compared with those born by normal VD.[26,27]

In the past three decades, childhood obesity and overweight prevalence have drastically increased globally at a quicker rate than in adult.[31–34] This is more predominant in developed nations. It is during the same period, the rates of CS have increased in those nations[34]; a relationship which is not a mere coincidence. Childhood overweight or obesity is undeniably a risk factor for adult obesity and its related comorbidities, the prevalence of which is also very high globally.[33,35] On the other hand, CS rates in lower and middle-income countries (LMICs) are not as high as in developed nations with also a big gap in the prevalence of childhood obesity between the two extremes despite also being high in LMICs. This in part, shows an observed association between CS delivery and childhood overweight/obesity. Several analytical and comparison epidemiological studies have established a significant positive association between CS delivery and the incidence of childhood-onset overweight or obesity.[34,36–39] Childhood obesity has also been found to be independently associated with adult morbidity and mortality independent of adult BMI.[33] Nevertheless, CS is associated with poor breastfeeding practices. Women undergoing CS are likely to have delayed breastfeeding, poor milk production, and early weaning.[40–42] This situation is alarming for newborn nutrition and future health outcomes.

Considering the mother's health, CS delivery compromises maternal health and has been linked to increased maternal mortality, early complications, and increased risk of complications in subsequent pregnancies. Some studies show that women who give birth via CS have an increased risk of complications like hemorrhage resulting to hysterectomy and transfusion, major infection, shock and may suffer uterine rupture and placenta previa in subsequent pregnancies.[3,43]

CS mode of delivery has also been linked with the development of endometriosis later in life.[44,45] Globally, the prevalence of endometriosis among reproductive age women and girls is 10%,[46] despite the fact that the specific contribution of CS to this magnitude is unknown. Moreover, several studies have found significant association of endometriosis and an increased likelihood of developing various cancers including ovarian cancer, endometrial, and breast cancer.[47,48] Other than direct health implications, CS are associated with increased health expenditures.[49,50] With the growing burden of health system financing, increased CS rate is likely to exert extra pressure to the health system that may be detrimental in LMICs.[49–51]

3 | DISCUSSION

Studies have clearly shown the high rates of CS deliveries in many countries and the trends are expected to continue to rise with time. With this rise, the mothers and children will undeniably suffer from the resulting consequences. To a great extent, this increase is due to surgeries which are not medically indicated. All these being a result of CS on maternal request and mostly due to physician's preference or convenience which is also influenced by a number of factors like financial incentives accompanying CS deliveries compared to vaginal deliveries.

CS have significant public health implications both to the mother and child as outlined. They range from short-term health outcomes like hemorrhage, infection, shock, and uterine rupture to the mother as well as long-term risks to the child of developing childhood overweight/obesity, asthma, allergies, and NCDs. This portrays how serious the consequences of caesarian delivery can be on health outcomes of the mothers and children. With the rising prevalence of NCDs globally, this is anticipated to be among the major public health threats in the future unless serious actions are taken.

From literatures, it is vivid that physicians are the key players and stakeholders who can be involved in the strategies to encounter this problem. They play a great role in influencing the decisions of the mothers regarding whether to undergo surgery or not. However, they also potentially benefit from the surgeries compared with normal vaginal deliveries which generally establish a conflict of interest between the main stakeholders.

Modern societies have perceived CS as a normal delivery mode.[52] Some mothers who made maternal requests for CS reported believing that CS is a pain-free and safe delivery mode to both the mother and the baby and friends' advice as among the reasons which influenced their decisions.[53] This might have increased the maternal requests to this mode of delivery hence increased rate of CS. Despite the fact that the World Health Organization (WHO) has provided recommendations on nonclinical interventions to reduce unnecessary CS since 2018, still the public and clinicians might not be aware with them. From a public health perspective, it is important to have a third-eye view on the increasing rates of CS delivery and all efforts should be directed at slowing it down as a long-term solution to the burden of NCDs and other related complications. The implications of lowering CS rates will ultimately lower healthcare expenditures.

4 | RECOMMENDATION AND CONCLUSION

It is undeniable fact that with this rise in CS delivery rates, the next generation will extremely suffer the resulting consequences. It has been observed that the increase in these rates is more predominant with surgeries that are not medically indicated with either subjective or objective preferences. It occurs that most mothers are subjected to delivery via CS without knowing the risks which accompany this mode of delivery. Therefore, before any CS (especially caesarian on maternal request), the health professionals should be obliged to explain all the short- and long-term consequences both to the mother and child as well as the impacts they can pose to the next generation especially during maternal requests circumstances. This will directly influence more rational decisions from the mothers on whether or not to undertake CS delivery.

However, this recommendation is subjected to conflicts of interest between the health professionals who are deemed to earn a lot with CS deliveries compared with vaginal deliveries. This is more prominent in private health facilities explained by their higher rates compared with public institutions. The costs are also higher with CS on maternal request hence the health professionals face a challenge in disclosing entire details against the CS which will consequently decrease the rates and in turn facilities' income. This challenge can be addressed through provision of intensive public health education regarding these public health implications to facilitate more informed decisions from the maternal side when choosing the mode of delivery so as to reduce unnecessary CS deliveries.

Furthermore, although some of them have been regarded as out of date practice in the modern obstetrics practice in most settings, there should be revival of methods which support VD such as vaginal birth after cesarean, external and internal cephalic version if settings allow, vaginal breech delivery and assisted VD approaches like the use of vacuum and forceps. These methods should be considered and encouraged during delivery as long as their indications for implementation are met in clinical settings. Birth attendants should be trained and equipped with both essential skills and tools to execute such methods when necessary.

Conducting frequent external reviews and audits to the health facilities and providing the feedback regarding the rates of caesarian deliveries can help to keep in check the rising CS trends as well as identify the settings with unmet surgical needs. Moreover, the public

especially expectant mothers during clinic visits and clinicians should be educated and be informed on the WHO recommendations on nonclinical interventions towards the reduction of unnecessary CS procedures.

AUTHOR CONTRIBUTIONS

Cornel M. Angolile: Data curation; writing—original draft. **Baraka L. Max**: Data curation; writing—original draft. **Justice Mushemba**: Data curation; writing—review and editing. **Harold L. Mashauri**: Conceptualization; data curation; project administration; supervision; validation; writing—review and editing. All authors have read and approved the final version of the manuscript.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The Corresponding author had full access to all of the data in this study and takes complete responsibility for the integrity of the data and the accuracy of the data analysis.

TRANSPARENCY STATEMENT

The lead author Harold L. Mashauri affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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REFERENCES

1. WHO. Caesarean section rates continue to rise, amid growing inequalities in access; 2021. https://www.who.int/news/item/16-06-2021-caesarean-section-rates-continue-to-rise-amid-growing-inequalities-in-access
2. Rahman M, Khan N, Rahman A, Alam M, Khan A. Long-term effects of caesarean delivery on health and behavioural outcomes of the mother and child in Bangladesh. *J Health Popul Nutr*. 2022;41(1):45.
3. Keag OE, Norman JE, Stock SJ. Long-term risks and benefits associated with cesarean delivery for mother, baby, and subsequent pregnancies: systematic review and meta-analysis. *PLoS Med*. 2018;15(1):e1002494.
4. Blustein J, Liu J. Time to consider the risks of caesarean delivery for long term child health. *BMJ*. 2015;350:h2410. https://www.bmj.com/content/350/bmj.h2410
5. Mylonas I, Friese K. Indications for and risks of elective cesarean section. *Dtsch Arztebl Int*. 2015;112(29–30):489-495.
6. WHO. WHO statement on caesarean section rates; 2015. https://www.who.int/publications/i/item/WHO-RHR-15.02
7. Mancuso A, De Vivo A, Fanara G, et al. Caesarean section on request: are there loco-regional factors influencing maternal choice? An Italian experience. *J Obstet Gynaecol*. 2008;28(4):382-385.
8. Plante LA. Public health implications of cesarean on demand. *Obstet Gynecol Surv*. 2006;61(12):807-815.
9. Christilaw JE. Cesarean section by choice: constructing a reproductive rights framework for the debate. *Int J Gynecol Obstet*. 2006;94(3):262-268.
10. Potter JE, Berquo E, Perpetuo IHO, et al. Unwanted caesarean sections among public and private patients in Brazil: prospective study. *BMJ*. 2001;323(7322):1155-1158.
11. Rosenberg KR, Trevathan WR. Evolutionary perspectives on cesarean section. *Evol Med Public Health*. 2018;2018(1):67-81.
12. Grant D. Physician financial incentives and cesarean delivery: new conclusions from the healthcare cost and utilization project. *J Health Econ*. 2009;28(1):244-250.
13. Main EK, Morton CH, Melsop K, Hopkins D, Giuliani G, Gould JB. Creating a public agenda for maternity safety and quality in cesarean delivery. *Obstet Gynecol*. 2012;120(5):1194-1198.
14. Mi J, Liu F. Rate of caesarean section is alarming in China. *Lancet*. 2014;383(9927):1463-1464.
15. Shirzad M, Shakibazadeh E, Hajimiri K, et al. Prevalence of and reasons for women's, family members', and health professionals' preferences for cesarean section in Iran: a mixed-methods systematic review. *Reprod Health*. 2021;18(1):1-30. https://reproductive-health-journal.biomedcentral.com/articles/10.1186/s12978-020-01047-x
16. Roudsari RL, Zakerihamidi M, Khoei EM. Socio-cultural beliefs, values and traditions regarding women's preferred mode of birth in the north of Iran. *Int J Community Based Nurs Midwifery*. 2015;3(3):165-176.
17. Boerma T, Ronsmans C, Melesse DY, et al. Global epidemiology of use of and disparities in caesarean sections. *Lancet*. 2018;392(10155):1341-1348. http://www.thelancet.com/article/S0140673618319287/fulltext
18. Panda S, Begley C, Daly D. Clinicians' views of factors influencing decision-making for CS for first-time mothers—a qualitative descriptive study. *PLoS One*. 2022;17(12):e0279403. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0279403
19. Minkoff H. Fear of litigation and cesarean section rates. *Semin Perinatol*. 2012;36(5):390-394.
20. Elaraby S, Altieri E, Downe S, et al. Behavioural factors associated with fear of litigation as a driver for the increased use of caesarean sections: a scoping review. *BMJ Open*. 2023;13(4):e070454. https://bmjopen.bmj.com/content/13/4/e070454
21. Ionescu CA, Dimitriu M, Poenaru E, et al. Defensive caesarean section: a reality and a recommended health care improvement for Romanian obstetrics. *J Eval Clin Pract*. 2019;25(1):111-116.
22. Betran AP, Ye J, Moller AB, Souza JP, Zhang J. Trends and projections of caesarean section rates: global and regional estimates. *BMJ Glob Heal*. 2021;6(6):e005671.
23. Magne F, Puchi Silva A, Carvajal B, Gotteland M. The elevated rate of cesarean section and its contribution to non-communicable chronic diseases in Latin America: the growing involvement of the microbiota. *Front Pediatr*. 2017;5:192.
24. Ye J, Zhang J, Mikolajczyk R, Torloni M, Gülmezoglu A, Betran A. Association between rates of caesarean section and maternal and neonatal mortality in the 21st century: a worldwide population-based ecological study with longitudinal data. *BJOG Int J Obstet Gynaecol*. 2016;123(5):745-753.
25. Villar J, Valladares E, Wojdyla D, et al. Caesarean delivery rates and pregnancy outcomes: the 2005 WHO global survey on maternal and perinatal health in Latin America. *Lancet*. 2006;367(9525):1819-1829.
26. Sandall J, Tribe RM, Avery L, et al. Short-term and long-term effects of caesarean section on the health of women and children. *Lancet*. 2018;Oct 392(10155):1349-1357.

27. Frye RE, Sergi C, Godman B. The elevated rate of cesarean section and its contribution to non-communicable chronic diseases in Latin America: the growing involvement of the microbiota. *Front Pediatr*. 2017;5:192.
28. Pinto Coelho GD, Arial Ayres LF, Barreto DS, Henriques BD, Cardoso Prado MRM, Dos Passos CM. Acquisition of microbiota according to the type of birth: an integrative review. *Rev Lat Am Enfermagem*. 2021;29:e3446.
29. Kim G, Bae J, Kim MJ, et al. Delayed establishment of gut microbiota in infants delivered by cesarean section. *Front Microbiol*. 2020;11:2099.
30. Zhang C, Li L, Jin B, et al. The effects of delivery mode on the gut microbiota and health: state of art. *Front Microbiol*. 2021;12:4084.
31. Sanyaolu A, Okorie C, Qi X, Locke J, Rehman S. Childhood and adolescent obesity in the United States: a public health concern. *Glob Pediatr Health*. 2019;6:2333794X1989130.
32. Han JC, Lawlor DA, Kimm SY. Childhood obesity. *Lancet*. 2010;375(9727):1737-1748.
33. Lakshman R, Elks CE, Ong KK. Childhood obesity. *Circulation*. 2012;126:1770-1779.
34. Rutayisire E, Wu X, Huang K, Tao S, Chen Y, Tao F. Cesarean section may increase the risk of both overweight and obesity in preschool children. *BMC Pregnancy Childbirth*. 2016;16(1):338.
35. Epstein LH, Wing RR, Valoski A. Childhood obesity. *Pediatr Clin North Am*. 1985;32(2):363-379.
36. Chu S, Zhang Y, Jiang Y, et al. Cesarean section and risks of overweight and obesity in school-aged children: a population-based study. *Q J Med*. 2018;111(12):859-865.
37. Goldani MZ, Barbieri MA, Da Silva AAM, Gutierrez MRP, Bettiol H, Goldani HAS. Cesarean section and increased body mass index in school children: two cohort studies from distinct socioeconomic background areas in Brazil. *Nutr J*. 2013;12(1):104.
38. Wang L, Alamian A, Southerland J, Wang K, Anderson J, Stevens M. Cesarean section and the risk of overweight in grade 6 children. *Eur J Pediatr*. 2013;172(10):1341-1347.
39. Zhang S, Qin X, Li P, Huang K. Effect of elective cesarean section on children's obesity from birth to adolescence: a systematic review and meta-analysis. *Front Pediatr*. 2022;9:793400.
40. Hobbs AJ, Mannion CA, Mcdonald SW, Brockway M, Tough SC. The impact of caesarean section on breastfeeding initiation, duration and difficulties in the first four months postpartum. *BMC Pregnancy Childbirth*. 2016;16:90.
41. Sodeno M, Tappis H, Burnham G, Ververs M. Associations between caesarean births and breastfeeding in the Middle East: a scoping review. *Eastern Mediterr Health J*. 2021;27(9):931-940.
42. Yisma E, Mol BW, Lynch JW, Smithers LG. Impact of caesarean section on breastfeeding indicators: within-country and meta-analyses of nationally representative data from 33 countries in sub-Saharan Africa. *BMJ open*. 2019;9:e027497.
43. Liu S, Liston RM, Joseph KS, Heaman M, Sauve R, Kramer MS. Maternal mortality and severe morbidity associated with low-risk planned cesarean delivery versus planned vaginal delivery at term. *Can Med Assoc J*. 2007;176(4):455-460.
44. Ananias P, Luenam K, Melo JP, et al. Cesarean section: a potential and forgotten risk for abdominal wall endometriosis. *Cureus*. 2021;13(8):17410.
45. Zhang P, Sun Y, Zhang C, et al. Cesarean scar endometriosis: presentation of 198 cases and literature review. *BMC Womens Health [Internet]*. 2019;19(1):14. https://bmcwomenshealth.biomedcentral.com/articles/10.1186/s12905-019-0711-8
46. World Health Organization. Endometriosis [Internet]. 2021. Accessed March 13, 2023. https://www.who.int/news-room/fact-sheets/detail/endometriosis
47. Brilhante AV, Augusto KL, Portela MC, et al. Endometriosis and ovarian cancer: an integrative review (Endometriosis and Ovarian Cancer). *Asian Pac J Cancer Prev*. 2017;18(1):11-16.
48. Ye J, Peng H, Huang X, Qi X. The association between endometriosis and risk of endometrial cancer and breast cancer: a meta-analysis. *BMC Womens Health*. 2022;22(1):1-21. https://bmcwomenshealth.biomedcentral.com/articles/10.1186/s12905-022-02028-x
49. Petrou S, Henderson J, Glazener C. Economic aspects of caesarean section and alternative modes of delivery. *Best Pract Res Clin Obstet Gynaecol*. 2001;15(1):145-163.
50. Rifat M, Id H, Rahman MM, et al. Ever-increasing Caesarean section and its economic burden in Bangladesh. *PloS One*. 2018;13:e0208623.
51. Binyaruka P, Mori AT. Economic consequences of caesarean section delivery: evidence from a household survey in Tanzania. *BMC Health Serv Res*. 2021;21:1367.
52. Gallagher L, Smith V, Carroll M, Hannon K, Lawler D, Begley C. What would reduce caesarean section rates?—Views from pregnant women and clinicians in Ireland. *PLoS One*. 2022;17(4):e0267465. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0267465
53. Konlan KD, Baku EK, Japiong M, Dodam Konlan K, Amoah RM. Reasons for women's choice of elective caesarian section in Duayaw Nkwanta Hospital. *J Pregnancy*. 2019;2019:2320743.

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