Factors Influencing Cesarean - Section Rates - A Narrative Review from Pakistan

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Abstract

The significant increase in the rate of cesarean section is a major public health issue. The World Health Organization recommends C-section rates not to be greater than 10% and not lower than 5% as both the indicated limits can adversely affect maternal and newborn health. The rate of C-section deliveries is 22% according to recent Pakistan demographics and Health Survey of 2017-2018. This study contributes to the existing literature by examining the factors influencing high C-section rates in Pakistan. A narrative review of published literature between 2000 to 2020, on "factors influencing C-section rates in Pakistan" was done. The findings highlighted five factors that primarily influence utilization of C-section which include: 1. Accessibility to utilize C-section, 2. Association of C-section rates with socioeconomic profile, 3. Elective C-section, 4. Medical conditions as a cause of C-section, 5. C-section as a source of business. Pakistan like other Low middle income countries (LMICs) is facing the increased disease burden on its week and fragile health system. The over utilization of C-section rates has imposed additional burden on the health care system of Pakistan as well as increased economic and health resource liability on maternal care.

Key words: C-section, public health, utilization of C-section, socioeconomic profile, source of business, medical conditions.

Introduction

The significant increase in the rate of cesarean section is a major public health issue.[1] Cesarean section (C-section) deliveries are recognized for dealing with complications.[2] Over the years, medical technology has supported to deal with childbirth complications which resulted in an increase in rates of cesarean section deliveries.[1] The medically unindicted cesarean section surgeries increase the risks of health conditions to the mother and the newborn. The risks of complications related to C-section surgeries include risks of blood transfusion reactions, anesthesia complications, respiratory conditions and infections.[2]

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Authors Contribution

BK conceptualized the project and did the writing of manuscript. FBM & KV also did the writing and review the manuscript.

Therefore, decreasing the rate of C-section deliveries is one of the health system goals to reduce healthcare burden on the system.[3]

The World Health Organization recommends C-section rates not to be greater than 10% and not lower than 5% as both the indicated limits those can be responsible for adverse maternal and newborn health results.[4] Few countries in Europe have reduced their C-section rates over time. Finland, Iceland, Norway have significantly reduced their C-section rates to around 15%.[5]

Pakistan has an underprivileged healthcare system where public health services are utilized by those people who cannot afford out of pocket payment for health services.[6] Public healthcare facilities that provides management of critical health issues are located mainly in towns and cities. Private health sector operates on fee-for-service system and hence is approached mainly by people who can pay for the cost of health care services.[7] Health care indicators of the country are poor. Pakistan spends less than 1% of its gross domestic product (GDP) on health care.[6] Despite of the burden of health on the weak health system of Pakistan, the rate of C-section in Pakistan is higher than the recommended rate.[7]

Pakistan is a resource poor country. The availability of medical practitioner who can perform

C-section, availability of antibiotics, sterile equipment, laboratories, operating rooms and hospital beds is a challenge6. C-section is a surgical procedure and it requires availability of all these resources to provide care to the mother after her delivery.[6] Spending these resources for utilizing C-section for insignificant reason can increase burden on the healthcare system of Pakistan.

Regardless of these aspects, the rate of C-section deliveries is 22% according to recent Pakistan demographics and Health Survey of 2017-2018.[8] This paper contributes to the existing literature by examining the factors influencing high C-section rates in Pakistan to inform policy makers, health managers and health care providers about equitable and focused strategies to improve increasing rates of C-sections.

Methodology

A narrative review of published literature on factors influencing C-section rates in Pakistan was performed. Inclusion criteria included MeSH terms "cesarean-section" AND "maternal health conditions", "fetal health condition", "maternal infections", "cord prolapse", "elective", "emergency". PubMed, MEDLINE, google scholar and Embase search engines were sought with the above stated criteria. All articles published between 2000 to 2020 were reviewed. All the available best evidences such as case series, randomized and non-randomized trials were included.

Results

The findings suggest five factors that influence utilization of C-section. These factors were divided into five categories.

1. Accessibility to utilize C-section
2. Association of C-section rates with socioeconomic profile
3. Elective C-section
4. Medical conditions as a cause of C-sections
5. C-section as a source of business

Accessibility to utilize C-section

The rates of C-section are higher in urban areas of Pakistan as compared in rural areas. C-section rates in urban areas estimated to be 25.6% and 11.5% in rural areas according to PDHS survey of 2017-18.[8] The availability of emergency obstetrics care services is a problem in rural areas of Pakistan.[8] The inequitable obstetrics services is one of the determinants of underuse in rural areas and overuse of C-section in urban areas of Pakistan.[9]

Secondly, the frontline healthcare providers for pregnancy and childbirth in rural areas are mainly TBAs, CMWs and LHVs working in their communities. This depicts that the expertise of these community based health cadres to perform normal vaginal deliveries in communities that influence the rates of low utilization of C-section.[10] On the other hand, people in urban areas mostly approach medical professionals at facilities like obstetricians and specialized medical practitioners. The availability and approach of people to medical practitioners in urban areas of Pakistan is one of the factor that influence high C-section rates.[11] Utilization of C-section has a strong association with demographic profile. The rates of C-section in Baluchistan are comparatively lower than other provinces of Pakistan.[9] Baluchistan is the most underdeveloped province with very low health care resources and facilities. Moreover, the long distances from the healthcare facilities and mountainous settings hinder access and approach of people to health care facilities in Baluchistan.[9]

Association of C-section rates with socioeconomic profile

Studies shows that education and socioeconomic status influence rate of C-section.[12] The high education and wealth index of women is highly associated with C-section rates because of the improved rates of visits for antenatal care of educated and high income women during their pregnancy.[9] Antenatal care visits lead to identification of complication during pregnancy and consequently utilization of C-section surgeries to decrease complication during childbirth. Education has a strong association with utilization of C-section rate as it provides autonomy and decision making power to the women.[12] The cost of C-section surgeries are relatively higher than the normal vaginal deliveries.[13] The existing data have recognized poverty as an essential factor responsible for the low utilization of C-section in women from low-income class group.

Elective C-section

Cesarean section can be classified into two categories as emergency C-section and elective or planned C-section deliveries.[14] Emergency C-section is carried out in case of urgent need, in order to save the life of mother or fetus.[15] However, elective or planned C-section is performed at a variety of indication and decisions. The elective C-section is opted for the reasons including breech presentation of the baby, twin pregnancies, birth canal infections, placenta previa, prevention of shoulder dystocia in newborns and history of C-section surgeries in previous pregnancies.[15]

Medical conditions as a cause of C-sections

There are a number of health conditions which require C-section including maternal health problems like cardiomyopathy, other cardiac problems, neurological and brain problems, active genital herpes infection at the time of delivery, large fibroid blocking the birth canal and prolapsed umbilical cord.[16] Moreover, there are certain fetal conditions that commend for C-section surgeries. Those conditions include changes in fetal heartbeat, fetal distress, and cord around the neck.[17]

C-sections as a source of business

The rates of C-section deliveries needs to be limited within recommended rates for medical and economic reasons.[17] According to Health Economics and Financing viewpoint, patient-provider relationship is complex where patient has more information than the provider about his health condition and the provider has more knowledge about the treatment option than the provider.[18] Hence, this complex phenomenon is most of the times misused by both providers and patients to hide their information. Therefore, patients consider doctors to be their decision maker in terms of treatment options.[19] This is therefore claimed that doctors misuse the option of C-section deliveries to generate high revenue as the cost of C-section delivery is two to three times more than normal vaginal deliveries.[9]

Discussion

The purpose of this review was to identify various factors that influence the rate of utilization of C-section in Pakistan. The findings reflect that there is a remarkable increase in C-section rates over time as evident by PDHS 2017-2018 that is greater than 25% in comparison to PDHS 2012-13 that reflected the rate of about 15.8%.[8] Although the factors behind this trend are not very well understood and they are multifactorial, however, some of the factors from the demand and supply side of the health system were identified from the existing literature. The demand side factors include maternal education, antenatal care (ANC) visits and wealth status, the supply side factors include geographical limitations, accessibility to health facilities and health care provider's choice.

C-section is deliberated as a safe and reliable procedure in many parts of the world.[20] Some of the most prevalent reasons behind the rise of C-section rates are factors such as maternal fear of labor pain, suitability to schedule the childbirth according to families or health care professionals' preferences, or because it is observed as being less distressing for the newborn.[20] In specific cultures, C-section allows selecting and setting the day of the birth according to certain believes of luck or better fortunate for the newborn's future.[21] In many countries, a societal agreement has enforced demand for the perfect outcome, and doctors are charged when the results are not as anticipated, driving the fear of litigation among doctors.[22] Moreover, in some cultures, C-section is perceived to preserve pelvic floor functioning resulting in fewer urinary tract complications and a more satisfactory return to sexual life.[23]

According to the 2013 survey of different countries for C-section rates, Sweden provides a notable example of the lowest C-section rate of 16.4%, whereas Turkey had the highest rate of C-section noted as 50.4%. Besides, Australia had a rate of 32.1%, the United States had a rate of 32.5%, and Pakistan had a rate of 14% respectively.[24-26]

Caesarean sections rate and specific indications by Global Network site (2010 to 2013) demonstrated that low resource countries such as Argentina had C-section rate of 35%, Guatemala had C-section rate of 18% and India has C-section rate of 20%. The major indication reported for high C-section rates in all these low-middle income countries (LMICs) was obstructed labor or prolonged labor.[27]

When medically necessary, C-section can effectively prevent maternal and newborn mortality.[28] Few studies from Human Reproduction Programme (HRP) demonstrated that when C-section rates rise towards 10% across a population, the number of maternal and newborn deaths decreases.[29] However, when the rate goes beyond 10%, there is no evidence that mortality rates improve.[30]

It is important to be able to compare C-section rates and the outcomes of C-section in a reliable manner. Health care providers including doctors and midwives need tools to analyze the impact of their practices, and clinical protocols on their patients.

There have been a lot of efforts by the ministry of health in Pakistan for maternal and child health including provision of skilled care, introduction of maternal and child health program and safe motherhood initiatives.[31] However, the implementation of these programs and initiatives is debatable.[31] There is lack of administrative support and strategic planning for provision of maternal care in LMICs that increases the C-section rates due to complications and obstacles.[32]

The increase in C-section rates in Pakistan is an alarming public health issue and it needs to be reduced through implementation of evidence based justification of the problem. Considering the burden of high C-section rates, World Health Organization proposed the Robson classification as a global

standard to assess, monitor and compare C-section rates within and between healthcare facilities.[33] This system classifies women into 10 categories based on the obstetric characteristics that are routinely collected. In Robson's Classification system, the categories are based on following basic obstetric characteristics (Figure).[34]

1. Parity (nulliparous, multiparous with and without previous caesarean section)
2. Onset of labour (spontaneous, induced or pre-labour caesarean section)
3. Gestational age (preterm or term)
4. Foetal presentation (cephalic, breech or transverse)
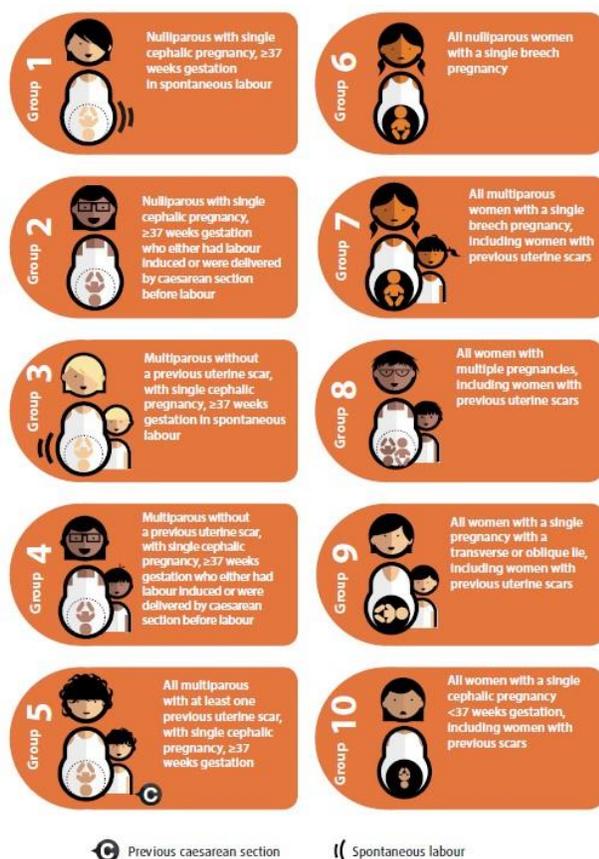5. Number of foetuses (single or multiple).

Image courtesy of World Health Organization WHO statement on caesarean section rates Executive summary, 2015.

Figure: Robson classification: Implementation manual. Geneva: World Health Organization; 2017. License: CCBY-NC-SA3.0IGO.

Since this classification can be used prospectively and its groups are totally inclusive and mutually exclusive, every woman who is admitted for delivery can be immediately classified, based on a few basic characteristics which are usually routinely collected by health care providers' worldwide.[35] The Robson's classification has been rapidly and increasingly used by many countries all over the world, even before its official endorsement as a formal guideline to be used in 2015.[36]

The use of Robson classification has been neglected in most of the health facilities in Pakistan.[23] The policy implication in health facilities and health system should be enforced to review and audit the misuse of the C-section utilization in Pakistan.

Pakistan like other LMICs is facing the increased burden on health system.[2] The increase in utilization of C-section rates has imposed an additional burden on the health care system of Pakistan as well as increased economic and health resource liability on maternal care. There is very limited information about the appropriate indications of C-section in Pakistan. Moreover, the check and balance and auditing is a problem in Pakistan.[23] The health policy makers and program implementers should take in account the health system implication of C-section of resource poor country and should reinforce a stringent system to monitor the rates.

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