

Conference Paper

A Systematic Review: Impact of Caesarean Rate after Implementation of Robson's Criteria at Secondary and Tertiary Hospital

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Abstract

When medically justified, a caesarean section can effectively prevent maternal and perinatal mortality and morbidity. However, there is no evidence showing the benefits of caesarean delivery for women or infants who do not require the procedure [1]. In recent years, governments and clinicians have expressed concern about the rise in the numbers of caesarean section births and the potential negative consequences for maternal and infant health [1-4]. This study aims to provide a description of how Robson's criteria give an implication of decreasing caesarean rate. This is a literature study, online databases such as ProQuest, JSTOR, EBSCO, Biomedicina were searched with time restriction from 2000 to 2016. The population of this study were taken from five countries with different culture, demography, per capita income and public health policy such as Canada, Ireland, Singapore, Peru, Lithuania, and India. Of the five countries, only Canada has a decreasing caesarean rate Intervention groups of low-risk pregnancy change 22.5% to 21.8% (CI 0,80 to 0,99 adjusted risk difference -1.8% (95% CI -3.8 to 0.2) but Intervention groups of high-risk pregnancy change 23.3% to 23.5% with $p = 0.35$; $p 0.03$ for interaction. Other countries still have an increasing caesarean rate. The implementation of Robson's criteria should be customized with the ability in healthcare providers and also health policy in each country.

Keywords: impact, caesarean rate, Robson's, hospital

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Received: 17 October 2018

Accepted: 5 November 2018

Published: 5 December 2018

Publishing services provided by
Knowledge E

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Selection and Peer-review under the responsibility of the 2nd ICHA Conference Committee.

1. Introduction

Since 1985, the international health care community has considered the ideal rate for caesarean sections to be between 10% and 15%. Since then, caesarean sections have become increasingly common in both developed and developing countries. When medically justified, a caesarean section can effectively preventing maternal and perinatal mortality and morbidity. However, there is no evidence showing the benefits of caesarean delivery for women or infants who do not require the procedure [1]. In

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recent years, governments and clinicians have expressed concern about the rise in the numbers of caesarean section births and the potential negative consequences for maternal and infant health [1–4].

As stated by WHO, there is no empirical evidence exists for an ideal caesarean rate, but –what matters most is that all women who need caesarean sections actually receive them. In areas with very high mortality rates, such as Africa, inadequate availability of caesarean section contributes to substantial maternal and perinatal morbidity and, mortality. Conversely, in many developed countries concerns exist about high rates of caesarean section, since increasing rates of this procedure show little evidence of leading to further improvement in perinatal outcomes [5]. As discussed by WHO, 2009; Bost, 2003 and Grady 2008 in Romero 2012; Souza and Costa, 2010; caesarean section carries its own risks for maternal and infant morbidity and for subsequent pregnancies [1, 6–8]. At some point, these risks will over the potential benefits associated with lowering the threshold at which the procedure becomes indicated. The skill needed to make a balanced clinical decision for an individual woman might well be greater than the skill required to actually undertake the procedure [5].

What are the consequences of these trends for the health of women and babies? To the extent that high rates of C-sections are not medically indicated, they unnecessarily expose the mother and child to consequences that are not fully understood. Caesarean sections are associated with an intrinsic risk of increased severe maternal outcomes [7]. In such procedures, the mother and her partner have no active participation in the birth of their child. The costs and benefits of this elective procedure, both physical and emotional, should be seriously explored before accepting the liberalization of its use [6, 9].

The use of a criteria system applicable internationally and designed to allow both short and long term analysis of determinants and implications of caesarean sections would be necessary. Indications for caesarean sections need to be defined more carefully, and the terms used as indications need to be standardized [1, 10]. A criteria system strictly based on the obstetric characteristics of the population, with mutually exclusive and totally inclusive categories has been developed [1, 3, 8]. The Robson system is simple to understand and implement [3, 8, 10, 11], the groups are considered to be clinically relevant and meets the requirements outlined. The ten groups are intended only to give an initial overview of caesarean section rates that can be compared with rates either in different units or in the same unit over time. Following the initial comparison, each of the groups may need to be studied further to determine the reasons for the differences. This criteria has already been showed to be useful

for monitoring CS rates and their components, calling the attention for the higher prevalent groups [1, 3, 8, 11]. Beside the Robson's criteria there were QUARISMA program in Canada. Each cycle in QUARISMA program included five standardized steps: the identification of women who had cesarean deliveries during the first month of each cycle; the collection of data, with the use of standardized forms, regarding the management of labor and delivery; the assessment by the local audit committee, with the use of clinical algorithms, of the relevance of the indications for cesarean delivery; the formulation of recommendations for best practices and the evaluation of previous recommendations, both performed by the committee; and the provision of informal and formal feedback to health professionals [12].

The aim of this study to make a description of caesarean proportion in a few countries after implementation Robson's categories in decreasing caesarean rate as WHO recommendation. This may help in adopting if Robson criteria should be modified or not to make the implementation can make an impact in reducing the unbooked indication of caesarean intervention. Especially in developing country whereas the lack of quality of healthcare providers than developed country.

2. Methods

2.1. Protocol and registration

This is an literature study by selected information from journal that has been published in safety sites and selected based on the implementation of Robson's criteria in caesarean intervention.

2.2. Search strategy for the identification the study

The search strategy was developed with the assistance of librarian experienced in electronic search strategies for systematic review. There are several electronics databases were searched: ProQuest, JSTOR, EBSCO, Biomedicina from 2000 until 2016.

2.3. Exclusion criteria

We excluded studies that were strictly theoretical or described opinions that were not based on actual experiences of the authors related to the use of the criteria or if the definitions used to categorize women in the groups were dubious or unclear.

2.4. Screening

All citation identified from electronics searcher were downloaded into Mendeley and duplicated were deleted. Information captured for each article included: (1) objectives of the study; (2) country, year, setting, type of institution, time period when the criteria was used, number of women/deliveries included, completeness, source of data and average CS rate; (3) observations, comments or criticisms to the overall criteria or to any of the 10 groups, adaptations or suggestions proposed to improve the criteria, facilitators and barriers identified for its use and implementation; and (4) definitions of the variables used in the construction of the groups of the criteria. The selection process is shown in Figure 1.

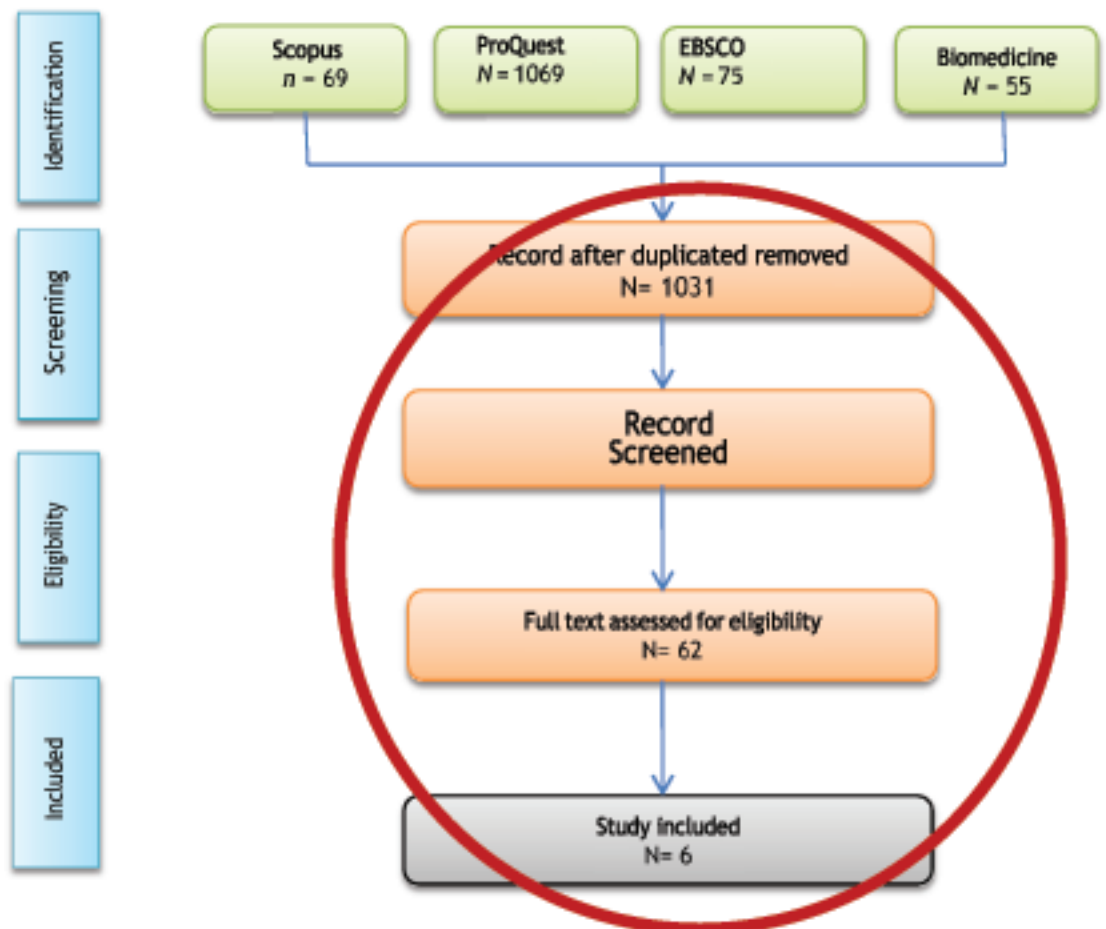


Figure 1: Selection process.

3. Results

3.1. Study selection

For this study, the selection is done based on the implementation of Robson's criteria in obstetric intervention. There are 10 classification that indicated of obstetric intervention (1) (3):

1. Nulliparous, single cephalic, ≥ 37 weeks, in spontaneous labor
2. Nulliparous, single cephalic, ≥ 37 weeks, induced or CS before labor
3. Multiparous (excluding prev. CS), single cephalic, ≥ 37 weeks, unspontaneous labor
4. Multiparous (excluding prev. CS), single cephalic, ≥ 37 weeks, induced or CS before labor
5. Previous CS, single cephalic, ≥ 37 weeks
6. All nulliparous breeches
7. All multiparous breeches (including prev. CS)
8. All multiple pregnancies (including prev. CS)
9. All abnormal lies (including prev. CS)
10. All single cephalic, ≤ 36 weeks (including prev. CS)

3.2. Study characteristic

This study is comparing the condition of caesarean intervention based on Robson category and none. The population was taken from 5 country with different culture, demographic, income per capita and public health policy. The participant came from 5 country such as Canada, Ireland, Singapore, Peru, Lithuania, and India. Women in many kind of parity, where delivered baby in secondary n tertiary hospital.

As figured in Table 1, among the 184,952 participants in Canada; 53,086 women delivered in the year before the intervention and 52,265 women delivered in the year following the intervention. There was a significant but small reduction in the rate of cesarean delivery from the preintervention period to the post intervention period in the intervention group as compared with the control group (change, 22.5% to 21.8% in the intervention group and 23.2% to 23.5% in the control group; odds ratio for incremental change over time, adjusted for hospital and patient characteristics, 0.90;

95% confidence interval [CI], 0.80 to 0.99; $P = 0.04$; adjusted risk difference, -1.8% ; 95% CI, -3.8 to -0.2). The cesarean delivery rate was significantly reduced among women with low-risk pregnancies (adjusted risk difference, -1.7% ; 95% CI, -3.0 to -0.3 ; $P = 0.03$) but not among those with high-risk pregnancies ($P = 0.35$; $P = 0.03$ for interaction) [12].

TABLE 1: Caesarean rate after Robson implementation.

Country	Time of Observation	Method of Study	Participant	Result
Canada	1 st April 2008 to 31 st October 2011	Clustered Randomized study(12)	Total 184,952 Woman in 32 hospital 16 hospital with intervention: 84,227 16 hospital without intervention 100,725	Intervention groups of low risk pregnancy Change 22.5% to 21.8% (CI 0, 80 to 0, 99, adjusted risk difference -1.8% (95% CI -3.8 to 0.2). Intervention groups of high risk pregnancy Change 23.3% to 23.5% ($p = 0.35$; $p = 0.03$ for interaction)
Ireland	2005 to 2010	Retrospective cohort study(13)	403,642 childbirth	Private coverage Changing 30.2% to 34.7% Public coverage Changing 22.2% to 23.8%
Singapore	1 st January 2000 to 31 st December 2012	Retrospective cohort (14)	26,817 deliveries	19.9 to 29.6 per 100 births
Peru	2008 to 2010	A prospective cross-sectional study(15)	571,212 deliveries 43 public hospitals	25.5% in 2000 to 30.1% in 2010 this increase in CS rate was due to the contribution of the Robson groups 1, 3, 4a, 5, 7 and 10.
Lithuania	1 st January to 31 st December 2012(4)	A prospective cross-sectional study (4)	23,375 deliveries with 6697 CS	Secondary hospital 27% with 95% CI 16.6% to 29.8% Tertiary hospital 30.2%
India	2005 to 2009	Retrospective study(16)	35,375 deliveries with 7623 CS intervention	CS rate in 2005 20.24% to 23.27% in 2009 Among non-absolute indication previous CS was 32.7%

Based on Ireland study figured in table, results 403,642 childbirth hospitalizations were reviewed. Over the six-year period, approximately one-third of maternities (30.2%) were booked privately. The percentage of private bookings steadily decreased over the study period, from 33.3% to 24.2% (results not shown; test for trend p -value < 0.001). Changing patterns in obstetric intervention were evident between 2005 and 2010. Increasing caesarean delivery rates were more pronounced among women with private coverage (30.2% to 34.7%) than women with public cover-age (22.2% to 23.8%) [13].

The maternity database in at the National University Hospital in Singapore is an institution-based surveillance system that monitors details about every registered birth at the National University Hospital. There were a total of 26,817 deliveries between January 2000 and December 2010. The CS rate for 2000–2010 was 24.1% overall. There was a significant increase in the CS rate from 19.9% in 2000 to 29.6% in 2010 [14].

In Peru, CS rates in 43 public hospitals have increased over a 10 year period from 25.5% in 2000 to 30.1% in 2010 well above 10–15% accepted as optimal rate for medically necessary cesarean delivery. This increase in CS rate was due to the contribution of the Robson groups 1, 3, 4a, 5, 7 and 10 [15].

A total of 6697 cesarean sections were performed among 25,373 deliveries in Lithuania, giving an average overall CS rate of 26.4% (range 16.6–30.7%). An average overall CS rate was highest in tertiary referral centers (30.2%), followed by hospitals providing health care services of II B (27.0%, range 18.7–29.8%) and II A level (21.6%, range 16.6–27.8%) (4).

The trend of CS in the hospital in India over the past 5 years and the general trend show an increase in the total no of deliveries between 2005 and 2009 and the CS rates from 20.2% in 2005 to 23.2% in 2009. Among the non-absolute indications, previous CS was the leading indication amounting to 32.7% [16].

4. Discussion

Although increased caesarean section rates are not a novel finding, the greatest increases in caesarean section rates were generally recorded in the least developed countries where compared with the high-income countries—the caesarean section rates of the first survey were lower, and a higher unmet need for caesarean section probably exists.

In other study that compare the physician opinion about indication of CS, the question of optimal rates among specific sub-groups of deliveries is unresolved. While the Robson criteria has become increasingly used to analyzed patterns of —over-intervention within health facilities, there is no agreement on what thresholds indicate unnecessary caesareans. Although there is likely to be little disagreement that most Absolute Maternal Indications (AMIs), such as major cephalopelvic disproportion and complete placenta previa, require surgery to avert the death of the mother, for other conditions (such as twin deliveries and women with previous caesareans) caesarean sections may sometimes, but not always be necessary. The evidence from randomized

controlled trials is either lacking or inconclusive, potentially leaving room for wide variations in opinions and practices. Examining obstetricians' opinions of the optimal caesarean rate among specific categories of deliveries would help assess the relative magnitude of perceived need for caesareans in different groups of women [17].

This multifaceted intervention in Canada, which involved on-site professional training in evidence-based management of labor and delivery and was designed to promote clinical audits, feedback, and implementation of best practices, led to a statistically significant but clinically small reduction in the rate of cesarean deliveries. The reduction was observed among women with low-risk pregnancies but not among those with high-risk pregnancies [12].

It was the first time analyzing the CS birth data of all medical institutions in Lithuania and identified the main groups of women who most contributed to the overall CS rate in 2012. In order to attempt to understand practices in certain obstetrics groups, closer monitoring and more in-depth analysis are needed and relevant effective actions to optimize CS rates are advised. It seems that efforts to reduce the overall CS rate should be focused on increasing vaginal birth after CS and reducing CS rates in nulliparous women with single cephalic full-term pregnancy (Groups 1 and 2) [4].

Peru is a low-income country where reducing maternal and perinatal morbidity and mortality is a priority for the Ministry of Health. Data obtained in the present study is important since women and neonates may be at higher risk of adverse outcomes due to unnecessary cesarean sections as those related to the group 1 of Robson [15].

What are the consequences of these trends for the health of women and babies? To the extent that high rates of C-sections are not medically indicated, they unnecessarily expose the mother and child to consequences that are not fully understood. In such procedures, the mother and her partner have no active participation in the birth of their child. The costs and benefits of this elective procedure, both physical and emotional, should be seriously explored before accepting the liberalization of its use.

Elective caesarean section may provide some benefits. A systematic review of 79 studies of elective C-sections versus vaginal deliveries, including observational and randomized trials, has shown that women with C-section have decreased urinary incontinence at 3 months and decreased perineal pain in comparison with those having a vaginal delivery. On the other hand, C-section was associated with a higher risk of maternal mortality, hysterectomy, ureteral tract and vesical injury, abdominal pain, neonatal respiratory morbidity, fetal death, placenta previa, and uterine rupture in future pregnancy [7, 9].

Based on this study from five country that implemented Robson criteria in determining caesarean intervention in delivering baby, there's a different mean proportion CS intervention. From five country such as Canada, Ireland, Singapore, Peru, Lithuania and India, have difference characteristic such as culture, health policy, and health care providers. In some countries that categories as a developed country such as Singapore, Ireland and Canada has difference result in changing pattern of caesarean intervention, only Canada that reported a decreasing of Caesarean rate after Robson criteria.

Peru and Lithuania are an example where implementation Robson's criteria in low income country should be has a new recommendation. From that country whereas the morbidity and mortality rate are still high, intervention of caesarean has a better implication in reducing morbidity and mortality of mother and infant. The obstetrician in that country usually should prefer to choose CS to safe the mother life when the delivering has a complication so in developing country the CS rate it seems difficult to interfere. Unlike in developed country with a high income the CS is more likely a trend when the women could choose how they could delivering their babies based on the satisfaction. Because women in that country thought that CS is the easier way to delivering baby without pain, they didn't considered the effect of CS in future if they do CS without the indication. Although in many study declared vaginal ways is the best part for delivering baby if there's no complication of pregnancy rather that CS [18]).

Canada used the modified Robson's criteria that known as QUARISMA that resulting decreased of caesarean rate in low risk pregnancy group until 0,7 with CI 0,80 to 0,99, adjusted risk difference -1.8% (95 % CI -3.8 to 0.2). This program improved and avoided unnecessary caesarean deliveries [12]. The interventions in the trial included identification of opinion leaders, the use of onsite training, and the introduction of standardized internal clinical audits and feedback. The safe reduction, albeit modest, in the rates of cesarean delivery observed in this trial and the moderate efforts required to maintain the program (approximately 2 days per 3-month cycle to conduct an audit session, develop recommendations, provide feedback, and review the implementation of the recommendations) suggest that a similar intervention may be beneficial in other countries or regions in which the rates of cesarean delivery are similar or higher.

4.1. Limitation

A number of limitations to our study are worth noting. First, our sample is not globally representative of specific Robson criteria performing caesareans. The dissemination strategy achieved a large and geographically diverse sample. This systematic review

without metanalysis so we just only have an description not find the causality so other research need to find the type of Robson implementation from each country and also causality based on the health policy.

5. Conclusion

Robson's criteria becomes in useful tool to monitoring cesarean section in low human development index countries [15], but the implementation should have other modification based on healthcare providers and health policy globally. Ideally, assessment of obstetric interventions and outcomes should be based on high-quality but the implementation should have other modification based on healthcare providers and health policy globally.

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