Why is the implementation of Robson's classification required in Morocco?

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Abstract. In Morocco, the Ministry of Health has mobilized several efforts to improve maternal and newborn health over the past decades. Despite progress, the high risk of death during pregnancy, childbirth, and postnatal is still a concern. Obstetricians highly regard this and require them to undertake ongoing research to promote optimal pregnancy and birth outcomes. Medical techniques such as cesarean section have led to significant progress. However, the frequency of cesarean sections has increased recently, despite World Health Organisation (WHO) recommendations to stay within 15%. Controlling the rate of cesarean sections has become a significant public health concern, given the risk of morbidity and mortality associated with cesarean sections and the associated costs. Through a review of the literature, this research interprets and analyses the relevant data to highlight the contribution of Robson's classification to controlling C-section indications and, consequently, their rates. Indeed, several original scientific studies recommend its adoption because of its objectivity and contribution to the effective reduction of cesarean section rates. Finally, as a main recommendation, the adoption of Robson's classification in Morocco as a simple tool for evaluation, monitoring, and audit of cesarean section rates and its use is strongly recommended for better control of cesarean section rates and indications. The training of practitioners should support it.

Keywords: Robson classification, cesarean section, implementation, cesarean section rates.

1. Introduction

In Morocco, the Ministry of Health has mobilized many efforts to improve maternal and neonatal health for over three decades. Progress in reducing maternal and neonatal morbidity and mortality has been significant. However, maternal and neonatal mortality's leading causes and risk factors are preventable. In this sense, achieving a successful pregnancy and giving birth to a healthy child is now a health priority to further reduce maternal and neonatal mortality (Ministry of Health, 2021). The situation of pregnant women remains a concern

because of the high risk of death during pregnancy, childbirth, and the postnatal period. Pregnancy and childbirth have always put women at risk of death (Murrieta, 2021).

And this risk is strongly considered by obstetricians and compels them to undertake continuous research to promote the best conditions for a favorable outcome of pregnancy and childbirth (Brugeilles, 2014). Rightly so, the possibility of using many medical techniques, such as cesarean section, has allowed several countries, such as Morocco, to make significant progress in the field (Haut-Commissariat au Plan, 2015). The main objective of Caesarean section is to prevent maternal and neonatal mortality and morbidity (WHO, 2018). It was initially reserved for major dystocia, cesarean section, a surgical procedure that can effectively prevent maternal and neonatal mortality when performed for medically justified reasons.

Over the past few decades, cesarean section rates have been steadily increasing worldwide. It has even evolved into a fairly standard procedure. This trend has not been accompanied by significant maternal or perinatal benefits. Indeed, the frequency of cesarean sections has steadily increased in recent decades despite the World Health Organization (WHO) recommendations not exceeding 15% (WHO, 2015). In this sense, this work attempts to raise awareness of the importance of formalizing the use of Robson's classification to control the indications for cesarean sections and their rates.

2. Methods

Our study consisted of a literature review supplemented by an analysis of the grey literature (including institutional records available in Morocco). This article aims to interpret and analyze all these data to shed light on the contribution of Robson's classification to controlling cesarean section indications and, therefore, their rates.

The data used for this work were identified by a search of original articles published in English or French from several databases (such as google scholar, Scopus, Web Of Science, and Pubmed) in the field of obstetrics. Articles were included in the reference list if they covered the following topics: cesarean section rates and Robson classification. The two main keywords used for the search were "cesarean" and "Robson".

Criteria for inclusion

Any study describing the experience of using Robson's classification was eligible for inclusion, regardless of the purpose and design of the research or the context or setting (e.g., national, state, institutional) in which it was applied.

Exclusion criteria

We excluded strictly theoretical studies or that described opinions that were not based on the author's actual experiences of using the classification or if the definitions used to classify women into the groups were questionable or unclear.

Next, all citations identified in the electronic searches were uploaded to Zotero, and duplicates were removed.

Finally, we followed three steps to systematically extract and synthesize the views of the authors in the original articles: (a) line-by-line coding to extract key concepts, usually presented in the Results, Discussion, or Methods sections; (b) organization of these critical concepts to construct 'descriptive' themes/topics that form the skeleton of the analysis structure; and (c) development of analytical themes based on the synthesis of the experiences and recommendations of the authors of the original articles.

3. Results

3.1 Cesarean section nowadays

Cesarean section, also known as delivery by high route, is a central obstetrical act and a surgical intervention consisting of extracting the fetus after hysterotomy (incision of the uterus). It should be remembered that Caesarean delivery has undergone undeniable evolution and progress over the last few decades. Indeed, the surgical techniques are well codified and therefore allow greater control of the surgical act; similarly, the anesthesia techniques are also safer thanks to the development of locoregional anesthesia. These elements have contributed to the trivialization of the act of cesarean section; sometimes, cesarean delivery is perceived as a natural mode of delivery (Bezzad, 2021).

Indeed, globally, cesarean section rates have increased in recent decades. Recent estimates from 150 countries indicate that 21% of all births are by cesarean section (Dumont et al., 2020). According to WHO estimates, the global C-section rate has almost tripled in a quarter of a century, from 6.7% in 1990 to 19.1% in 2014. Then, this rate increased from 16 million in 2000 to nearly 30 million in 2015, representing 12% to 21% of all births (Boerma et al., 2018), while in 2015, the World Health Organization (WHO) estimated that only 10-15% of all deliveries require a cesarean section (WHO, 2015). The determinants of this increase are controversial (Vogel et al., 2015). Controlling the cesarean section rate is a significant concern in obstetrics, given the risk of morbidity and mortality associated with cesarean sections (Blondel et al., 2012).

In Morocco, the current cesarean section rate is a concern. It has increased significantly from 5.4% to 21.2% between 2004 and 2018, as shown in Figure 1 (ENPSF, 2018). According to ENPSF (2018) data, the cesarean section rate in Morocco was 21.2% (26.3% in urban areas and 12.9% in rural areas). This rate, which includes cesarean sections in both the public and private sectors, reveals a significant disparity between cesarean section rates; since in the public sector, which provides 70.2% of deliveries, the cesarean section rate is only 12%, whereas it reaches 62.2% in the private sector, which provides only 15.7% of all deliveries. That said, Caesarean sections are still more common in the private sector than in the public sector (62.2% in the private sector and 12.2% in the public sector) (Ministry of Health Morocco, 2018). Indeed, a recent study conducted in a private hospital in Casablanca found a cesarean section rate of 61% (Chrifi et al., 2022). There are also disparities in C-section rates in the public sector. Cesarean sections in university maternities (41.7%) are 2.5 times higher in regional maternities (14.4%) (Bezzad, 2021).
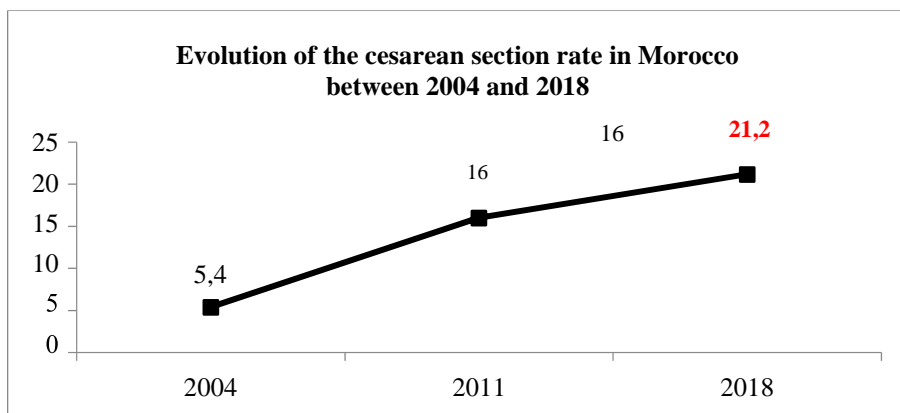
Graph 1: Evolution of the cesarean section rate in Morocco between 2004 and 2018 (ENPSF, 2018)

3.2 Consequences of cesarean section

Today, the increase in the use of cesarean section is fuelling a reflection on the considerations that lead to favoring surgical intervention over vaginal delivery and is causing controversy in several public arenas (Murrieta, 2021). Unwarranted cesarean sections represent a significant expense for overburdened and often weakened health systems. Also, their cost is an obstacle to ensuring equitable access to maternal and newborn care (Chrifi et al., 2022).

In addition to considerable health costs, cesarean section is associated with short- and long-term risks for women, children, and future pregnancies (Kodio et al., 2018). These risks are higher in settings where women have limited access to good-quality obstetric care.

Moreover, according to the OECD report published in 2017, unnecessary cesarean sections and the waste they generate an account for 20% of health expenditure. Indeed, the rate of cesarean sections is increasing and contrasts with the WHO recommendations (maximum speed of 15%). For 36 countries belonging to the Organisation for Economic Co-operation and Development, the average cesarean section rate is 27.9%, with expenditure rising from 13 MDH in 2006 to 130 MDH in 2017 (WHO, 2018).

Moreover, at present, cesarean section is felt by professionals and users alike to be commonplace, tending to become, in some countries, the most usual mode of childbirth (Sabatino, 2019). This should be considered deeply as cesarean section increases maternal morbidity and adverse outcomes in a subsequent pregnancy (Gautam et al., 2021).

3.3 The causes of the increase in the cesarean section rate

Increasing cesarean section rates are a universal problem. It affects low-, middle- and high-income countries. However, the consequences of unnecessary cesarean sections may differ between contexts and countries, depending on the human or financial resources available and the capacity to perform a safe cesarean section and manage associated complications (WHO, 2018).

Classically, indications for cesarean section were based on clinical features such as maternal or obstetric complications, previous cesarean section, dystocia, fetal distress, breech presentation, and other presentation anomalies.

The excessive increase in the cesarean section rate can be explained by maternal characteristics such as advanced maternal age and high rates of hypertension during pregnancy, diabetes, obesity, and multiple pregnancies, especially with advances in assisted reproductive technology. Cesarean sections without medical indication are said to be superfluous and are increasingly performed for patients' comfort, the least effort for practitioners, and the profit of private clinics (Schantz et al., 2019).

Also, in interpreting this increase in the cesarean section rate, one must consider the improvement in cesarean section techniques, the idea that patients and practitioners have that cesarean section is safer than vaginal delivery, personal convenience, etc. (Kodio, 2018).

The causes of the increase in the cesarean section rate are multiple and vary from country to country and within countries (there are more caesareans in cities). Several reasons may combine a decline in the competence of the medical profession to allow a potentially difficult delivery to take place anyway by natural route, the comfort of being able to schedule the day of the birth, or higher incomes for doctors and private clinics in case of cesarean section. In some countries, fear of vaginal delivery may also cesarean to this 'cesarean epidemic' (Dumont et al., 2020).

Other factors that have been implicated in this trend of rising cesarean section rates, such as differences in professional practice style, increasing fear of medical litigation, as well as

organizational, economic, social, and cultural factors, have all been highlighted (Murrieta et al., 2014) (Mi et al., 2014) (Zwecker et al., 2011).

4. Discussion

4.1 The necessity to control the cesarean section rate

Controlling cesarean section rates is a significant public health concern, particularly in obstetrics, given the risk of morbidity and mortality associated with cesarean sections and the expense involved. There is a wide variety of obstetrical situations for indicating a cesarean section. Still, there is no standardized methodology for determining cesarean section rates, analyzing the results of indications, or comparing them over time within or between organizations.

In 2001, a systematic review identified Robson's proposed ten-group classification system among 27 cesarean section classification systems (Robson, 2001) as the most appropriate for comparing cesarean section rates (Torloni et al., 2011). This is because the ten groups are exclusive, clearly defined, and easy to use (Amatya, 2013) (Shaaban et al., 2013) (Tan et al., 2014). In 2015, WHO proposed that this 10-group classification be used as a global standard for assessing, monitoring, and comparing cesarean section rates within and between health facilities.

The Robson classification (Table 1) has been adopted since 2015 as a universal classification system for cesarean sections (WHO, 2015). It classifies cesarean sections into ten groups and remains based on simple obstetric parameters (previous CS parity, gestational age, onset of labor, fetal presentation, and the number of fetuses).

In Robson's classification, the overall cesarean section rate is a composite of the ten groups. This not only allows the specific rates of each group to be examined but also demonstrates how the overall cesarean rate is affected by the size of the specific rates and the relative size of each group, thus identifying which groups contribute much and which contribute little to the overall rate.

The advantage of such an analysis is to provide data based on daily practice to target better the groups of gestations and indications requiring special attention to not only indicate the cesarean operation conscientiously but also improve maternal and perinatal prognosis.

Table 1: Robson's 10-group classification (Robson, 2001)

Group	Description
1	Nulliparous, singleton, cephalic, full-term, spontaneous labour
2	Nulliparous, singleton, cephalic, full-term, induced labour or pre-labour caesarean section
2a	Induced labour
2b	Pre-labour CS
3	Multiparous, singleton, cephalic, full-term, without a previous caesarean section, spontaneous labour
4	Multiparous, singleton, cephalic, full-term, without a previous uterine scar, induced labour or pre-labour caesarean section
4a	Induced labour
4b	Pre-labour CS
5	Multiparous, singleton, cephalic, full-term, with a previous caesarean section
6	Nulliparous, singleton, breech
7	Multiparous, singleton, breech including previous CS
8	Multiple pregnancy (twins or higher-order multiples) including previous CS
9	Singleton, transverse or oblique lie
10	Singleton, cephalic, preterm including previous CS

Several original scientific studies recommend its adoption and use because of its objectivity and its contribution to the effective reduction of cesarean section rates:

Table 2: Importance of adopting Robson's classification system

The importance of the Robson classification	References of Scientific Evidence
Robson's classification system plays a vital role in assessing and monitoring the condition of parturients. Based on Robson's classification system, we find that parity, fetal position, number of fetuses, and weeks of gestation are the main factors influencing the cesarean section rate.	(Dong & Xie, 2021)
Robson's classification provides an objective assessment of cesarean section practice	(Zamané et al., 2018)
Robson's classification is used to optimize the use of cesarean sections, to evaluate strategies to reduce the cesarean section rate, and thus to improve clinical practice and quality of care in different health facilities.	(Gautam et al. 2021)
The Robson classification is becoming a valuable tool for monitoring cesarean sections in countries with low human development indexes.	(Tapia et al., 2016)
The Robson ten-group classification system is essential for identifying and analyzing contributors to the cesarean section rate.	(Mayne et al., 2022)
The Robson classification system contributes to controlling and reducing cesarean section rates.	(Dong & Xie, 2021)
Une intervention visant à mettre en œuvre la classification de Robson pendant dix mois a eu un effet positif immédiat sur les taux de césariennes : Les taux de CS dans les groupes 1 et 2 de Robson ont diminué de 34,6 à 13,5%.	(Aguiar et al, 2015)
Use of the Robson classification system to reduce cesarean section rates in a cycle of audits and feedback in countries with some of the highest cesarean section rates in the world (Brazil, Chile, and Italy). All studies reported reducing or maintaining cesarean section rates without a concomitant increase in neonatal morbidity or other adverse outcomes.	(Boatin et al., 2017)
It is a simple method providing a common starting point for analyses in which all perinatal events and outcomes can be measured and compared. This system should be considered flexible.	(Manseur et al., 2020).

Cesarean section is an effective surgical procedure with both maternal and neonatal risks. Robson's classification helps ensure that women needing a C-section receive one.	(Chrifi et al., 2022)
The 10-group Caesarean section classification system is a quality tool for studying Caesarean deliveries. Its interest lies in the dynamic monitoring of the ten groups of women who give birth in maternity hospitals and comparing them. This comparison aims to produce recommendations to reduce the cesarean section rate.	(Bezzad, 2021)

4.2 Stakeholders to consider when implementing in the Moroccan context

To ensure the implementation of the in the Moroccan context, it's so important to consider:
Decision-makers: Implement a continuous improvement strategy to control cesarean section rates by integrating Robson's classification to ensure the proper indication for cesarean sections.
Practitioners in maternity units (obstetricians, midwives): continuous training for developing good practices, training on using Robson's classification, and awareness of the risks of unnecessary cesarean sections.
Care managers: role in traceability and allocation of materials and resources.
Teachers and Researchers: training, research, and dissemination to support the implementation of Robson's classification.
Parturients: awareness of the risks of unnecessary cesarean sections and the importance of antenatal surveillance.

5. Conclusions and recommendations

Controlling the cesarean section rate is now a significant concern for the obstetrical world (Ye et al., 2014). The priority is making every effort to perform a cesarean section in all women who need it instead of reaching a specific rate (WHO, 2018).
The response to this problem of unnecessary cesarean sections has been the subject of WHO recommendations directed at the three main actors in this field: policymakers, practitioners, and parturients. Among the recommendations for practitioners at the maternity level, it has been proposed that health systems commit to the ten-group classification system for cesarean section (Robson Classification) (WHO, 2015).
Indeed, the WHO proposes introducing a system for reviewing the indications for cesarean sections in maternity units by generalizing this 10-group cesarean classification system and adopting it in maternity units as a quality tool (WHO, 2015). Improved case selection, standardization, induction protocol, and regular audits could reduce cesarean section rates (Gautam, 2021). Also, adopting the Robson classification of cesareans could help reduce the overall rate of cesarean sections (Boatin et al., 2017).
Other recommendations include reorienting obstetric practice towards preventive programming based on risks identified during pregnancy surveillance, mainly at the last prenatal consultation. Also, revising the protocols for managing groups 1 (nulliparous, spontaneous labor, single pregnancy, and cephalic presentations) and five will help control the increase in cesarean sections. Revision of these protocols is the basis for maintaining cesarean sections (Bezzad, 2021).
In conclusion, Robson's classification is a simple tool for assessing and monitoring cesarean section rates, and its use is strongly recommended and should be supported by practitioner training. That said, joint mobilization of the medical community and patients is necessary to counter this therapeutic overkill (Dumont et al., 2020).
Declaration of interest
We do not declare any conflicts of interest.

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