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RESEARCH ARTICLE

IMPLEMENTATION OF ROBSON TEN GROUP CLASSIFICATION SYSTEM IN MOROCCAN MATERNITIES FOR C SECTION RATES EVALUATION: A MULTICENTRIC PILOT STUDY

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Abstract

C-Section is a lifesaving procedure practised in obstetrics to decrease maternal and foetal morbidity and mortality. CS rates vary widely depending on the country, hospital, and each obstetrician's experience.The World Health Organization recommends that the C-section rate should not exceed 10-15% of all deliveries, as higher rates are not associated with improved outcomes for mothers or babies.[13]The overall rate of c section in Morocco was reported in 2019 following a national survey to be 18.8%, with significant variation across different regions and sectors (25.5% in the private sector versus 14.4% in the public sector) In order to compare and analyse the variation in CS rates within the same or amongst multiple maternity institutions, the WHO (2015) recommended using the Robson Ten-Group Classification System (RTGCS) as a standardised, universal system. This classification categorises women into ten groups based on obstetrical characteristics of parity, number of foetuses, foetal presentation, gestational age and onset of labour[13]Les Orangers maternity hospital for reproductive health is a WHO collaborating center in North Africa, that implements several WHO programs.Our center received a request from the ministry of health, to help in the national effort for the implementation of the Robson Ten Group Classification System in eight Moroccan referral maternities (4 University maternity hospitals, 4 regional maternities)The aim of the study is to show the disparities of the obstetrical practice and c section rates between the different regions in Morocco using a standardised tool, which is the RTGCS, and describe our efforts to implement it in Moroccan maternities.Our methodology and results are described and analysed in the following article.

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Introduction:-

Caesarean section, is a life saving surgical procedure, performed by obstetricians when vaginal delivery is not possible or safe for the mother or the baby.

This procedure reduces the risk of birth injuries: which may occur during difficult deliveries (macrosomia or breech presentation). It may also prevent certain complications of preeclampsia for example, when the mother and foetus are affected. Or to prevent uterus rupture in case of history of previous c sections and so on.

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C section (CS) isn't a benign procedure, the mother needs a longer recovery time compared with vaginal delivery and may experience pain and discomfort for several weeks after the procedure. As a major surgery, it comes with risks such as infection, bleeding, and blood clots. It also impactsthe mother's future pregnancies: many cases of placenta accreta spectrum or uterine rupture are reported every year.[1.2]

C-section rates vary widely depending on the country, hospital, and each physician's experience and practice.
The World Health Organization recommends that the C-section rate should not exceed 10-15% of all deliveries, as higher rates are not associated with improved outcomes for mothers or babies.[13]

The overall rate of c section in Morocco was reported in 2019 following a national survey to be 18.8%, with significant variation across different regions and sectors (25.5% in the private sector versus 14.4% in the public sector) [5]

In order to compare and analyse the variation in CS rates within the same or amongst multiple maternity institutions, the WHO (2015) recommended using the Robson Ten-Group Classification System (RTGCS) as a standardised, universal system. This classification categorises women into ten groups based on obstetrical characteristics of parity, number of foetuses, foetal presentation, gestational age and onset of labour[13]

Les Orangers maternity hospital for reproductive health is a WHO collaborating center in North Africa, that implements several WHO programs.

We introduced the Robson ten group classification system to evaluate our obstetrical activity in 2019 following the most recent recommendations. Thus becoming a reference in the north African region.

Our center received a request from the ministry of health, to help in the national effort for the implementation of the Robson Ten Group Classification System in eight Moroccan referral maternities (4 University maternity hospitals, 4 regional maternities)

The aim of the study is to show the disparities of the obstetrical practice and c section rates between the different regions in Morocco using a standardised tool, which is the RTGCS, and describe our efforts to implement it in Moroccan maternities.

Research Methodology:-

We conducted a national interventional prospective study, to implement the RTGCS from January 1st to March 15th , 2021. 8 Moroccan maternities were chosen as a reference for their respective regions: 2 in Rabat, 2 in Fes, 1 in Casablanca, 1 in Agadir, 1 in Beni Mellal, and 1 in Oujda.

A Robsoncommittee was created. Their mission was to ensure the success of this project.

For this endeavour, a web based digital platform was created based on the Robson ten group classification system, it offered access to all participating maternities to record their data, allowing a real time data analysis.

The platform performed all the statistical calculations needed to analyse and compare participating maternities' data.

The analysis and interpretation of the data collected through the platform was performed by our research team in Les Orangers maternity hospital.

3 prior virtual interactive sessions were organised to train the healthcare providers in the participating maternities to the use of the Robson platform. Then the Robson committee visited all maternities to offer more support to the local teams, and to remind them of the principles of the Robson classification, and encourage them to classify the deliveries routinely in the common platform.

All pregnant women admitted to the labour and delivery ward were included in the study and were classified according to the Robsonclassification system. Any deliveries with a gestational age less than 22 weeks or with a newborn weight under 500 g were excluded from the study. The study did not require the research team to have any

direct contact with the patients. Since this study was conducted in partnership with our ministry of health as a part of a national strategy to implement the RTGCS, no local ethical committee's authorization was needed.

Results:-

We analysed the data collected on the digital platform. The total number of deliveries that occurred within the study period in the 8 maternities was 9792 delivery: 2650 C sections, and 7142 vaginal deliveries, with a c section rate of 27,1%. (figure 1)

As for the groupanalysis according to RTGCS (table 1), we found that groupe 3 and 1 were the major representatives (42,24% and 27,1%) in terms of size. (Figure 2)

The major contributors in the overall c section rate are group 5 and 1 (28,59% and 20,15%), These groups were identified as "target groups" since they were responsible for 48.74% of all C sections.

We compared the data of the university hospital maternities to the regional ones. C section rate in the former was 41,7% versus 14,4% in the latter. (Figure 3)

Group 5 and 1 are the major contributors in both university hospital (27,64% and 21,89%) and regional maternities (30,9% and 15,92%) (Figure 4)

Table 1:- Robson Ten Group Classification System.

Group	Description
1	Group 1: Nullipara, single, cephalic, term pregnancy, spontaneous labour
2	Nullipara, single, cephalic, term, induced labour or planned CS
3	Multipara without uterine scar, single, cephalic, term, spontaneous labour
4	Multipara without uterine scar, single, cephalic, term, induced labour or planned CS
5	Multipara with uterine scar, single, cephalic, term
6	Nullipara, single, Breech presentation
7	Multipara, single, breech, including previous C-Section
8	Multiple Pregnancy
9	Single, abnormal lie, including previous scar
10	Single, Cephalic, Preterm including previous scar

Figure 1:- Number of c sections and vaginal deliveries.

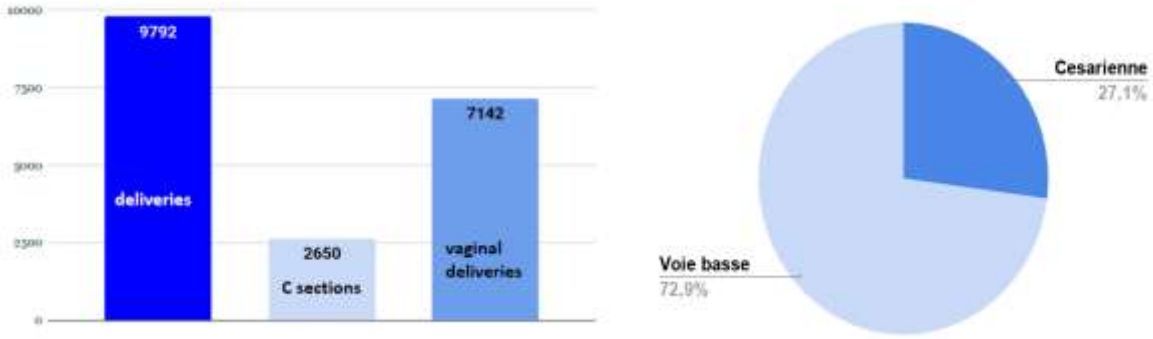


Figure 2:- Group sizes.

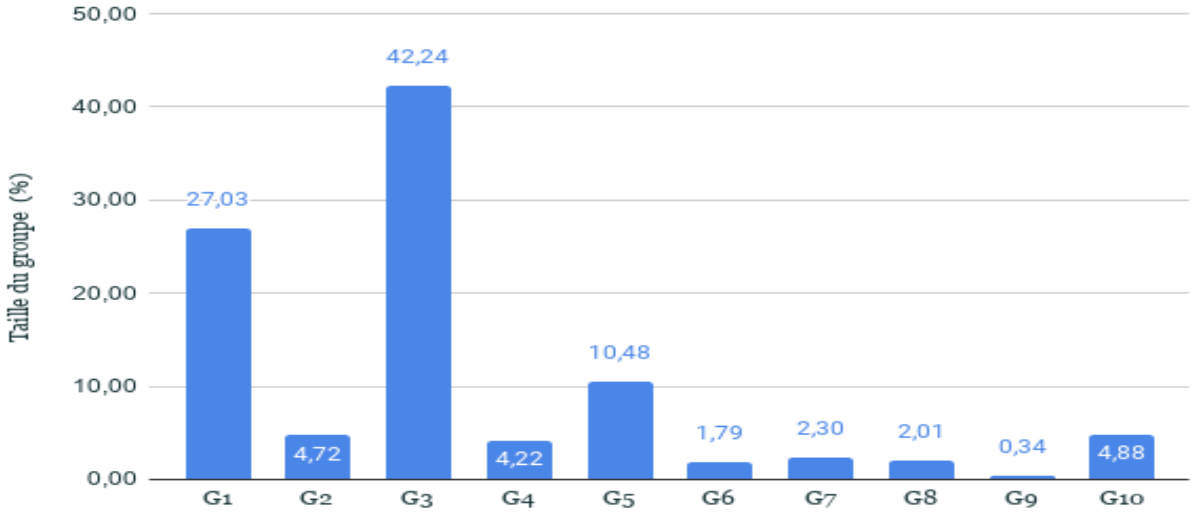


Figure 3:- Relative contribution of the groups in the overall c section rate.

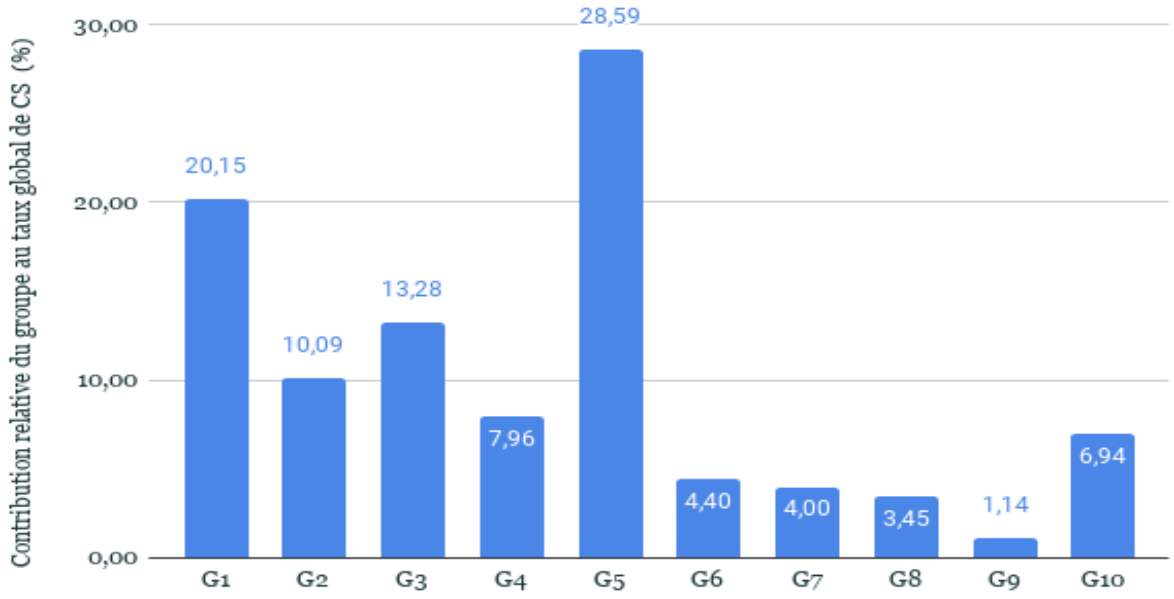


Figure 4:- Comparing c section between university and regional maternities.

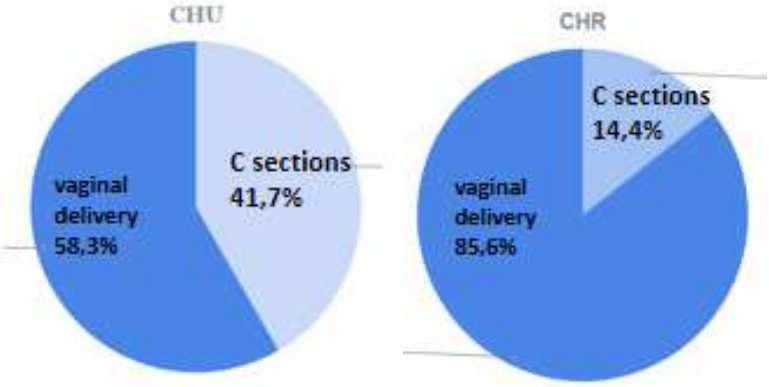
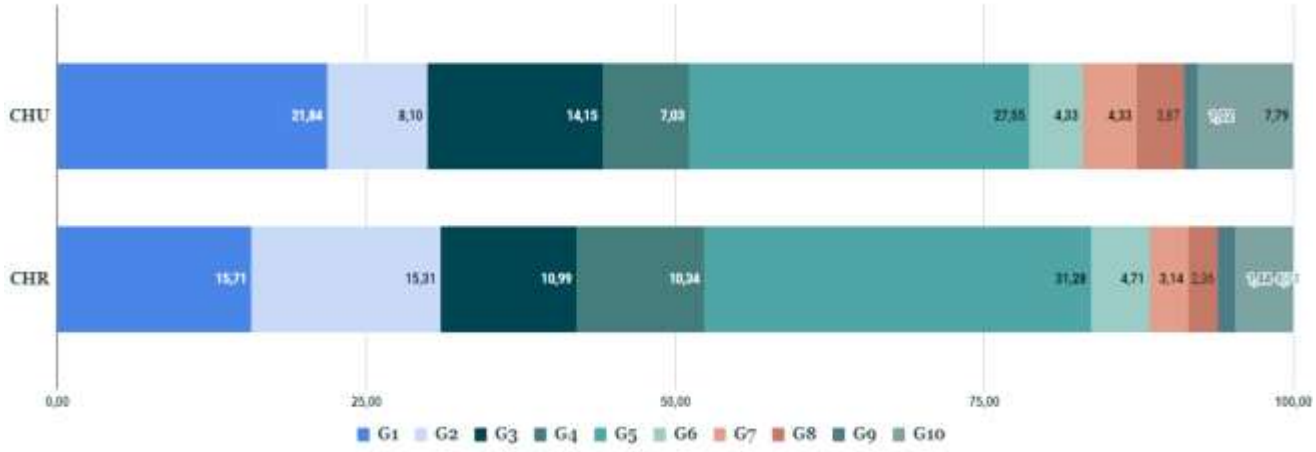


Figure 5:- Relative contribution of each group in the overall c section rate: university hospital vs regional maternities.



Discussion:-

We analysed our results following the recommendations provided by Robson and al[26]

The national c section rate was 27.1% which is high compared to the WHO recommendations (10-15%)[13]. This rate vary between university hospitals (41.7%) and regional maternities (14.4%) in Morocco.

Some regional maternities suffer from medical staff shortage (obstetricians, midwives, anaesthesiologists), and equipments insufficiency resulting in a lack of trust from the local population, thus university hospitals are overloaded with patients since they centralize all surgical activities and high risk pregnancies follow ups, which explains the high c section rates in these structures.

Groups 1, 2 and 5 normally account for two-thirds of the overall CS rate with group 5 as the largest contributor according to the Robson group. [15,26]

When we analysed the results of our study to evaluate our national tendency, group 5 was the largest contributor to cs rates, followed with group 1 and 3.

This study showed that the induction rates in the 8 facilities was low in groups 2 and 4 (4.72% and 4.22%), which is why we considered them target groups in our context.

Then we split the results into regional and central/university hospitals. We found that in regional maternities the tendency followed the Robson group's statement [26], thus the major groups contributing to c sections were group 5,1 and 2 (62.3%) with group 5 being the largest (31,28%). These groups were also identified as "target groups".

In university hospitals the biggest contributor to C section rates is group 5 and 1 and then group 3. We noticed that there is a tendency in our practice to offer c sections to all women with a history of c section even though there are recommendation in favour of a Trial of Labour After Caesarean section **TOLAC**[12,16] And the reason for this finding is explained by the fear of complications such as uterine rupture, a lack of confidence in the qualitative surveillance in the particular context of providers and equipment shortage (foetal heart and contractions monitoring)

The second interesting finding is that group 3 is the third contributor to the CS rate in the university hospitals group, this is explained by the fact that all high risk pregnancies (diabetes, preeclampsia, post terms) are cared for in these structures, and as it is well known , c section rates are the highest in this patient's category.

We have shown in our study that the Robson Ten Group Classification was useful not only for identifying the target groups of women who influence the CS rates the most, but also it seemed to work as an evaluation tool that helped us identify the areas that needed more attention to improve our practice. No specific clinical intervention was implemented during the study period. Several audits of the data were performed during the study period to ensure their veracity. We analysed only the distribution of deliveries in Robson's groups, according to the data collected in the platform that was recorded by each participating hospital. These data were analysed and presented to health care policy-makers and hospital staff who implemented the Robson classification during the study period.

On account of the data analysis performed during our study, we found several areas of improvement to evolve our practice.

First of all, to reduce the number of CS in group 5, there is a need to inform and train the professional to the TOLAC practice, through continuous education seminars and courses.

Secondly, the ministry of health is working on strategies to solve the problem of healthcare providers and equipment shortage in the regional maternities, in order to alleviate the weight on the central university hospitals, so that the obstetrical activity would be practiced homogeneously and without strain throughout the Moroccan territory.

The last point that was identified is the need to review and update the labour and induction protocoles used in the labour and delivery wards, to reduce c section rates in group 1. This is the subject of an upcoming national multicentric study presented to the national research committee for validation.

Strengths and Limitations:
The strength of this study is the fact that it was a multicentric, prospective study that ensured the data accuracy. The population studied was important, which offered more validity.

The limitation was the short study period.

Another study needs to be done to evaluate the c section rates with RTGCS after the implementation and practice of this classification for a longer period of time, in order to evaluate the improvements we intend to introduce to our national obstetrical practice.

Conclusion:-

The Robson Ten Group classification System can work as an audit and evaluation tool to identify the groups that have the greatest impact on the CS rate.

It also helps develop focused strategies for the reduction of the overall CS rates.

In our study, Robson Groups 5 of previous c section and 1 of primiparas were identified as the main contributors to the overall CS rate in Morocco.

Strategies to reduce c section rates in these groups are underway.

Conflicts of interest
None declared.

Financial disclosure
None.

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