Indications for Caesarean Sections in Rundu State Hospital in Kavango East Region, Namibia

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Abstract

Background: A caesarean section is a life saving procedure for both the mother and the baby. However, the fact that caesarean section rates are increasing worldwide, in both the developed and developing countries is becoming an issue of increasing concern, which raised a concern. The purpose of this study was to evaluate the indications for a caesarean section in the Rundu State Hospital.

Methods: A cross sectional retrospective study was conducted.The study population comprised the records of women who had undergone caesarean section between 1 January 2017 to 31 March 2017. After conducting a sample size calculation the delivery, records of 149 women who had undergone a caesarean section during the study period were reviewed. The required data was collected using individual data collection sheets and then analysed using SPSS version 24.

Results: The age of participants ranged between 20 and 50 years. The mean age for the study group was 25.1 years. The overall leading indications for a caesarean section included foetal distress (25.6%), previous uterine scar (18.1%) and Cephalopelvic disproportion (16.1%) while other major contributing indications were eclampsia (16.1%), mal-presentation (8.1%), prolonged labour (6.7%, ante partum haemorrhage (3.4%), failed vaginal birth after caesarean section (2.0%), cord prolapse (1.3%) and severe vaginal warts (0.6%). In addition, the study found that a primary caesarean section was more common at 81.9% as compared to previous uterine scar at 18.1 % while maternal indications contributed to 61% of caesarean sections while foetal indications constituted 39%.

Conclusion: Overall, the study found that the leading indications for caesarean section were foetal distress and previous uterine scar. It was recommended that foetal distress, as the main indicator for a primary caesarean section, should be further confirmed with a printed cardiotocograph. Training health workers on the interpretation of cardiotocograph and the importance of the use of other methods, such as the fetoscope and doptone, may help to reduce the incidence of unnecessary primary caesarean section due to foetal distress. In addition, previous uterine scar cases should be embark on labour before a decision is made.

Keywords: caesarean section, indication, pregnancy, previous caesarean, primary caesarean section

1. Background

The term caesarean section (C/S) refers to the delivery of a foetus, placenta and membranes through an abdominal and uterine incision after 28 weeks of gestation (Moges et al., 2015). A C/S is carried out in obstetric emergencies where immediate action is vital to prevent the deaths of the mother, unborn foetus or both and is usually carried out in incidences in which a vaginal delivery could endanger the health and/or the lives of foetus and / or mother (Makori, 2015).

Globally, the rate of C/S has been increasing significantly. The rate of C/S varies from continent to continent with Asia at 46% followed by both, Europe and Latin America at 33% respectively and Sub-Saharan Africa at 6.2%

(Patah& Malik, 2011). However, despite the increase in the rate of C/S has presented a general increasing trend, thus leading to an upsurge in health service costs and the risk of maternal and perinatal morbidity and mortality, there has been no impact on decreasing the maternal and perinatal mortality rates (Molina et al., 2015).

Nevertheless, the need for a C/S may play a vital role in providing the care for every pregnant woman. On the other hand, every C/S leads to an increase in the C/S rate and is accompanied by possible complications (Betran et al., 2007). In addition, women who undergo a C/S are likely to have a repeat C/S in a subsequent pregnancy, thus increasing the C/S rate in a country with poor resources (Betrán et al., 2007). Moreover, there is ample evidence in the existing literature that there is increased maternal and neonatal morbidity and mortality associated with caesarean deliveries worldwide when compared to a normal vaginal delivery (NVD) (Kirchengast & Hartmann, 2019). In addition, infection, haemorrhage, complication arising from the anaesthesia, bladder damage, prolonged hospitalisation and delayed recovery are common complications associated with a C/S (Pallasmaa et al., 2010). A recent study identified that the risks of placenta praevia, morbidly adherent placenta and obstetric haemorrhage in subsequent pregnancies also increase in the case of repeated C/S (Xu et al., 2019).

The factors influencing a C/S are interrelated, complex, and may differ from one continent to another. Researchers have identified various factors that results in women undergoing a C/S. Barber et al.(2011) conducted a study in the United States of America (USA) which identified factors such as the arrest of dilatation and non-reassuring foetal monitoring heart tracings as playing a significant role in the increasing C/S rates. Furthermore, the study also documented that medical indications, such as maternal, foetal or obstetric conditions contribute to the increasing rate of C/S (Barber et al., 2011). A study conducted by Abebe et al. (2016) on factors leading to C/S delivery at the Felegehiwot referral hospital in northwest Ethiopia identified that obstructed labour (30.7 %) foetal distress (15.9 %) and abnormal presentation (13.4 %) were the major obstetric indications of a C/S. In addition, the study also identified other factors as maternal age and parity, failure to progress in labour and non-obstetric factors such as maternal request as playing a role in the C/S rate (Barber et al., 2011).

In Namibia, the C/S rate between 2005 and 2010 was 13% according to global statistics report, (WHO 2012). During that period, Namibia was still in the acceptable right range (10–15%) as per the WHO guidelines (WHO, 2009). However, a study conducted by Shikwambi (2014) in the Khomas region in Namibia identified that the C/S rate had increased to 23.9% while the proportion of non-elective C/S was 72.2%. Shikwambi (2014) further highlighted that the main cause of C/S among low risk women were the poor assessment of maternal wellbeing and the progress of labour (Shikwambi, 2014). Rundu State Hospital reported 242 C/S cases between 1 January and 31 March 2017. The high numbers of C/S is a matter of concern as it results in high healthcare costs, increased workload and challenges in ensuring improved quality of care when compared to NVD, which is natural way of delivery and linked to both rapid recovery, a relatively short hospital stay and maternal satisfaction (Kirchengast& Hartmann, 2019). Rundu hospital serves as a referral hospital in the Kavango east and Kavango west constituencies with a total catchment population of 63431 (Namibia Statistics Agency, 2011). It is usually women with high-risk pregnancies who are referred to this hospital. However, women from the nearest constituencies also deliver at this hospital without being referred as it also serves as the district hospital. At the time of the study, there was no evidence of research having been conducted at the Rundu State Hospital to identify the indications leading to the high rate of C/S. It is, thus, recommended that efforts should be made to both improve access to and reduce the use of C/S (Molina et al 2015). In the developed countries, C/S rates have increased and attention is being focused on interventions to decrease its use (Betran et al., 2007). It is, therefore, imperative that an evaluation is conducted of the indications of C/S in Rundu State Hospital as the findings of such an evaluation may inform ways to safely reduce the incidence C/S in the population under study and improve the quality and efficiency of the care provided.

2. Methodology

The study was conducted in the Rundu Intermediate Hospital. According to the Rundu Hospital statistic, there were 242 C/S deliveries conducted between1 January 2017 to 31 March 2017. The study used a cross sectional, retrospective study design. Simple random sampling was used to select the documents required while Yamane's (1967) formula for sample selection was used to calculate the sample as follows:

$n = \frac{N}{1+Nx\alpha^2}$ Whereby the sample size; N is the population size under study and α is the level of significance, which was 0.05. Thus, the formula $n = \frac{242}{1+(242x0.05^2)}$= 150 was used to determine the sample size, however only 149 clinical records of women who had undergone a C/S after the period of viability, namely, 28 weeks, within a given time were accessed and reviewed. The documents were reviewed to determine the indications of the C/S they had undergone using a predesigned questionnaire. The data retrieved from the files, including age, gravida; primary

and repeat cases were used in the study. The Statistical Package for Social Science (SPSS) version 24 was used to analyse the data while descriptive statistics were used to describe the data.

2.1 Research Ethics

Permission to conduct the study was obtained from the Ministry of Health and Social Services and from the Rundu Hospital management team. The study did not reveal any personal data, for example, names, pertaining to the women those files were reviewed. In other words, their anonymity was respected. In addition, the anonymity and the confidentiality of the information collected was ensured through the use of codes. All the files relevant to the research topic and kept by the hospital had an equal chance of being selected.

3. Results

3.1 Demographic Profile of Women

The ages of the participants were ranged between 20 and 50 years with the majority of the participants (n = 68), namely, 45.63 %, being in the age group 20 to 30 years, followed by (n = 40), namely, 26.84%, being in the age group 13 to 19years, while 14.76 % (n = 22) were aged between 35 and 49 years while one participant was 50 years old. The results are presented in table 1.The mean age for the study group was 25.1 years.

3.2 Age

Table 1. Age of participants

Age category	Frequencies	Percentage %
13 to 19 years	40	26.84
20 to 30 years	68	45.63
31 to 34 years	18	12.1
35 to 49 years	22	14.76
50	1	0.67
Total	149	100%

3.3 Employment Status

The study found that 108 (72.5 %) of the participants were unemployed while 41 (27.5%) were employed.

Table 2. Employment status

Employment status	Frequencies	Percentage %
Unemployed	108	72.5
Employed	41	27.5
Total	149	100%

3.4 Gravidity Before Delivery

It emerged that 52% (n = 78) were multigravida,:44% (n = 65) were primigravida while 4% (n = 6 (4%) grand multipara (see Table 3 below).

Table 3. Gravidity of participants before delivery

Gravidity	Frequencies	Percentage%
Multigravida	78	52
Primigravida	65	44
Grande multipara	6	4.0
Total	149	100%

3.5 Type of Pregnancy

Table 4 below indicates the pregnancy type as found in the files, which were reviewed with the majority of the women having a singleton pregnancy (96.6%) and few only with multiple pregnancies (3.36%).

Table 4. Type of pregnancy

Type of pregnancy	Frequency	Percentage %
Singleton pregnancy	145	96
Multiple pregnancy	6	4.0
Total	149	100

3.6 Antenatal Care Attendance

The records indicated that 144 (97%) of the women had attended antenatal care while 5 of the women (3 %) had not attended antenatal care during pregnancy.

Table 5. Antenatal care attendance

Antenatal care attendance	Frequency	Percentage %
Attended	144	97
Not attended	5	3
Total	149	100

3.7 Indications of Caesarean Section

Table 6 below presents the following indications of C/S, namely, foetal distress 25.6%, (n = 38) previous C/S scar 18.1% (n = 27) CPD 16.1% (n = 24) 16.1% malpresentation (n = 10) 6.7%, 9.4%, eclampsia/pre-eclampsia (n = 12) 8.1%. Furthermore, the study findings revealed the following indications of C/S, namely; ante partum haemorrhage 7.4 % (n = 11), prolonged labour 6.7% (n = 10), multiple pregnancy 4.0% (n = 5), failed induction of labour 3.4% (n = 5), 2.0% failed vaginal birth after caesarean section (n = 3), cord prolapse 1.3% (n = 2) and severe vaginal warts 0.6% (n = 1).

Table 6. Indications of caesarean section

Indications of caesarean section	Frequency	Percentage %
Foetal distress	38	25.6
Previous caesarean section	27	18.1
Cephalopelvic disproportion	24	16.1
Pre-eclampsia/eclampsia	12	8.1
Antepartum haemorrhage	11	7.4
Malpresentation	10	6.7
Prolonged labour	10	6.7
Multiple pregnancies	6	4.0
Failed induction	5	3.4
Failed Vaginal birth after caesarean section	3	2.0
Cord prolapse	2	1.3
Severe vaginal warts	1	0.6
Total	149	100.

4. Discussion

This study revealed the common age for C/S among women was 20 to 30 years old respectively. According to the Namibia Ministry of Health and Social Services (MoHSS) and ICF International (2014), the normal reproductive age is between 20 and 30 years with this age range being considered to have the best delivery outcomes for both mother and foetus. This finding is similar to a study conducted at Al-Wahda hospital, Libya which found out that majority of women undergoing C/S were in the 20 to 30 years' age group (Elzahaf & Ajroud, 2018). Similar findings were reported in a study conducted in the Punjab Institute of Medical Sciences, which revealed that most of the mothers undergoing C/S were between the ages of 21 to 30 years. On the other hand, a study conducted in a rural block of the State of West Bengal found that the common age group of women who delivered by C/S had increased to between the ages of 25 and 30 years (Pal, Mondal, & Ghosh, 2015).

In addition, this study reported high number of women aged 13 and 19 years (adolescents) as having undergone a C/S. The study finding is supporting the findings of higher rate of adolescent pregnancy in Kavango region, Namibia (The Namibia Ministry of Health and Social Services (MoHSS) and ICF International, 2014). Adolescent pregnancy is defined as pregnancy in a young girl between the age of 13 and19 (Spencer, 2011). According to Nilsen (2014), the high C/S percentages in adolescents could be caused by obstructed labour due to an immature birth canal. This means that they became pregnant before the pelvis had matured, resulting in cephalo-pelvic disproportion which plays a central role in obstructed labour. The results of this study in relation to girls aged 12 to 20 years, in which younger adolescent age was used as an impartial factor for C/S, revealed that the incidence of C/S increases as maternal age decreases (Malabarey, Balayla, & Abenhaim, 2012).

Although this study's findings relating to the 26.84% of adolescent girls who had undergone C/S was of interest it was, nevertheless, not surprising as Namibia has been cited as one of the countries with the highest adolescent pregnancy rates in Africa (Ministry of Education, Arts and Culture [MOE], 2010). Overall, the study's findings were in line with the findings of a previous study on the teenage pregnancy rate which was conducted in the Kavango region by the United States Agency for International Development (USAID) (2011), which stated that the teenage pregnancy rate in the Kavango region was double the national average at 34% for the 15 to 19 years' old age group. It may, therefore, be suggested that operational measures in relation to avoiding adolescent pregnancy should be improved and reinforced at schools from an early age. Health education and sex education should be introduced as a school subject and teachers instructing adolescents on the disadvantages or danger of failing pregnant at a young age. In addition, a friendly policy in respect of family planning that allows adolescents to gain access to free contraceptives without fear of discrimination and/or intimidation should be implemented.

This study also revealed that 12.1% of the women who underwent C/S were in the age group 31 to 34 years. This result is contrary to the findings of a study conducted by Rydal et al., (2019) which reported that 25% of women who underwent C/S were between 30 and 34 years. The findings of this study are similar to those of the study conducted by Janoudi et al. (2015) who discovered that women aged 35 or older experienced a greater number of obstetrical complications as compared to women aged between 20 and 34 with such complications putting them at risk of C/S. The findings of this study also concur with the study done by Nilsen (2014) which found that C/S in higher maternal age groups was associated with medical conditions such as hypertension and diabetes. Moreover, in the industrialised world, social, demographic and educational social trends combined with the greater accessibility of birth control and wider solutions to infertility problems has increased the proportion of women experiencing their first pregnancy after the age of 35 (Cohen, 2014). However, Mylonas and Friese (2015) emphasised that age is not, in itself, an indication for C/S but, rather, it is the occurrence of specific risks in this group that may result in indications for C/S, for example, woman may have hypertension which may be an indication for C/S.

Of the total population more, than half of the files reviewed indicated that the majority of the woman were unemployed, thus indicating a poor socio-economic status. Rundu is a semi-rural area and the majority of the inhabitants survive on subsistence farming. This could also contribute to the high rate of unemployment rate among the community members. This study's findings were in line with those of a study conducted by Shamshad (2008) in Pakistan which identified that the majority of women who had undergone C/S were unemployed and of a poor socio-economic status.

In their study carried out in 2017 Patil et al found that, in relation to an emergency C/S, multiple pregnancies contributed to 2.9% – lower than the 4.0% reported in this study. This study also revealed a higher rate of C/S was among primigravida. The high number of women undergoing C/S for the first time is an issue of great concern in light of the implications for future pregnancies and deliveries. In addition, the high number of C/S cases in primigravida will also result in an increase in the number of women with previous C/S in the future and, therefore,

it is clearly important to prevent the first C/S where possible. This study reported a high rate 44% of primigravida who had undergone C/S as opposed to the 23.2% of primigravida who had undergone C/S as reported to a study conducted in the Military Hospital Rawalpindi (Saijad, 2014).

The majority of the women whose files were reviewed in this study had attended ANC with only a few not attending ANC. In Namibia, a national policy of free maternal and child (less than 5 years) health care at public health facilities was implemented in 2000 in order to improve the accessibility and availability of maternal and child services throughout the country (MoHSS, 2010).In addition, antenatal care service is rendered free of charge in all public health facilities. This has resulted in the increased use of health services for both ANC and delivery services in the country. Namibia has managed to attain a 95% ANC coverage which is above the authorised target (MoHSS, 2010). More than 80% of all deliveries occur in public institutions while 81.4% of all deliveries are carried out by skilled birth attendants. These statistics may be the reason for high rate of C/S (MOHSS, 2010). The findings of this study are in line with the findings of studies conducted by Witter and Diadhiou (2008) and Witter et al. (2010) in Hajjah hospital and Yemen hospital. The fact that both of these hospitals offer free antenatal care and free C/Ss may be one of the reasons for the high incidence of caesarean deliveries. The policy of free caesarean deliveries, which was recommended and adopted by many countries, in a bid to improve access to emergency obstetric care has been found to increase the incidence of caesarean deliveries (Witteret al., 2010).

The indications for C/S are divided into two categories, namely, foetal and maternal conditions. This study found that foetal conditions constituted 39% of C/S. The most common of such foetal conditions was foetal distress at 25.50%. However, this finding was lower than the 50% reported in a study conducted in the Kamineni Institute of Medical Sciences (Balmur & Guthi, 2017) but higher than the 10.0% recently reported in an audit of C/S carried out in Pakistan (Sajjad et al., 2014). These variations may be attributed to the various methods used to detect foetal distress and the samples of the populations under investigation. In the hospital were the study is conducted the most common method employed for monitoring foetal heart rate (FHR) in labour is the cardiotocography (CTG). Nevertheless, despite the fact that there are guidelines on the diagnosis of foetal distress, in practice what constitutes foetal distress may differ from one clinician to another based on inter and intra-observer differences in the interpretation of foetal heart rate patterns. In the Rundu State Hospital, foetal distress is diagnosed based on an abnormal foetal heart rate as indicated on the CTG and /or meconium stained liquor. Ideally, CTG shows the foetal heart rate response both to foetal movement and maternal contractions. The trace it produces may be interpreted as reassuring, non-reassuring or abnormal. In Rundu State Hospital, the CTG was of poor quality, as most of CTGs did not have tocographic (uterine contractions) recordings as the midwives used one probe only to listen to the FHR without printing it. This may be due to a lack of equipment, proper facilities and skilled workers who are trained in CTG interpretation. The practice of not using both probes to print the CTG may mean foetal asphyxia will not be detected early enough, thus resulting in a poor outcome. Nonetheless, when the CTG is used to listen for the foetal heart for a few minutes only this may result in incorrectly diagnosed foetal asphyxia that lead to an unnecessary C/S. Ideally, the suspicion of foetal distress should be also confirmed by both foetal scalp blood sampling for pH and lactate determination (Inyanga-Otu, 2014).There are appropriate methods that are easy to use when monitoring foetal heart rate in low risk labour, for example, intermittent auscultation with fetoscope and doptone. When such methods are not used, this may lead to an incorrect diagnosis, which may then result in an unnecessary C/S (Inyanga-Otu, 2014).

Cephalo-pelvic disproportion constituted 16% of C/S in this study. This represented the only subjective assessment made by the attending healthcare providers based on a pelvic assessment and based primarily on findings during labour. Overall, the findings of this study contradicted the findings in previous studies conducted in other countries that used a different terminology such as arrest of dilatation, arrest of descent and dystocia. It is possible such diagnoses may have been recorded in the patient records as poor progress (Inyang-Otu, 2014; Barber et al., 2011). The findings of this study suggest a degree of subjectivity in clinical assessment an adjustable factor which, if addressed, might lead to fewer instances of C/S.

The current study also reported a higher rate of 81.9% primary C/S as compared to the 68.7% and 67.6% reported on other studies (Chukwu et al., 2017; Geidam et al., 2009). Mothers who had a primary C/S are more likely to have a C/S delivery in future pregnancies as health workers are reluctant to try a vaginal delivery in the case of women with a C/S scar. This may be due to the fear of litigation as a result of uterine rupture and the associated risk to both the mother and the foetus. It is, therefore, clear that primary C/S should be avoided whenever possible.

The findings of this study revealed that mothers with previous C/S were more prone to have a subsequent C/S as compared to their counterparts with no history of C/S. These findings are similar to those of the study conducted by Shamshad, (2008) that found that repeated C/S was the most common indication for C/S. The guideline established

that women with previous C/S should be given information during their antenatal visits to enable them to give their informed consent as to whether they wished to attempt a VBAC or proceed directly to C/S. Those women who agreed to VBAC would be admitted at 38 weeks of gestation to wait for spontaneous labour while those who did not agree should be booked for a C/S at about 38 weeks (MoHSS, 2009). It is, thus, recommended that the existing rules in Namibia for the management of patients with a previous C/S be changed and that the patient be evaluated at approximately 36 weeks of gestation and decision made on the mode of delivery.

According to Lavender et al. (2012), C/S may possibly reduce the incidence of litigations associated with vaginal deliveries. Furthermore, Nyamtema et al.(2008) also support the view that fear of litigation also affects the attitude of many doctors who tend to perform C/Ss. However, Abebe et al., (2016) discovered that trial of scar in singleton pregnancies could be carried out to reduce the rate of repeated C/Ss as the risk of uterine rupture is low in singleton pregnancies compared to multiple pregnancies.

Pregnancy inductive hypertension (PIH) that developed into pre-eclampsia and then eclampsia contributed to the statistic of 8.05 % in respect of women who underwent an emergency C/S. The possible interpretation of pre-eclampsia and eclampsia may arise from the fact that the Rundu State Hospital is a referral hospital with the possibility of a number of the patients being referred from peripheral hospitals and who may have received suboptimal care prior to their being referred. This study reported an 8.05% hypertensive disorder of pregnancy with lower than the 27.1% reported in a study conducted by Al-Rukeimi, Al-Haddad & Adam, (2013) on the overuse of caesarean delivery at the Al-Saudi Hospital in Hajjah, Yemen. The discrepancy between the findings may stem from the fact that the study in Yemen was a large study using a big sample and conducted over a period of one year while this study was a small study with small sample and conducted over a period of 3 months.

4.1 Limitations of the Study

One of the limitations of the study was the retrospective design used and because of which the validity of the study applied only to the population under study. In addition, the fact that the Rundu State Hospital, the setting of the study, serves as a referral centre may mean that the findings of the study are not necessarily generalisable to non-referral hospitals.

5. Conclusion

In conclusion, the study found that the age of the participants ranged between 13 and 50 years with the majority of the participants being in the age group of 20 to 30 years with a mean age of 25.1 years. The majority of the participants had a singleton pregnancy and only a few had multiple pregnancies. In addition, the study found out that a primary C/S was more common than previous uterine scar. Overall, the study found that the leading indications for C/S included foetal distress, previous uterine scar and cephalopelvic disproportion. However, it is recommended that foetal distress, as the main indication for a primary C/S, should be further confirmed with a printed cardiotocograph. The training of health workers on the interpretation of cardio-tocographs and the importance of using other methods such as the fetoscope and doptone to monitor foetal heart rate may help to reduce the use of primary C/S as a result of foetal distress. In addition, the increase in C/S due to previous single caesarean section could be decreased by allowing the mother to undergo a trial labour for vaginal delivery.

Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

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