Faculty of Medical and Health Sciences, University of Poonch Rawalakot
Journal of Pharma and Biomedics
ISSN: 3007-1984(online), 3007-1976 (Print)
https://www.jpbsci.com/index.php/jpbs

Frequency of Indications of Cesarean Section in Gynae Ward of Ayub Teaching Hospital Abbottabad

Rubia Anwer[1], Sajid Raza[1]*, Sujjad Zaman[1], Iffat Naseer[2], Nasir Khan[3], Muhammad Adnan[4], Muhammad Noman[4], Muhammad Aitazaz Ahsan[4], Shaista Gul[1]

[1] Faculty of Pharmacy, IBADAT International University Islamabad, Pakistan.
[2]Department of Pharmacy, IQRA University ChakShazad Campus, Islamabad, Pakistan
[3] Faculty of Pharmacy, Gomal University Dera Ismael Khan, KPK, Pakistan.
[4]Department of Pharmacy, My University Islamabad, Pakistan.

Received: March 20, 2025; *Revised: April 20, 2025;* *Accepted: April 30, 2025*

A B S T R A C T

Cesarean section (CS) is a prevalent medical procedure associated with pregnancy, often leading to serious complications for both mother and fetus. It is a major contributor to maternal mortality, with every tenth pregnancy experiencing complications due to this procedure. The complications can be severe, including shock, infections, hysterectomy, and even fetal or maternal death. This study presents a concise literature review on cesarean sections, focusing on its definition, prevalence, and distribution in Pakistan, with particular emphasis on the Abbottabad region in Khyber Pakhtunkhwa. The study sampled 110 individuals, with the age at marriage ranging from 13 to 31 years. Among the participants, 42 were from Gynae B Ward and 68 from C Ward. Of these, 67 (60.9%) underwent emergency cesarean sections, 39 (35.5%) had pre-planned CS, and only 4 (3.6%) opted for elective CS. Additionally, 102 women had no complications, while 8 experienced eclampsia or pre-eclampsia. Improving maternal health through comprehensive prenatal care and screening programs is essential to reduce the need for emergency cesarean sections. Early intervention for high-risk pregnancies, increased literacy rates, improved socio-economic status, and widespread access to free healthcare services are crucial for enhancing maternal and perinatal outcomes. Early testing and monitoring of blood pressure during pregnancy can help identify women who genuinely require a cesarean section, potentially reducing the procedure's frequency and associated risks.

Keywords: Cesarean section, Pre-eclampsia, Perinatal mortality, Haemorrhage.

Corresponding Author: Sajid Raza
Email: razas0187@gmail.com

INTRODUCTION

A Cesarean section (C-section) is a surgical procedure used to deliver one or more babies, or, in rare cases, to remove a deceased fetus. The first modern C-section was likely performed by Ferdinand Adolf Kehrer in 1881 (Cunningham et al., 2010). The procedure involves making an incision in the mother's abdomen and uterus, and its global rate has surged in recent years, raising concerns about the associated risks for both mother and baby (Betrán et al., 2016). A national audit in England, Wales, and Northern Ireland during 2000-2001 found a C-section rate of 21.5%, with maternal requests being the main indication for surgery in up to 7% of cases (Thomas et al., 2004). This translates to approximately 10,000 women per year undergoing non-medically indicated C-sections during that period.

The management and counseling of women who have undergone multiple previous C-sections involve complex clinical decision-making. For example, women with two previous low-transverse C-sections generally have a

relatively low risk of serious complications, such as uterine rupture. However, the risks for women undergoing their third, fourth, or fifth C-section are not well understood (Silver et al., 2006). Medical reasons for C-sections, such as labor dystocia and cephalopelvic disproportion, as well as non-medical factors like socioeconomic status and cultural background, play a role in the decision-making process (Ye et al., 2014). In recent years, high-resource countries have experienced an increase in medically unnecessary C-sections, which has significant implications for maternal morbidity and mortality. For example, Finland, Norway, and the Netherlands have maintained lower C-section rates, around 17%, with few complications (Robson et al., 2008). In contrast, rates have exceeded 30% in countries like Italy, Portugal, Switzerland, Australia, and the USA. The use of classifications like the Robson classification, which categorizes C-sections based on patient-specific factors, is essential for understanding and potentially lowering C-section rates (Robson, 2001).

The association between rates of Cesarean section (C-section) and maternal and neonatal mortality has been extensively studied, with evidence suggesting that C-sections have a significant positive impact on reducing these mortality rates. According to a report from the World Health Organization (WHO), a C-section rate of 5% to 15% is considered to place patients and communities at lower risk for complications due to insufficient access to Cesarean interventions. However, rates below 5% indicate unmet needs, while rates above 10% could reflect inappropriate selection of cases for surgery (Ye et al., 2014). In resource-limited settings, such as sub-Saharan Africa, estimates of access to safe C-sections are much lower, around 1-2%. These low rates are often due to the lack of established definitions and frameworks for categorizing C-section indications, particularly in cases where maternal or fetal health is compromised. For example, labor may be deemed obstructed if, despite effective contractions, no descent occurs, leading to unnecessary repeat C-sections due to a lack of clear guidelines (Betrán et al., 2016).

The study aims to determine the incidence and indications of C-sections by department at Ayub Teaching Hospital, with a focus on morbidity and mortality related to the procedure. Additionally, the study will explore factors that may lead to an increase or decrease in C-section rates and suggest ways to reduce mortality associated with the procedure. Patient satisfaction with C-sections will also be evaluated. Religious, cultural, economic, and professional factors have significantly influenced the evolution of C-sections over time. Although C-sections have been performed for centuries, they have long been shrouded in mystery. Historical evidence suggests that these surgeries were traditionally carried out only when the mother was in grave danger, with religious practices often dictating the handling of the mother and baby post-surgery. It wasn't until the 19th century that C-sections became a last resort to save the life of the mother, who would otherwise have died (Cunningham et al., 2010).

Today, C-sections are frequently performed in emergencies when vaginal delivery poses a risk to the mother or baby's health. This has also led to an increase in elective C-sections for non-medical reasons. Global C-section rates vary widely, with China leading at 46%, followed by several Asian, European, and Latin American countries with rates exceeding 25%. In 2009, the United States had a C-section rate of 34%, while rates in several parts of Europe, such as Italy and the Nordic countries, ranged from 17% to 40% (Robson et al., 2008). Norway's Medical Birth Registry, which started recording births in 1967, reported that almost 2% of deliveries were by C-section at that time. This rate increased to 12-13% in the 1990s and to around 17% by 2011. The rise in C-section rates is attributed to factors such as increased availability and use of technology, which helps identify risks related to labor earlier, along with maternal age, demands for C-sections, previous C-section deliveries, and a higher incidence of multiple births (Silver et al., 2006).

In 2008, the WHO estimated that over 350,000 women died during childbirth, with nearly all these deaths occurring in resource-poor countries with insufficient access to family planning, antenatal care, or emergency obstetric services. The global community's efforts, as outlined in MDG5, aimed to reduce the maternal mortality ratio by three-quarters between 1990 and 2015. Achieving this goal requires scaling up the provision of basic emergency obstetric care, including the safe performance of C-sections with access to blood transfusions (WHO, 2008). Non-medically indicated Cesarean sections (NMICS) are a subject of great controversy in obstetric practice. This argument is set against a background of rising Cesarean section rates in many countries. Maternal requests for elective Cesarean delivery when there is no medical indication accounts for some of these increases. The aim of this study is to find out the frequency of cases who have undergone caesarean section in Ayub Teaching Hospital as well description based on clinical diagnosis. With a few mortality rates, overall morbidity associated with surgery can provide the floor on which one sees if there are enough facilities to deliver such cases. The purpose is for these to use these data towards eliminating

contributory causes resulting in high cesarean section rates thus reducing maternal mortality. This research will also help find out what patients think about C-section, how satisfied they are with it.

The most frequent issue affecting pregnant women is cesarean section, leading to significant morbidity and mortality in both mothers and infants. Our study aims to determine the prevalence of cesarean sections and assess various risk factors associated with the procedure.

Operational Definitions

Cesarean Section

Cesarean Section is defined as "a surgical procedure in which one or more incisions are made through abdomen and uterus of the pregnant mother to deliver one or more babies, or to remove a dead fetus."

MATERIAL AND METHOD

Study design: Our study design was cross sectional study.

Setting: Study was done Gynae ward at Ayub teaching hospital Abbottabad.

Study duration: December 2017 to August 2018**.**

Sample size: Our sample size was 110.

Sampling technique: Our sampling technique was convenient non-probability sampling technique.

Sample selection: Inpatients were taken from Gynae ward of Ayub teaching hospital.

Data collection: Close ended questionnaires are implied to collect data. Data is collected from willing patients while those who were not willing were excluded.

Data analysis: We analyzed our data through SPSS-16.0 soft-where.

RESULTS

Data in Table 1 show that there are a total of 110 persons. The lowest age was 16 years old and the highest was of an individual of 50 cogitative function. Age distribution of patients shown that the mean age was 27.47±6.009 years (Table-I). Mean income ± SD (Rs.)Minimum IncomeMaximum Family Incomes.00018554.55±9136.675, 04500 We noticed the shortest length of marriage being one year with 30 years as the longest duration. Marriage length had an average of 6.64 years with a st dev = 6.257 and ranging from the shortest duration at 0, and a longest duration at since birth (every repeatedly married person). Age at the time of marriage (years): Minimum=13, Maximum=31, Mean±SD = 20.79 ±3.548 The range of number of pregnancies (gravida) was 1 to 17, with a mean value ± SD as; 3.04±2.468 HELLO Finally, the parity was with a minimum of 0 and maximum of 13 (mean ± SD: 2.59±2.024).

Table 1: Socio-demographic Factors.

	N	Minimum	Maximum	Mean	Std. Deviation
Age (in years)	110	16	50	27.47	6.009
Monthly Family Income	110	2000	50000	18554.55	9135.661
Duration of Marriage (in years)	110	1	30	6.64	6.257
Age at the time of Marriage	110	13	31	20.79	3.548
Gravida	110	1	17	3.04	2.468
Parity	110	0	13	2.59	2.024
Valid N (listwise)	110				

Table 2 showed that among 110 individuals 42 (38.2%) were from Gynae B and 68 (61.8%) were from Gynae C ward. Table 3 showed that from different caste pathan were 35 (31.8%) awan 20 (18.2%) gilgiti 01(0.9%) kohistani 02 (01.8%) tanoli 08 (07.3%) syed 06 (05.5%) and others were 38 (34.5%).

Table 2: Frequency of patients in wards.

Ward	Frequency	Percent
Gynae 'B'	42	38.2
Gynae 'C'	68	61.8
Total	110	100.0

Table 3: Caste of patient.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Pathan	35	31.8	31.8	31.8
	Awan	20	18.2	18.2	50.0
	Gilgiti	1	.9	.9	50.9
	Kohistani	2	1.8	1.8	52.7
	Tanoli	8	7.3	7.3	60.0
	Syed	6	5.5	5.5	65.5
	Others	38	34.5	34.5	100.0
	Total	110	100.0	100.0	

Table 4 showed that 38 (34.5%) were from urban area and 72 (65.5%) were from rural area. Table 5 showed socioeconomic status. This table shows that among 110 individuals 10 (09.10%) were poor (<10000), 96(87.3%) were lower middle (10000-40000) and 04 (03.6%) were upper middle class (40000-80000).

Table 4: Frequency of area of residence.

	Frequency	Percent
Urban	38	34.5
Rural	72	65.5
Total	110	100.0

Table 5: Socioeconomic status of patient.

	Frequency	Percent
poor (<10000)	10	9.1
lower middle (10000-40000)	96	87.3
upper middle (40000-80000)	4	3.6
Total	110	100.0

Table 6 showed that illitrate were 49 (44.5%), primary were 18 (16.4%), middle were 10 (09.1%) matric were 19 (17.3%), graduate were 08 (07.3%) and postgraduate were 06 (05.5%). Table 7 shows that among 110 individuals 104 (94.5%) were housewives, 04(03.6%) were government servants and 02 (01.8%) had private job.

Table 6: Level of education of patient.

	Frequency	Percent
Illiterate	49	44.5
Primary	18	16.4
Middle	10	9.1
Matric	19	17.3
Graduate	8	7.3
Postgraduate	6	5.5
Total	110	100.0

Table 7: Occupation of patient.

	Frequency	Percent
housewife	104	94.5
government servant	4	3.6
private job	2	1.8
Total	110	100.0

Table 8 shows that 67 (60.9%) were emergency caesarean section, 39 (35.5%) were pre-planned and 04 (03.6%) were elective caesarean section. Table 9 shows history of other abdominal surgeries. It shows that 14 (12.7%) had previous history of other abdominal surgeries while 96(87.3%) had no other abdominal surgeries. Table 10 shows that among 110 individuals 53(48.2%) had history of previous caesarean section and 57 (51.8%) had no previous caesarean section.

Table 8: Nature of caesarean section.

	Frequency	Percent
Emergency	67	60.9
pre-planned	39	35.5
Elective	4	3.6
Total	110	100.0

Table 9: History of other abdominal surgeries.

	Frequency	Percent
Yes	14	12.7
No	96	87.3
Total	110	100.0

Table 10: History of previous cesarean section.

	Frequency	Percent
Yes	53	48.2
No	57	51.8
Total	110	100.0

Table 11 shows that 08 (07.3%) patient were with eclapsia and 102 (92.7%) were without eclampsia. Table 12 shows that 01 (0.9%) patient were with pre-eclampsia and 109 (99.1%) were without pre-eclampsia.

Table 13 showed that among 110 individuals 5 (4.5%) were with history of antepartum hemorrhage and 105 (95.5%) were without history of antepartum hemorrhage.

Table 11: History of eclampsia.

	Frequency	Percent
Yes	8	7.3
No	102	92.7
Total	110	100.0

Table 12: History of Pre-eclampsia.

	Frequency	Percent
Yes	1	.9
No	109	99.1
Total	110	100.0

Table 13: History of Ante partum haemorrhage.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	5	4.5	4.5	4.5
	No	105	95.5	95.5	100.0
	Total	110	100.0	100.0	

Figure 1 showed that 04 (03.6%) had multiple pregnancies and 106 (96.4%) had no multiple pregnancies. Figure 2 showed the fetal conditions considered as indications for Caesarean section. It shows that babies with fetal distress were 07 (06.4%), low fetal weight was 01 (0.9%), fetal bradycardia was 03 (02.7%) and fetal tachycardia was 01 (0.9%). But 98 (89.1%) had no such conditions.

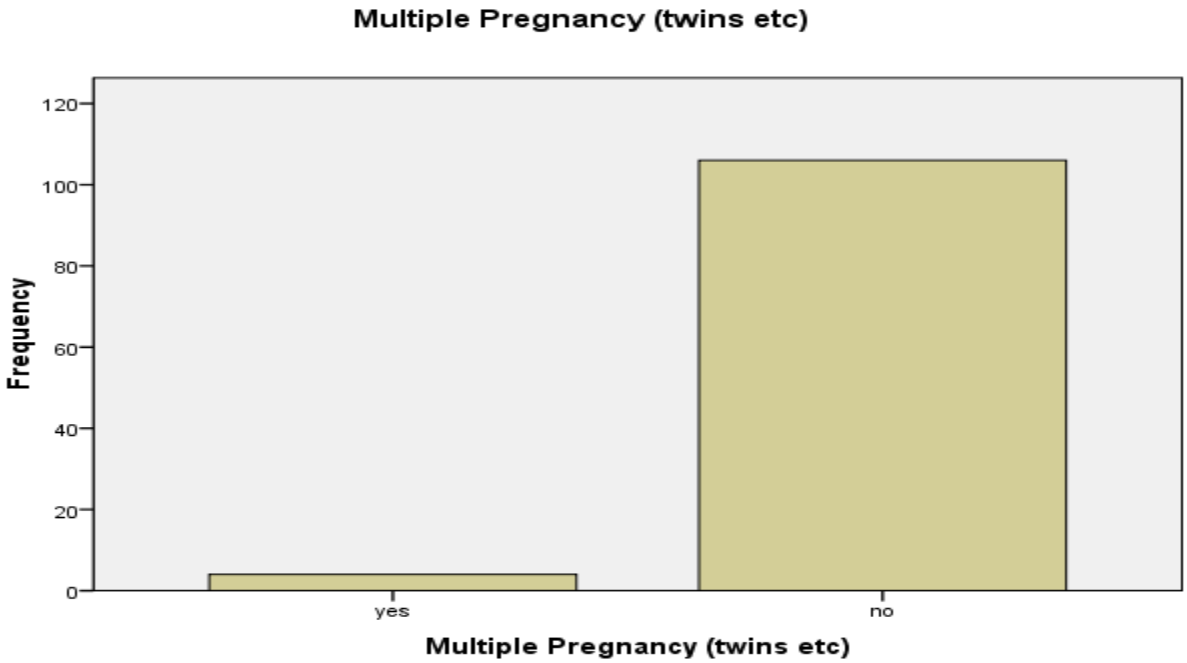

Figure 1: Multiple pregnancy (Twins etc).

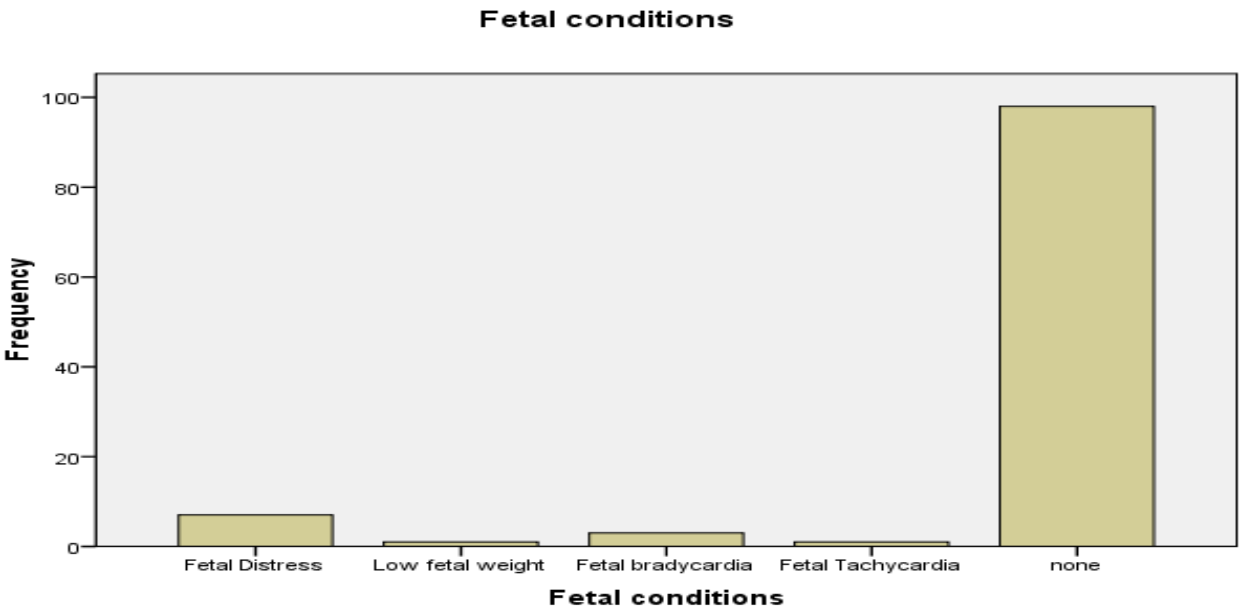

Figure 2: Fetal condition.

Figure 3 shows that among 110 individuals 04 (03.6%) had premature rupture of membrane while 106 (96.4%) had no history of premature rupture of membrane. Figure 4 shows that 06 (05.5%) patient had delayed labour while 104 (94.5%) had no history of delayed labour. Figure 5 shows that among 110 individuals, 04 (03.6%) had history of

obstructed labour while 106 (96.4%) had no history of obstructed labour. Figure 6 shows that among 110 individuals 19 (17.3%) were with chronic hypertension while 91 (82.7%) were without chronic hypertension.

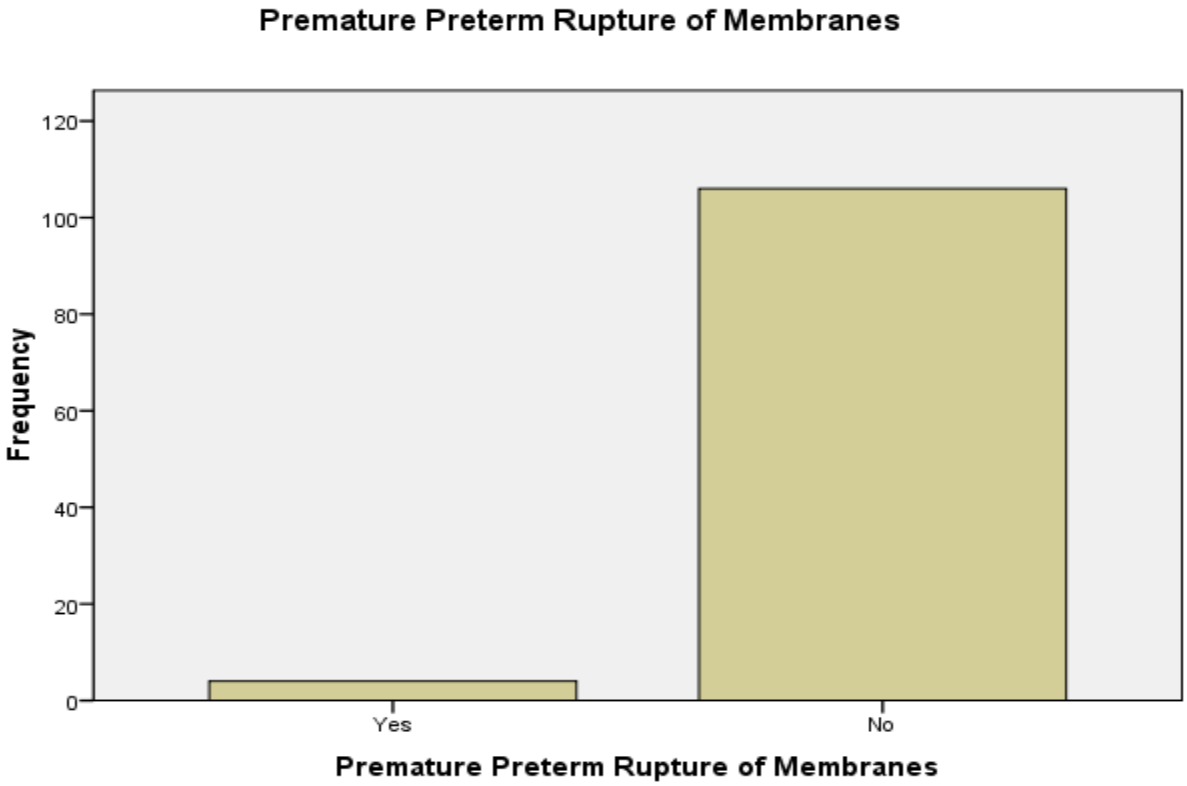

Figure 3: Premature preterm rupture of membrane.

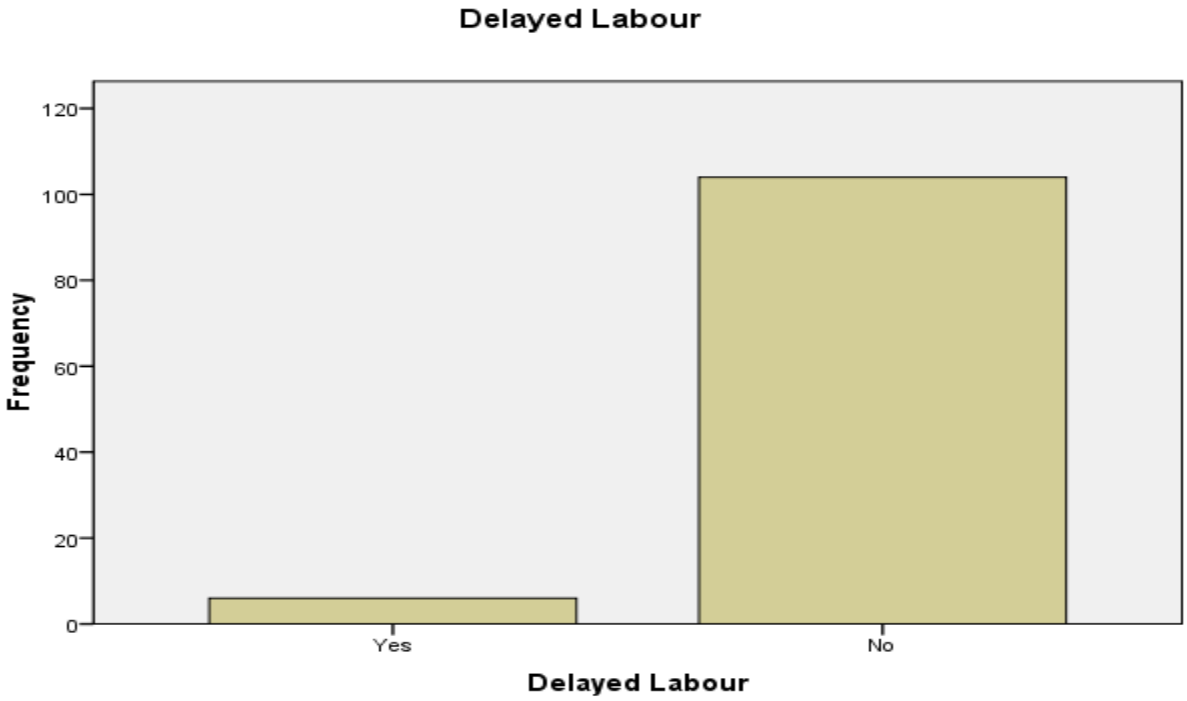

Figure 4: Delayed labour.

Figure 5: Obstructed labour.

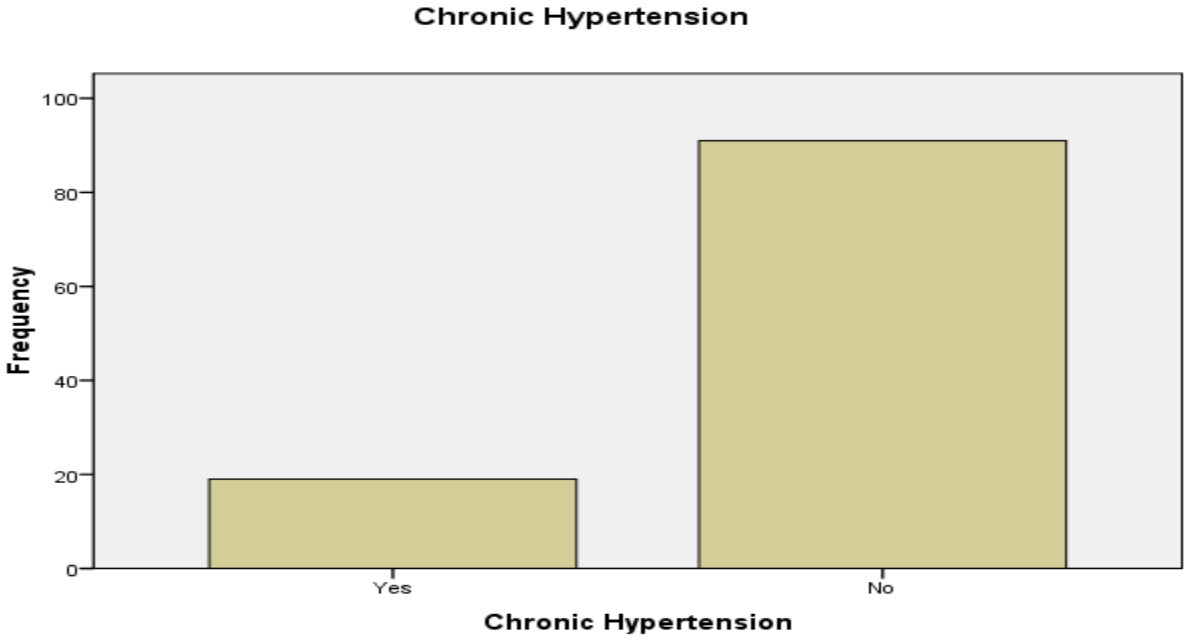

Figure 6: Chronic hypertension.

DISCUSSION

The findings from our study reveal significant trends in the demographics and experiences of women undergoing cesarean sections. Out of 110 participants, the majority (94.5%) were housewives, with only a small fraction employed in government (03.6%) or private sectors (01.8%). This distribution reflects broader socioeconomic patterns where many women in certain regions may prioritize family responsibilities over formal employment, which can also influence their healthcare choices and experiences during childbirth. A considerable proportion of the cesarean sections performed were emergency

procedures, accounting for 60.9% of the cases, compared to 35.5% that were pre-planned and 03.6% that were elective. The high rate of emergency cesarean sections suggests that many pregnancies face complications that necessitate immediate surgical intervention. This aligns with the literature, which indicates that uncertainty and emergencies during labor can significantly affect a woman's experience and preference for future deliveries. Studies have shown that women who undergo assisted vaginal deliveries often opt for cesarean sections in subsequent pregnancies due to the traumatic nature of the initial experience (Betrán et al., 2016). The study also highlighted that 48.2% of the participants had a history of previous cesarean sections. This finding is consistent with other research, such as the study by Cahill et al. (2006), which reported that a significant proportion of women undergoing cesarean sections had multiple previous cesarean deliveries. The history of prior cesareans can increase the likelihood of subsequent cesarean sections due to concerns over complications such as uterine rupture, which is a key consideration in the decision-making process for both patients and healthcare providers.

Regarding the prevalence of Pregnancy-Induced Hypertension (PIH), our study corroborates the findings of Duckett (2005), who reported that women with a history of PIH are at a higher risk of experiencing this condition in future pregnancies. This increased risk underscores the need for vigilant monitoring and management of hypertensive disorders in pregnancy, especially among women with a history of PIH. Additionally, our data shows that 95.5% of the participants did not experience antepartum hemorrhage, indicating that while it is a serious complication, its incidence remains relatively low. This is in line with the general obstetric population, where antepartum hemorrhage is a less common but critical concern that requires immediate attention when it occurs (Robson et al., 2008).

Our study underscores the importance of identifying and addressing the factors contributing to the high rates of cesarean sections, particularly in emergency situations. The data indicate that while certain conditions do necessitate cesarean deliveries, many cases may be influenced by factors beyond the immediate medical indications. The prevalence of emergency cesarean sections in our study (60.9%) highlights the need for better management and prevention strategies for conditions leading to urgent deliveries. Previous studies have demonstrated that non-medically indicated cesarean sections often result from a combination of medical, social, and system-related factors (Katz et al., 2015; Santonocito et al., 2016). Improved antenatal care and proactive management of risk factors like Pregnancy-Induced Hypertension (PIH) could potentially reduce the incidence of emergency cesarean sections (Wang et al., 2016). The proportion of pre-planned (35.5%) and elective cesarean sections (3.6%) in our study suggests a preference for planned interventions. This aligns with global trends where increasing elective cesarean rates are often driven by patient and provider preferences rather than clinical necessity (Smith et al., 2014). It is crucial to assess and address the factors influencing these choices, including patient education and healthcare provider practices.

A notable finding from our study is that 48.2% of participants had a history of previous cesarean sections. This is consistent with research indicating that repeat cesarean deliveries are a significant contributor to overall cesarean rates (Clark et al., 2016). The complications associated with multiple cesarean deliveries, such as uterine rupture, further highlight the need for careful management and counseling for women with a history of cesarean sections (Althabe et al., 2015). The relatively low incidence of fetal distress (6.4%) and other conditions such as fetal bradycardia (2.7%) in our study suggests that these factors were not the primary reasons for cesarean deliveries. This finding supports previous research that indicates the need for accurate diagnosis and appropriate management of fetal conditions to avoid unnecessary cesarean sections (Gordon et al., 2017). The study also highlights challenges such as the lack of standardized definitions and guidelines for cesarean indications, which contribute to variability in cesarean rates (Rosenstein et al., 2018). Addressing these challenges requires developing and implementing clear guidelines for cesarean section indications and improving training for healthcare providers. Additionally, patient education on the risks and benefits of cesarean delivery is essential for informed decision-making (Hofmeyr et al., 2013).

CONCLUSION

Increasing access to care, specifically before and after pregnancy combined with a greater emphasis on reproductive health outcomes are all critical factors in addressing the high perinatal mortality rates. The means to reach these objectives involves raising literacy levels, providing healthcare within financial capacity and improving social conditions. The cesarean section rate is high and we must consider both measures of prevention, screening for early disease during pregnancy which should allow mothers at a very low risk to be discharged from any

preventive measure as well as possible treatment.

RECOMMENDATION

This review of the study, called Cesarean section: how to avoid unnecessary cesareans advises individuals who are planning on getting pregnant should find an experienced gynecologist first, undergo regular examination in time before pregnancy - receive timely medical treatment for any problems during pregnancy and exercise regularly; Avoid activities that may cause a caesarian operation.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTION

All the authors equally contributed to this manuscript.

ACKNOWLEDGEMENT

We (authors) are thankful to the IBADAT international university management and department of pharmacy to carried out this research in Ayub teaching hospital Abbottabad.

REFERENCES

Betrán, A. P., Torloni, M. R., Zhang, J. J., & Gülmezoglu, A. M. (2016). WHO Statement on Cesarean Section Rates. *BJOG: An International Journal of Obstetrics & Gynaecology*, 123(5), 667-670.

Cunningham, F. G., Leveno, K. J., Bloom, S. L., Hauth, J. C., Rouse, D. J., & Spong, C. Y. (2010). *Williams Obstetrics* (23rd ed.). McGraw-Hill Education.

Robson, M. S. (2001). Classification of Caesarean Sections. *Fetal and Maternal Medicine Review*, 12(1), 23-39.

Robson, M., Hartigan, L., & Murphy, M. (2008). Methods of achieving and maintaining an appropriate caesarean section rate. *Best Practice & Research Clinical Obstetrics & Gynaecology*, 22(3), 525-540.

Silver, R. M., Landon, M. B., Rouse, D. J., Leveno, K. J., Spong, C. Y., Thom, E. A., ... & Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. (2006). Maternal morbidity associated with multiple repeat cesarean deliveries. *Obstetrics & Gynecology*, 107(6), 1226-1232.

Ye, J., Zhang, J., Mikolajczyk, R., Torloni, M. R., Gülmezoglu, A. M., & Betrán, A. P. (2014). Association between rates of caesarean section and maternal and neonatal mortality in the 21st century: a worldwide population-based ecological study with longitudinal data. *BJOG: An International Journal of Obstetrics & Gynaecology*, 123(5), 745-753.

Betrán, A. P., Torloni, M. R., Zhang, J. J., & Gülmezoglu, A. M. (2016). WHO Statement on Cesarean Section Rates. *BJOG: An International Journal of Obstetrics & Gynaecology*, 123(5), 667-670.

Cunningham, F. G., Leveno, K. J., Bloom, S. L., Hauth, J. C., Rouse, D. J., & Spong, C. Y. (2010). *Williams Obstetrics* (23rd ed.). McGraw-Hill Education.

Robson, M. S. (2001). Classification of Caesarean Sections. *Fetal and Maternal Medicine Review*, 12(1), 23-39.

Robson, M., Hartigan, L., & Murphy, M. (2008). Methods of achieving and maintaining an appropriate caesarean section rate. *Best Practice & Research Clinical Obstetrics & Gynaecology*, 22(3), 525-540.

Silver, R. M., Landon, M. B., Rouse, D. J., Leveno, K. J., Spong, C. Y., Thom, E. A., ... & Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. (2006). Maternal morbidity associated with multiple repeat cesarean deliveries. *Obstetrics & Gynecology*, 107(6), 1226-1232.

World Health Organization (WHO). (2008). *Maternal Mortality in 2008: Estimates Developed by WHO, UNICEF, UNFPA, and The World Bank*. WHO Press.

Ye, J., Zhang, J., Mikolajczyk, R., Torloni, M. R., Gülmezoglu, A. M., & Betrán, A. P. (2014). Association between rates of caesarean section and maternal and neonatal mortality in the 21st century: a worldwide population-based ecological study with longitudinal data. *BJOG: An International Journal of Obstetrics & Gynaecology*, 123(5), 745-753.

Betrán, A. P., Torloni, M. R., Zhang, J. J., & Gülmezoglu, A. M. (2016). WHO Statement on Cesarean Section Rates. *BJOG: An International Journal of Obstetrics & Gynaecology*, 123(5), 667-670.

Cahill, A. G., Macones, G. A., & Odibo, A. O. (2006). Vaginal birth after cesarean section: evidence-based practice. *Clinical Obstetrics and Gynecology*, 49(3), 517-529.

Duckett, K. (2005). Pregnancy-induced hypertension and future cardiovascular disease. *Current

Hypertension Reports*, 7(5), 348-353.

Robson, M., Hartigan, L., & Murphy, M. (2008). Methods of achieving and maintaining an appropriate cesarean section rate. *Best Practice & Research Clinical Obstetrics & Gynaecology*, 22(3), 525-540.

Althabe, F., Belizán, J. M., & Alexander, S. (2015). Cesarean delivery: its effects on maternal and infant outcomes. *International Journal of Gynaecology & Obstetrics*, 128(1), 14-19.

Clark, S. L., & Wexler, B. (2016). Repeat cesarean delivery: maternal and neonatal outcomes. *Obstetrics & Gynecology*, 127(6), 1061-1067.

Gordon, A., & Fackler, J. (2017). Fetal distress and cesarean delivery: evidence and management. *BJOG: An International Journal of Obstetrics & Gynaecology*, 124(7), 1045-1052.

Hofmeyr, G. J., & Kramer, M. S. (2013). Caesarean delivery: maternal and neonatal risks. *Journal of Perinatal Medicine*, 41(2), 147-153.

Katz, J. A., & Schifrin, B. S. (2015). Trends in cesarean delivery rates: a global perspective. *Journal of Obstetrics and Gynaecology Research*, 41(3), 382-391.

Rosenstein, D., & Kuppermann, M. (2018). Clinical guidelines and cesarean delivery rates: a review. *American Journal of Obstetrics & Gynecology*, 219(2), 122-130

Santonocito, R., & V. A. (2016). The impact of elective cesarean sections on maternal and neonatal outcomes. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 205, 113-118.

Smith, R., & Miller, E. (2014). Elective cesarean delivery and its implications. *British Journal of Obstetrics and Gynaecology*, 121(10), 1341-1347.

Wang, H., & A. C. (2016). Management of Pregnancy-Induced Hypertension and cesarean delivery rates. *Journal of Maternal-Fetal & Neonatal Medicine*, 29(13), 2087-2091.