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# INDICATIONS OF CESAREAN SECTION AT AL-WAHDAH TEACHING HOSPITAL, DHAMAR, YEMEN

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ABSTRACT

***Purpose**: Because of the lack of information about the incidence of cesarean section and its indicators in Yemen, particularly in Dhamar Governorate, this study aimed to evaluate the incidence of cesarean section and identify the most common indications for cesarean section in Al- Wahdah Teaching Hospital, in Dhamar Governorate, Yemen.*

***Subjects and Methods:** A descriptive study was conducted on 393 at Al-Wahdah Teaching Hospital to estimate the incidence and indications of cesarean section in the hospital. The data were collected using a pre-tested questionnaire over a period of one month.*

***Results:** The overall rate of cesarean section was 55.5% (218/ 393). Among the 218, 61.9% were emergency while 38.1 % were elective cesarean sections. The maternal age for patients undergoing cesarean section ranged from 16 to 40 years, 23.9% were under 20 years, 66.5% were from 20- 35 years, and 9.6% were more than 35 years. The majority of mothers who gave birth by cesarean section were multigravida "43.1%" of which 42.7% (93) were multipara and 72% had no abortion. The majority of mothers had term pregnancy 90.8% (198), and 54.6% (119) had limited antenatal care. The most common indication was previous cesarean section 22.5%, followed by contracted pelvis 22% and obstructed labor 20.6%.*

***Conclusions:** In our study, the rate of cesarean section is higher than recommended by WHO. Most of them were emergency cesarean sections. The most common indication was a previous cesarean section, followed by the contracted pelvis and obstructed labor.*

## INTRODUCTION

Cesarean section refers to the delivery of a fetus after 20weeks of pregnancy through an abdominal and uterine incision (Farouk, 2007). While it confers the risk of both immediate and long-term complications, for some women, cesarean delivery can be the safest or even the only way to deliver a healthy newborn (Sung & Mahdy, 2021). In the United States, almost one in three women have their babies this way (Caughey et al., 2018). Some cesarean sections are planned, but many are done when unexpected problems happen during delivery (Caughey et al., 2018). World Health Organization (WHO) recommends a cesarean section

rate of 10-15% (AlSheeha, 2018). However, the prevalence of cesarean section has been increasing in both developed and developing countries (Prakash & Neupane, 2014).

Cesarean section indications vary among different populations and countries, and there is no world standard classification system for indications of caesarean section (WHO, 2015). The most common indications include previous caesarean section, multiple pregnancies, malpresentation, fetal distress, lack of progress of labor, small fetus and macrosomia, cord prolapse, cephalopelvic disproportion, previa and abruption placenta and severe preeclampsia (Elzahaf & Ajroud., 2018).

In Yemen, there are few published data on cesarean delivery. The available literature suggests that the incidence of the cesarean section had considerably increased over the last decade, from 1.4 in 1997 to 30% in 2013 (Al-Rukeimi et al, 2013). In a study published in 2016 about the risk ratio differences in the exposure to cesarean in the central area of the Western Highlands of Yemen, the rate of cesarean section was found to be 22% which is higher than the rate recommended by WHO (Mehrass et al., 2016). Because of the lack of information about the incidence of cesarean section and its indicators in Yemen, particularly in the Dhamar Governorate, this study aimed to evaluate the incidence of cesarean section and identify the most common indications for cesarean section at Al-Wahdah Teaching Hospital, in Dhamar Governorate, Yemen.

## METHODOLOGY

### Study area
This study was carried out at Al- Wahdah Teaching Hospital, Obstetrics and Gynecology Department, Dhamar Governorate, Yemen.

### Study design
This study was a descriptive study that was designed to evaluate the incidence and the indications of cesarean deliveries at Al- Wahdah Teaching Hospital.

### Study subjects
This study was conducted among cesarean sections at Al-Wahdah Teaching Hospital, which was available during the period of data collection which was one month “March 2021” and the total number of cesarean sections was 218.

### Data collection
The data were collected by a pre-tested questionnaire for women undergoing cesarean delivery in Al-Wahdah Teaching Hospital, which includes the following variables: maternal age, age at marriage, place of residence, income, educational and employment status, as well as other data like antenatal care, the indication of cesarean section, gravidity and parity, number of abortions, gestational age and the outcome of the operation to the mother and fetus.

### Ethical approval
This research was approved by Thamar University Medical Ethics Committee [TUMEC21002]. Verbal consent was obtained from each participant before participation in this study.

### Statistical analysis
Data were analyzed by Statistic Package for Social Sciences (SPSS) version 20. Variables were presented as percentages (%) according to their demographic variables and the indication of a cesarean section.

## RESULTS AND DISCUSSION

During the study period, 393 deliveries took place. The general characteristics of the study subjects are presented in Table 1. Most of the participants were from rural areas (70.6%), unemployed (95.4%), married at 20 to 35 years (66.5%), Illiterate (42.2%), and with low income (48.2%).

Out of the 393, 218 (55.5%) were cesarean sections and 175 (44.5%) were vaginal deliveries. As shown in Figure 1, the cesarean section rate was 55.5% per 100 deliveries. Accordingly, 61.9% were emergency and 38.1 % were elective cesarean sections. The maternal age for patients undergoing cesarean section ranged from 16 to 40 years, 23.9% were under 20 years, 66.5% were from 20- 35 years, and 9.6% were more than 35 years.

Most of the mothers who gave birth by cesarean section were multigravida (43.1%), of which (42.7%) were multipara and (72%) had no abortion. The majority of mothers had term pregnancies (90.8%), and 54.6% had limited antenatal care. Out of the 218 cesarean sections, 61.9% were emergency caesareans and 38.1% were elective caesareans (*Table 1).*

The most common indication was previous cesarean section (22.5%), followed by contracted pelvis (22%) and obstructed labor (20.6%) (*Figure 2)*. Two types of antepartum hemorrhage, (85.7%) were placenta previa and (14.3 %) were abruption placenta. Malpresentation among study subjects was (53.1%) breech and (49.9%) transverse (*Figure 3).*

The causes of fetal death and the causes of admission into incubation are listed in Table 3. The outcome of the operation to the mother and fetus, (93.6%) of mothers without complications, and (6.4%) have complications. Most of these complications are bleeding (42.9%) followed by anemia (35.8%). The outcome of the operation for the babies (7.8%) were alive and (4.1%) were dead and (17.9%) were sent into incubation. Most of the reasons for admission to the ICU are fetal distress (30.8%) and Asphyxia (20.5) (*Table 4*).

**Table 2: Socio-demographic characteristics of the study subjects**

| Variable (n=218) | Frequency ( N ) | Percentage (%) |
|---|---|---|
| **Place of residence** | | |
| Rural area | 154 | 70.6 |
| Urban area | 64 | 29.4 |
| **Employment status of participants** | | |
| Employed | 10 | 4.6 |
| Unemployed | 208 | 95.4 |
| **Maternal age in years** | | |
| Less than 20 | 52 | 23.9 |
| 20 to 35 | 145 | 66.5 |
| More than 35 | 21 | 9.6 |
| **Age at marriage** | | |
| **Less** than 18 | 127 | 58.3 |
| 18 to 30 | 89 | 40.8 |
| More than 30 | 2 | 0.9 |
| **Educational status of participants** | | |
| Illiterate | 92 | 42.2 |
| Primary | 63 | 28.9 |
| Preparatory | 28 | 12.8 |
| Secondary | 32 | 14.7 |
| High | 3 | 1.4 |
| **Employment status of husband** | | |
| Employed | 202 | 92.7 |
| Unemployed | 16 | 7.3 |

| | | |
|---|---|---|
| **Educational status of husband** | | |
| Illiterate | 32 | 14.7 |
| Primary | 59 | 27.1 |
| Preparatory | 32 | 14.7 |
| Secondary | 52 | 23.9 |
| High | 43 | 19.7 |
| **Income in Rials** | | |
| <20000 | 105 | 48.2 |
| 20000 to 50000 | 94 | 43.1 |
| 50000 to 100000 | 10 | 4.6 |
| >100000 | 9 | 4.1 |

*Source: Authors*

**Table 3: Obstetric data of the study subjects**

| Variable n (218) | Frequency (n) | Percentage % |
|---|---|---|
| **Gravidity** | | |
| Primigravida | 64 | 29.4 |
| Multigravida | 94 | 43.1 |
| Grandmultigravida | 60 | 27.5 |
| **Parity** | | |
| Primiparara | 77 | 35.3 |
| Multipara | 93 | 42.7 |
| Grand multipara | 48 | 22 |
| **Gestational age** | | |
| Term | 198 | 90.8 |
| Preterm | 12 | 5.5 |
| Post term | 8 | 3.7 |
| **Previous abortion** | | |
| Yes | 61 | 28 |
| No | 157 | 72 |
| **Number of previous abortion** | | |
| 0 | | |
| 1 | 157 | 72 |
| 2to 4 | 34 | 15.6 |
| More than 4 | 26 | 11.9 |
| | 1 | 0.5 |
| **Antenatal care** | | |
| No | 12 | 5.5 |
| Regular | 87 | 39.9 |
| Limited | 119 | 54.6 |
| **Type of cesarean section** | | |
| Elective | | |
| Emergency | 83 | 38.1 |
| | 135 | 61.9 |

*Source: Authors*

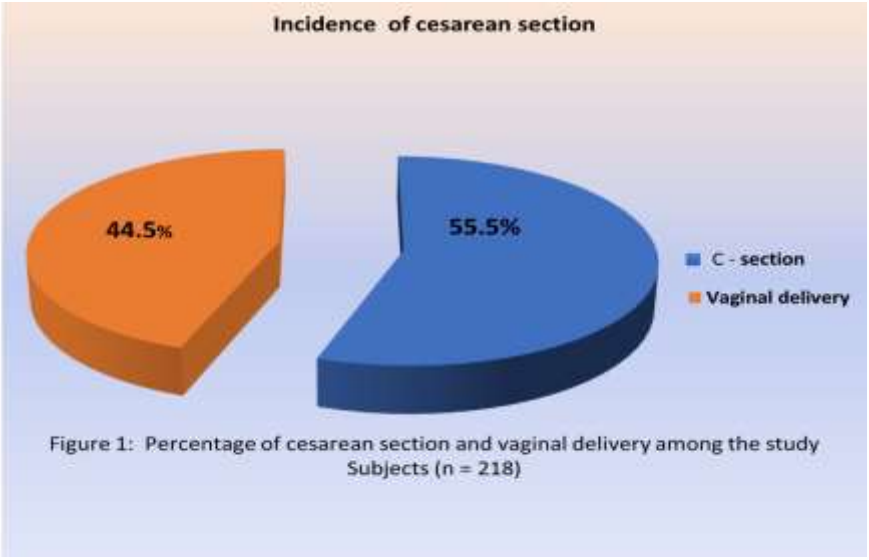


*Figure 1: Incidence of cesarean section in Al-Wahdah Teaching Hospital*

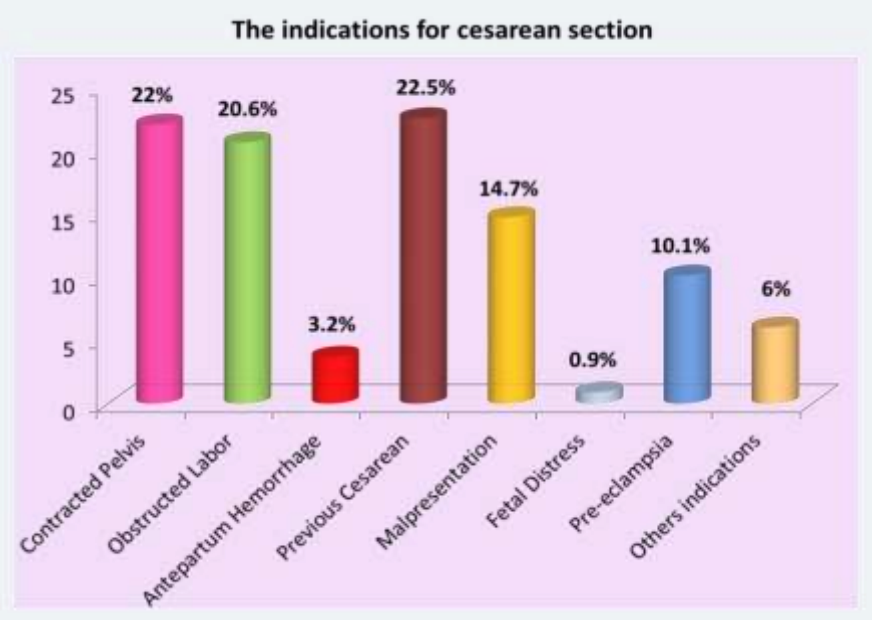


*Figure 2: Indications of cesarean section among study subjects (n=218)*

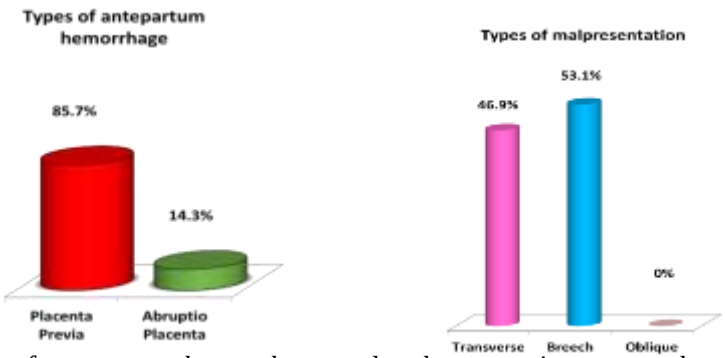


*Figure 3: Types of antepartum hemorrhage and malpresentation among the study subjects (n=218)*

**Table 3: Indications of elective and emergency cesarean section**

| | Emergency CS | Elective CS |
|---|---|---|
| Contracted Pelvis | 62.5 | 37.5 |
| Obstructed Labor | 97.8 | 2.2 |
| Antepartum Hemorrhage | 85,7 | 14.3 |
| Previous Cesarean | 2 | 98 |
| Malpresentation | 90.6 | 9.4 |
| Fetal Distress | 100 | 0 |
| Pre-eclampsia | 72.7 | 27.3 |
| Others indications | 53.8 | 46.2 |

*Source: Authors*

Table 4: Outcome of the operation to the mother and fetus

| Variable | Frequency (n) | Percentage (%) |
|---|---|---|
| **Maternal complications n (218)** | | |
| Yes | 14 | 6.4 |
| No | 204 | 93.6 |
| **The complications that happened n(14)** | | |
| Bleeding | 6 | 42.9 |
| Increased BP | 1 | 7.1 |
| Dyspnea | 1 | 7.1 |
| Hypotension | 1 | 7.1 |
| Anemia | 5 | 35.8 |
| **Outcome of the operation to the newborn n (218)** | | |
| A live | 170 | 78 |
| Dead | 9 | 4.1 |
| Sent into ICU | 39 | 17.9 |
| **Causes of admission to ICU (n = 39)** | | |
| Asphyxia | 8 | 20.5 |
| Meconium aspiration | 2 | 5.1 |
| Preterm | 10 | 25.6 |
| Cyanosis | 4 | 10.3 |
| Congenital anomaly | 3 | 7.7 |
| Fetal distress | 12 | 30.8 |
| **Causes of death of the newborn n ( 9 )** | | |
| Cord prolapse | 1 | 11.1 |
| Asphyxia | 1 | 11.2 |
| Placental insufficiency | 2 | 22.2 |
| Obstructed labor | 2 | 22.2 |
| Oligohydramnios (post term) | 2 | 22.2 |
| Fetal distress | 1 | 11.1 |

*Source: Authors*

## Discussion

During the study period, the rate of cesarean section was 55.5%. According to the WHO, the recommended rate of cesarean section should be within 10-15% (AlSheeha., 2018), thus this study showed a higher rate. The observed rate of cesarean section in this study was higher than the previously reported rate in Dhamar Governorate which was 22% (Mehrass et al., 2016), and also higher than the reported rate in Hajjah, 2013 which was 30% (Al-Rukeimi et al., 2013). This high rate in Al-Wahdah Teaching Hospital may be because we didn't take into consideration mothers delivered at home or in a private clinic or the nearby hospitals, therefore, the actual rate of cesarean section for the area the hospitals serve is much lower, this is partly due to lack of health facilities in rural areas and also due to lack of knowledge or antenatal care. Supporting organizations can be also the cause of this high rate. Primigravida is at higher risk, therefore, a higher incidence of cesarean section is found among them (Qin

et al., 2012). However, in our study, the cesarean section rate was higher among multigravida. This is probably due to the fact that women in this part of the world get pregnant many times.

In our study, we found the common age group where delivered by C-section was highest among women between 20- 35 years of age followed by women under 20 years and a lower rate among the older age groups. This is in contrast to the study in a rural block of the State of West Bengal found the common age group where delivered by C-section was highest among women <25 years of age followed by women between 25 and 30 years of age. (Mondal et al., 2015). Moreover, another retrospective study found that majority of mothers having C-section s fall in the 21–30 years' age group which was conducted in Department of Obstetrics and Gynaecology, Punjab Institute of Medical Sciences, Jalandhar (Punjab, India) (Kaur et al., 2013). A study found that most of the mothers having C-sections are between the age group of 20–24 years and 25–35 years (Gutema et al., 2014). This is different than other studies done in Ethiopia, which found a higher rate of C-section among older age group (Moges et al., 2015).

The most common indication of cesarean section in our study was previous cesarean section 22,5% because the previous cesarean section is an important cause of cesarean section. Therefore the implementation of a trial of vaginal delivery after a previous cesarean section should be done to control the increasing cesarean section rate (Ali et al., 2007). The second most frequent indication in this study was contracted pelvis 22%, especially in emergency cesarean section, which may be due to lack of antenatal care. The third most common indication was obstructed labor or failure to progress 20,6%. The fourth most common indication was malpresentation 14%, and the most common type was breech 53,1%.

Breech presentation is associated with higher maternal mortality and morbidity, irrespective of the route of delivery due to its association with fetal abnormalities and premature delivery. However, vaginal delivery for term breech presentation does not increase morbidity and mortality, if the case for vaginal delivery is well selected. Nowadays there has been an increase in the cesarean section for breech presentation, as most obstetricians consider it to be safe and easier than giving a trial of labor. This led to an increase in the elective cesarean section for breech (Coughlan et al, 2002), but in our study most of them were emergency, and that is due to a lack of antenatal care and knowledge.

The fifth most common indication was pre-eclampsia (10.1%). The sixth most common indication was antepartum hemorrhage (3.2%). It is an important indication for emergency cesarean section. In antepartum hemorrhage, cesarean section is important lifesaving, as in most cases, it is due to placenta previa, the definitive risk for both mother and child if any delay is done. Fetal distress of (0.9%) has always been one of the most important indications of cesarean section. There is currently no evidence that elective cesarean section is safer than vaginal delivery. Most evidence indicates that cesarean section has a much higher risk than labor. Therefore, obstetric care providers should continue to advocate for vaginal delivery as the optimal mode of birth.

## CONCLUSION

In our study, the rate of cesarean section is higher than recommended by WHO. Most of them were emergency cesarean sections. The most common indication was a previous cesarean section, followed by the contracted pelvis and obstructed labor. Educational programs for pregnant women should be established about the risks of unnecessary and repeated cesarean sections. There should also be educational programs on the importance of antenatal care for

choosing the safest method of delivery. In addition; hospitals should put in place a monitoring policy to prevent an unnecessary cesarean section with no medical emergency.

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## CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

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