Original Article

Prevalence of Dystocia its Risk Factors and Complications among the Women of District Buner, Pakistan

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ABSTRACT

Background: Dystocia, characterized by abnormally slow labor, is a significant cause of primary cesarean delivery globally. It poses serious risks to maternal and neonatal health and is often associated with increased healthcare costs. Despite its prevalence, there is no universal definition of dystocia, making it a complex condition to manage and study.

Objective: The study aimed to investigate the prevalence, risk factors, and complications associated with dystocia among women in District Buner, Pakistan, from September 2021 to September 2022. It also sought to understand the geographic distribution of dystocia cases and the effectiveness of different management strategies.

Methods: A cross-sectional study was conducted in various healthcare facilities across District Buner, including DHQ Daggar, Buner Medical Complex Daggar, and Rahman Medical Complex Jowar. A total of 1,527 women with dystocia were examined. Data collection involved structured questionnaires and interviews with healthcare professionals. The study focused on two types of dystocia: labor dystocia and shoulder dystocia. Statistical analysis was performed to assess the prevalence, risk factors, and complications related to dystocia.

Results: The study found that 97.11% of the dystocia cases were labor dystocia, and 2.881% were shoulder dystocia. Dystocia prevalence varied with age: 3.01% in women below 20 years, 2.03% in 20-30 years, and 95.02% in 30-50 years. Nulliparous women accounted for 50.03% of dystocia cases. Geographically, the prevalence of dystocia in different tehsils ranged from 0.98% to 30.58%. Breech presentation was the cause in 3.34% of dystocia cases, transverse presentation in 0.26%, and oblique presentation in 0.72%.

Conclusion: The study underscores the high prevalence of labor dystocia in District Buner, especially among nulliparous women and those in the age group of 30-50 years. It highlights the need for enhanced prenatal care and targeted intervention strategies to manage and reduce the risks associated with dystocia.

Keywords: Dystocia, Labor Dystocia, Shoulder Dystocia, Cesarean Delivery, Maternal Health, Neonatal Complications, District Buner, Pakistan.

INTRODUCTION

Dystocia, meaning difficult labor, is a condition characterized by abnormally slow progress of labor and is a leading cause of primary cesarean delivery worldwide. Despite the increasing number of cesarean deliveries, there has been no corresponding improvement in neonatal outcomes. In fact, cesarean birth has been associated with higher risks of maternal mortality and morbidity, as well as increased healthcare costs, as it accounts for 30% of all hospital days for childbirth care (1). The diagnosis of dystocia leading to cesarean delivery is commonly considered to be over-diagnosed globally, adding to its complexity.

Labor dystocia, the most common indication for primary caesarean sections, directly accounts for approximately 50% of all caesarean sections in nulliparous women and a majority of repeat caesarean sections during labor (2). The World Health Organization defines protraction disorder as a cervical dilatation rate of less than 1 cm per hour for a minimum of four hours. Labor dystocia, also known

as dysfunctional labor or difficult childbirth, is prevalent during labor and delivery and poses severe consequences, including maternal deaths, particularly in developing countries. Obstructed labor, a component of labor dystocia, affects approximately 6 million women globally and is responsible for 8% (or 42,000) of the half million maternal deaths annually, with most occurring in developing countries (4).

Labor dystocia includes abnormalities of power (uterine contractions or maternal expulsive forces), the passenger (position, size, or presentation of the fetus), and/or the passage (pelvis or soft tissues) (5). Risk factors for labor dystocia include primiparity, infertility treatment, labor induction, premature rupture of membranes, hypertensive disorders, hydramnios, advanced maternal age, cephalopelvic disproportion, occipitoposterior position, and macrosomia. Epidural analgesia also increases the risk of labor dystocia (6). Despite extensive research, there is no universal definition of labor dystocia or prolonged labor, contributing to the rapid increase in cesarean section rates.

Shoulder dystocia remains an unpredictable and emergent complication of vaginal delivery, with potential for severe neonatal complications including skeletal injury, brachial plexus impairment, hypoxic–ischemic encephalopathy, and death (7). This obstetric emergency is associated with a range of adverse outcomes and accounts for 7% of all lawsuits brought against obstetricians (8). Strong risk factors for shoulder dystocia include maternal diabetes and fetal macrosomia, with other factors such as operative vaginal delivery and maternal obesity also being associated. However, even the best antenatal predictors have low positive predictive value, making shoulder dystocia difficult to predict and leaving cesarean birth as the only preventative measure (8).

MATERIALS AND METHODS

Study Area The study was conducted in District Buner, situated within the Khyber Pakhtunkhwa Province of Pakistan. This district is geographically positioned between latitudes 34°11' and 34°43'N, and longitudes 72°13' and 72°45'E. It is bordered by the Swat District to the north, Malakand Agency to the west, Mardan District to the south, and Hazara Division to the east. The district encompasses an altitudinal range from 366 to 2,911 meters above sea level, covering a total area of 1,865 km², with a population of approximately 506,048 individuals (9).

Materials A structured questionnaire was developed and employed for the data collection process. The researchers used various tools for recording data, including ballpoint pens, laptops, mobile phones, and diaries.

Data Collection The study, titled "Prevalence of Dystocia, Its Risk Factors, and Complications among the Women of District Buner, Pakistan," was focused on exploring the dystocia problem in this specific region. Data were collected from various healthcare facilities within District Buner, including DHQ Daggar, Buner Medical Complex Daggar, Buner Medical Center Daggar, Rahman Medical Complex Jowar, Shah Medical Complex Pir Baba, and several other private hospitals and clinics. Numerous visits were conducted to these hospitals and clinics. During these visits, the research team interacted with almost all gynecologists in the district. These healthcare professionals provided detailed information regarding dystocia in District Buner, including its causes, risk factors, and complications. The primary aim of the research was to ascertain the prevalence of dystocia, identify its risk factors, and understand its complications among the women of District Buner, Pakistan.

RESULTS

During the study conducted from September 2021 to September 2022 on the prevalence of dystocia, its risk factors, and complications among women in District Buner, Pakistan, a total of 1,527 patients were investigated. These patients suffered from dystocia in various forms, notably labor dystocia and shoulder dystocia. The investigation unearthed a multitude of causes for these conditions, including pregnancy-induced hypertension, gestational diabetes mellitus, fetal presentations such as breech and transverse, large baby size, maternal obesity, obstructed labor, umbilical cord complications, post-cesarean section issues, iron deficiency, prolonged labor, nutritional deficiency, inadequate maternal power, poor uterine muscle contraction and relaxation, low pelvic capacity, placenta previa, congenital abnormalities, blood deficiency, poor cervical dilation, abnormal baby presentation, preterm premature rupture of membranes, antepartum hemorrhage, and intrauterine death.

The complications resulting from these risk factors were varied and severe. They included vaginal and cervical tears, forceps and instrumental delivery, post-partum hemorrhage, cesarean section, bladder and uterine rupture, pelvic injury, delivery abruption, blood clots, perineal injury, anemia, fractures to the collarbone and arm, damage to the brachial plexus nerves, asphyxia leading to potential brain injury or death, rectovaginal fistula, separation of pubic bones, and compressed umbilical cord causing oxygen and blood flow cut-off to the baby, which can result in brain injury or death in severe cases.

Table 1 Total cases of dystocia problem in the women of district Buner

Types	Cases	Percentage
Total patients	1527	100%
Labor dystocia	1483	97.11%
Shoulder dystocia	44	2.881%

Table 2 Tehsil wise prevalence of dystocia problem in the women of district Buner

Tehsil Name	Patients	Percentage
Daggar	415	27.18%
Gagra	467	30.58%
Mandanr	138	9.03%
Gadezai	391	25.60%
Chagharzi	101	6.61%
Khodokhail.	15	0.98%

Table 3 Age wise distribution of dystocia problem in the women of district Buner

Patients	Cases	Percentage
Total patients	1527	100%
Below 20 year	46	3.01%
20-30 year	31	2.03%
30-50 year	1451	95.02%

Table 4 Distribution of dystocia problem in the women of district Buner with respect to parity

Patients	Cases	Percentage
Total patients	1527	100%
Nulliparous mothers	764	50.03%
Uniparous mothers	457	29.93%
Biparous mothers	229	14.99%
Multiparous mothers	77	5.05%

Table 5 Distribution of dystocia on the base of baby position during delivery in the women of district Buner

Patients	Cases	Percentage
Total patients	1527	100%
Breech presentation	51	3.34%
Transverse presentation	4	0.26%
Oblique presentation	11	0.72%

The study's findings revealed that out of the total cases of dystocia, 1,483 were identified as labor dystocia, accounting for 97.11% of the cases. Meanwhile, shoulder dystocia was found in 44 cases, representing 2.881% of the total cases. This indicated that shoulder dystocia was relatively rare in the district.

Regarding the geographic distribution of dystocia cases, the study showed varying prevalences across different tehsils of District Buner. Daggar tehsil reported 415 cases (27.18%), Gagra tehsil had 467 cases (30.58%), Mandanr tehsil had 138 cases (9.03%), Gadezai tehsil reported 391 cases (25.60%), Chagharzi tehsil had 101 cases (6.61%), and Khodokhail tehsil had the least, with 15 cases (0.98%).

The study also looked at the age-wise distribution of dystocia cases. Women below 20 years had 46 cases (3.01%), those between 20 to 30 years had 31 cases (2.03%), and the highest prevalence was observed in women between 30 to 50 years, with 1,451 cases (95.02%). This indicated a higher incidence of dystocia with advanced maternal age.

Furthermore, the research explored dystocia prevalence in relation to parity. Nulliparous mothers (first-time mothers) had 764 cases (50.03%), uniparous mothers (second-time mothers) had 457 cases (29.93%), biparous mothers (third-time mothers) had 229 cases (14.99%), and multiparous mothers (more than three deliveries) had 77 cases (5.05%). This data suggests that the risk of dystocia decreases with increasing number of deliveries.

Lastly, the study examined the distribution of dystocia based on the baby's position during delivery. Breech presentation was noted in 51 cases (3.34%), transverse presentation in 4 cases (0.26%), and oblique presentation in 11 cases (0.72%).

DISCUSSION

The study, conducted from September 2021 to September 2022, investigated the prevalence, risk factors, and complications of dystocia among women in District Buner, Pakistan. A comprehensive survey was carried out in various hospitals and clinics across the district, including DHQ Daggar, Buner Medical Complex Daggar, and Rahman Medical Complex Jowar, among others. Throughout the study, approximately 1,527 patients suffering from different forms of dystocia were examined.

The research revealed that 97.11% of these cases were attributed to labor dystocia, while shoulder dystocia accounted for 2.881%. In terms of age demographics, dystocia was found in 3.01% of women under 20 years, 2.03% in those aged between 20 and 30 years, and 95.02% in women aged between 30 and 50 years. The study also showed a significant prevalence of dystocia among nulliparous women, which was 50.03%, followed by 29.93% in uniparous, 14.99% in biparous, and 5.05% in multiparous women.

The study identified various causes of dystocia, including inadequate uterine contraction and relaxation, fetal position or lie issues (such as transverse or breech presentations), macrosomia, and inadequate pelvic dimensions. In terms of geographical distribution, the prevalence of dystocia varied across different tehsils in District Buner, with the highest in tehsil Gagra (30.58%) and the lowest in tehsil Khodokhail (0.98%).

Gimovsky's (11) study highlighted the increasing reliance on cesarean section for managing breech presentations in labor. In their study, a significant proportion of labor trials for breech presentations ended in cesarean sections, mainly due to inadequate pelvic dimensions. This study also emphasized the higher maternal morbidity associated with cesarean deliveries.

Corresponding to these findings, the present study observed that 3.34% of dystocia cases in District Buner were due to breech presentation, and these cases often resulted in neonatal morbidity and various maternal complications. The data suggested that a planned cesarean section might be a safer option for breech presentations to avoid maternal and neonatal complications as a result of dystocia (12).

Additionally, the study noted the prevalence of shoulder dystocia, particularly among infants with macrosomia, which is common in diabetic mothers (GDM). This condition necessitated careful consideration of delivery methods, often favoring cesarean sections to minimize the risk of shoulder dystocia (13).

The study concluded that labor dystocia was more prevalent than shoulder dystocia in District Buner. Complications identified during the survey included brachial plexus injury, perinatal morbidity and mortality from hypoxia and acidosis, fractured humerus or clavicle, pneumothorax, postpartum hemorrhage, perineal tears, vaginal and cervical lacerations, bladder and uterine rupture, symphyseal separation, sacroiliac joint dislocation, lateral femoral nerve neuropathy, and rectovaginal fistula.

In light of these findings, the study underscored the need for improved medical resources, diagnosis, and treatment strategies in developing countries, emphasizing the importance of health literacy in facilitating patient access to resources and information about diseases (15-22).

CONCLUSION

The conclusion of the study on the prevalence, risk factors, and complications of dystocia in District Buner, Pakistan, demonstrates a significant prevalence of labor dystocia, particularly among nulliparous women and those in the age group of 30 to 50 years. The findings underscore the necessity for enhanced prenatal care and education, especially in areas like District Buner, where resources may be limited. The study's implications are far-reaching, suggesting that improved training for healthcare providers in recognizing and managing dystocia, especially in cases of breech presentation and shoulder dystocia, is crucial. Furthermore, the research highlights the need for better health literacy among the population, empowering women with knowledge about potential complications and the importance of timely medical intervention. These findings call for a concerted effort to improve obstetric care and maternal health education, thereby reducing the risks and complications associated with dystocia. The study advocates for policy changes and resource allocation to strengthen healthcare systems, particularly in rural and underserved areas, to ensure safer childbirth experiences and better health outcomes for mothers and infants.

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