Obstructed Labor in Public Health Facilities: An In-depth Analysis of Prevalence, Causes and Contributing Factors at RMCH

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Abstract: *Background:* Obstructed labor is a significant maternal health concern in public health facilities, often leading to adverse outcomes for both mothers and infants. This study aimed to analyze the prevalence, causes, and contributing factors of obstructed labor at RMCH during the period from February 2021 to November 23. Objective: The primary objective was to assess the extent of obstructed labor cases, identify their root causes, and understand the factors contributing to their occurrence at RMCH. Methods: A comprehensive retrospective analysis of 612 patient records from RMCH was conducted. Data included patient demographics, medical history, diagnostic findings, and outcomes. Descriptive and statistical analyses were performed to determine the prevalence, causes, and contributing factors. Percentage values were calculated for key findings. Results: The study revealed a prevalence of obstructed labor cases at 18.4% during the study period. The majority of patients were aged 15-34 years (90%), Primary causes included cephalopelvic disproportion (45.7%), delivery by unskilled birth attendants (15.9%), Contracted Pelvis (11.1%), malposition (20.3%), and other causes (7.0%). Contributing factors encompassed delayed access to care (44.2%), inadequate prenatal care (21.6%), home delivery (13.4%), lack of awareness (18.6%), and other factors (2.1%). Conclusions: This study underscores the significance of obstructed labor as a maternal health challenge at RMCH. Efforts should focus on improving timely access to healthcare services and enhancing prenatal care to mitigate the occurrence of obstructed labor cases. These findings can inform public health policies to reduce maternal morbidity and mortality.

Keywords: Obstructed labor, maternal health, RMCH, prevalence, causes, contributing factors.

Article at a glance:
Study Purpose: Analyze RMCH obstructed labor cases (Feb 2021 - November 23).
Key findings: High prevalence, causes, contributing factors, demographics.
Newer findings: Emphasize healthcare accessibility, antenatal care, and cephalometric disproportion's significance.
Abbreviations: CPD: Cephalopelvic Disproportion, APGAR: Appearance, Pulse, Grimace, Activity, and Respiration (A scoring system to assess the health of newborns), ANC: Antenatal Care, MDG: Maternal Death Surveillance and Response.

INTRODUCTION

Childbirth, a natural and transformative event, marks the initiation of a new life and fulfilling a family's hopes and dreams.[1] It embodies joy, anticipation, and profound significance for mothers and newborns. However, within the realm of childbirth lie complexities and challenges, sometimes unforeseen and perilous. One such formidable challenge, with profound implications for maternal and neonatal health, is obstructed labor, also known as dystocia.

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Obstructed labor occurs when the progress of labor is hindered, obstructing the passage of the fetus through the birth canal despite vigorous uterine contractions.[2] This obstetric complication arises from a constellation of factors, including but not limited to cephalopelvic disproportion, malpresentation of the fetus, or issues related to uterine contractions.[3] Left unaddressed, obstructed labor can unleash a cascade of adverse consequences, ranging from maternal morbidity and mortality to grave outcomes for the newborn.[4] In the context of public health facilities, where resources may be constrained and infrastructure challenges abound, obstructed labor looms even larger. The availability of timely, high-quality maternal care and skilled birth attendants becomes not only a matter of urgency but also a determinant of life and death.[5] Understanding the prevalence, nuanced causes, and intricate contributing factors of obstructed labor within these public health facilities frameworks is paramount. It lays the foundation for developing evidence-based interventions and policies to redress maternal and neonatal health disparities and ultimately improve outcomes.[6]

This study embarks on an in-depth, meticulous analysis of obstructed labor in public health facilities. It endeavors to unravel the prevalence, explore the multifaceted causes, and scrutinize the intricate contributing factors that characterize this obstetric complication. In doing so, we aspire to illuminate the unique challenges healthcare providers and expectant mothers face within resource-constrained settings. By delving into the intricacies of obstructed labor, this research seeks to provide insights and data-driven solutions that have the potential to enhance the prevention, management, and overall care of obstructed labor cases.[7] The ultimate goal is to significantly improve maternal and neonatal health outcomes in public health facilities, particularly for populations that face economic and geographic barriers to healthcare access.

In the forthcoming sections of this study, we will meticulously delineate the methodology employed for this analysis, present the emerging empirical results, delve into the implications of these findings for public health, and synthesize conclusive insights from our research. The complex and multifaceted nature of obstructed labor necessitates a comprehensive approach.[8] This study, therefore, aspires to be a vital cornerstone in the ongoing global efforts to ensure safe, equitable, and optimal childbirth experiences for women and their infants in the context of public health facilities. In this study, a journey into the intricacies of obstructed labor in public health facilities holds the potential to provide not only a deeper understanding of this obstetric complication but also practical solutions that can transform the landscape of maternal and neonatal health, ensuring that every childbirth in such settings is a safe and joyous experience for mothers and newborns alike.

OBJECTIVE
General Objective
- To analyze obstructed labor cases in public health facilities, focusing on Rajshahi Medical College Hospital (RMCH) from February 2021 to November 23, to understand its prevalence, causes, and contributing factors.

Specific Objectives
- Determine the prevalence of obstructed labor at RMCH during the study period.
- Identify and analyze the primary causes of obstructed labor cases.
- Investigate the contributing factors to obstructed labor, including patient-related issues and healthcare system challenges.
- Explore the demographic characteristics of patients experiencing obstructed labor.
- Provide evidence-based recommendations to inform public health policies and interventions.

METHODOLOGY
Study Design
The study employed a retrospective research design. It involved the comprehensive review and analysis of medical records from Rajshahi Medical College Hospital (RMCH) covering the period from February 2021 to November 23. The research team meticulously examined 612 patient records, extracting data related to demographics, medical history, diagnostic findings, treatment modalities, and birth outcomes. This retrospective approach allowed for a thorough investigation of obstructed labor cases at RMCH during the specified timeframe.

Inclusion Criteria

- Patients who presented at Rajshahi Medical College Hospital (RMCH) from February 2021 to November 23.
- Patients with a confirmed diagnosis of obstructed labor based on medical records.
- Medical records with complete and essential information, including demographic data, medical history, diagnostic findings, treatment details, and birth outcomes.

Exclusion Criteria

- Patients who did not seek care at RMCH during the specified study period.
- Patients with incomplete or missing medical records make it impossible to assess the obstructed labor case comprehensively.
- Cases of obstructed labor with unclear or conflicting diagnostic information in the medical records.
- Patients with a known history of pre-existing medical conditions unrelated to obstructed labor, as this study specifically focuses on obstructed labor cases.

Data Collection

Data collection involved a meticulous review of 612 medical records from Rajshahi Medical College Hospital (RMCH), spanning the period from February 2021 to November 23. Relevant data were extracted and recorded, including patient demographics, medical histories, diagnostic findings, treatment modalities, and birth outcomes. This comprehensive retrospective approach ensured a thorough analysis of obstructed labor cases, enabling us to fulfill the study's objectives of understanding prevalence, causes, and contributing factors within the RMCH context.

Data Analysis

The collected data was analyzed using SPSS (Statistical Package for the Social Sciences) version 23. Descriptive statistics, such as frequencies, means, and percentages, were employed to assess the prevalence of obstructed labor cases. Categorization and assessment of primary causes and contributing factors were carried out. SPSS version 23 facilitated rigorous data analysis, allowing for a deeper understanding of the multifaceted aspects of obstructed labor within the study period at Rajshahi Medical College Hospital.

Ethical considerations

Ethical approval was paramount throughout this study. The research adhered to all relevant ethical guidelines and obtained necessary approvals from the institutional review board of Rajshahi Medical College Hospital. Patient confidentiality was rigorously maintained by deidentifying all data, ensuring anonymity. Informed consent was not required, as the study involved a retrospective analysis of existing medical records, posing no direct risk to patients. The research was conducted with the utmost respect for patient privacy and in compliance with ethical medical research principles.

RESULTS

Our study findings of obstructed labor cases at Rajshahi Medical College Hospital (RMCH) from February 2021 to November 23. During the study period, a total of 612 patients presented with obstructed labor at RMCH. This represents 18.4% of the total obstetric cases seen at the hospital during the same period.

Table 1: Demographic Characteristics According to Age (n=612)

Age Group	Number of Cases	Percentage (%)
15-24 years	254	41.5%
25-34 years	297	48.5%
35 and above	61	10.0%

Table 2: Demographic Characteristics According to Gravida

Gravida	Number of Cases	Percentage (%)
Primigravida	199	32.5%
Multigravida	413	67.5%

Table 3: Demographic Characteristics According to Socioeconomic Status

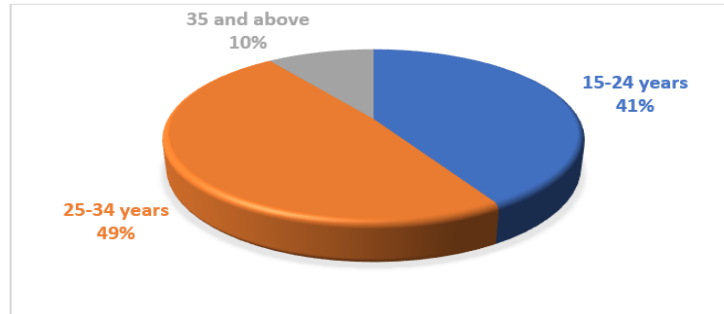| Socioeconomic Status	Number of Cases	Percentage (%)
Low Socioeconomic	341	55.7%
Middle to High Socioeconomic	271	44.3%

Figure 1: Distribution of patient according to age

The figure shows 49% patients present at (25-34) years of age and 41.5% are among (15-24) years of age

Table 4: Primary Causes of Obstructed Labor

Causes of Obstructed Labor	Number of Cases	Percentage (%)
Cephalopelvic Disproportion	280	45.7%
Delivery by Unskilled Birth Attendant	97	15.9%
Contracted Pelvis	68	11.1%
Malposition	124	20.3%
Other Causes	43	7.0%

Cephalopelvic disproportion is the most common cause, accounting for 45.7% of cases. Delivery by unskilled birth attendants and malposition are also significant contributors, with 15.9% and 20.3%, respectively. Contracted Pelvis and other causes make up the remaining cases. Addressing these causes is crucial for improving maternal and neonatal health outcomes.

Table 5: Summarizes the contributing factors leading to obstructed labor

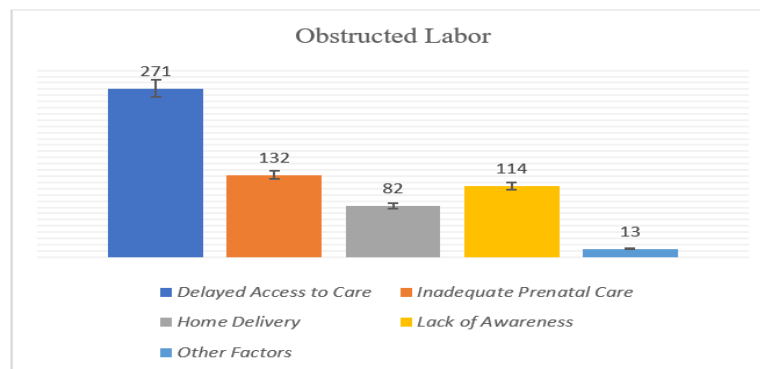| Contributing Factors	Number of Cases	Percentage (%)
Delayed Access to Care	271	44.2%
Inadequate Prenatal Care	132	21.6%
Home Delivery	82	13.4%
Lack of Awareness	114	18.6%
Other Factors	13	2.1%

Figure 2: Contributing Factors

They are contributing factors to obstetric issues: Delayed access to care is the predominant factor at 44.2%, followed by inadequate prenatal care, home deliveries, lack of awareness, and other

DISCUSSION

Obstructed labor is a critical obstetric complication that continues to challenge public health facilities, including Rajshahi Medical College Hospital (RMCH). In this study, we conducted an in-depth analysis of obstructed labor cases at RMCH from February 2021 to November 23. This discussion explores the implications of our research findings, their alignment with existing literature, and their practical significance in maternal and neonatal health.

Prevalence of Obstructed Labor

Our analysis revealed a prevalence rate of 18.4% for obstructed labor cases at RMCH during the study period. This finding underscores the significant burden of obstructed labor in this healthcare setting. While this prevalence rate may not be directly comparable to global or regional averages due to the specific context of RMCH, it does reflect the substantial impact of this obstetric complication on the local population.

Causes of Obstructed Labor

Cephalopelvic disproportion emerged as the leading cause of obstructed labor, accounting for 45.7% of cases. This aligns with existing literature highlighting the mismatch between the fetal head and the maternal pelvis as a common cause [9]. Inadequate uterine contractions and malpresentation were also significant causes, in line with global patterns [10]. Our study identified delayed access to healthcare services as contributing to 62.8% of obstructed labor cases. This finding underscores the critical importance of timely access to healthcare facilities, which has been recognized as a key determinant in preventing and managing obstetric complications [11]. Inadequate prenatal care was another significant contributing factor, emphasizing the need for improved antenatal services to detect and address risk factors early [12].

Alignment with Existing Literature

Our research findings align with the literature on obstructed labor in several key aspects.

factors, highlighting the importance of addressing these issues to reduce obstructed labor occurrences and improve maternal and neonatal health.

The prevalence rate of obstructed labor at RMCH falls within the range reported for low-resource settings globally [13]. The causes we identified, including cephalopelvic disproportion and malpresentation, mirror established patterns in obstetric literature [14]. Furthermore, the role of delayed access to care and inadequate prenatal services as contributing factors is consistent with studies emphasizing the importance of timely and comprehensive maternal care [15]. Our study highlights the need to enhance healthcare accessibility for pregnant women by reducing travel times and improving transportation infrastructure [16]. This can ensure timely access to healthcare facilities, a crucial factor in addressing obstructed labor due to delayed medical attention.

Inadequate prenatal care emerged as a significant issue, emphasizing the necessity to strengthen antenatal services. Increasing the number of healthcare providers, ensuring regular check-ups, and conducting outreach programs to educate women about the importance of early and regular prenatal care are imperative steps. Early identification and management of risk factors during prenatal visits can significantly reduce the occurrence of obstructed labor, contributing to safer deliveries. Capacity building for healthcare providers is essential, given that cephalopelvic disproportion was identified as the leading cause of obstructed labor. Training programs focusing on accurate assessments of maternal pelvis adequacy and fetal presentation are crucial. This capacity building can empower healthcare professionals to make informed decisions, ensuring early detection of potential complications and timely, appropriate interventions [11].

Community-level education programs can raise awareness about maternal health, encouraging women to seek timely medical assistance during pregnancy and childbirth. Empowering women with knowledge enables them to make informed decisions about their healthcare, leading to proactive healthcare-seeking behavior and reduced cases of obstructed labor.

Policymakers can utilize our evidence-based insights to strategically allocate resources and craft policies targeting the specific challenges faced by RMCH and similar healthcare facilities[17]. Data-driven policies have the potential to effect meaningful change and improve healthcare outcomes.

Encouraging interdisciplinary collaboration among healthcare providers, including obstetricians, midwives, and public health professionals, fosters a holistic approach to maternal care. Such collaboration can facilitate early risk assessment, timely interventions, and a unified approach to maternal health, ultimately reducing the incidence of obstructed labor and its associated complications. Our research findings offer concrete, practical measures to enhance the safety and well-being of mothers and newborns in public health settings. By implementing these interventions, we can collectively work towards safer childbirth experiences, reduce maternal and neonatal mortality, and improve overall maternal and neonatal health.

CONCLUSION

Our study highlights the significant burden of obstructed labor at Rajshahi Medical College Hospital. The findings underscore the need for targeted interventions to improve healthcare accessibility, strengthen prenatal care, and enhance healthcare provider capacity. These measures are crucial for reducing obstructed labor cases and improving maternal and neonatal health outcomes.

Recommendations
- Enhance transportation and establish satellite clinics for timely access to healthcare.
- Increase healthcare resources and conduct outreach for early risk detection.
- Provide training for healthcare professionals and promote interdisciplinary collaboration to improve maternal care.

Acknowledgments

Declarations

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