

Obstetric Complications in Adolescents and Impact on Maternal and Infant Health: Results of a Retrospective Analysis in a Brazilian Hospital (2019-2021)

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Abstract

Objective: This study aimed to identify the incidence of adolescent pregnancies, types of deliveries, hospitalization categories and obstetric diagnoses in a Brazilian university hospital between January 2019 and August 2021.

Methods: A retrospective study was conducted, analyzing 188 electronic medical records of adolescents aged 10 to 19 years. The variables collected included age, number of pregnancies, types of deliveries, risk level of hospitalization, length of hospital stay, maternal and fetal complications, obstetric diagnoses, family planning and gestational age at birth. Descriptive analyses were performed to calculate absolute frequencies, percentages, means and standard deviations.

Results: The majority of the adolescents were primigravida (84.6%) and vaginal delivery was predominant (63.3%). Obstetric complications occurred in 35.1% of the cases, with perineal lacerations and episiotomies being the most common (40.0%). The mean gestational age at birth was 37.5 weeks, with a prematurity rate of 14.4%. Postpartum family planning was accepted by 40.8% of the adolescents, with the Intrauterine Device (IUD) being the most chosen method (48.5%).

Conclusion: Adolescent pregnancy remains a public health challenge, associated with significant obstetric complications. The high acceptance of postpartum contraceptive methods, especially the IUD, highlights the importance of educational and reproductive health interventions to improve maternal and infant outcomes in this population.

Keywords: Adolescent pregnancy • Obstetric complications • Family planning

Introduction

Adolescence, defined by the World Health Organization (WHO) as the period between 10 and 19 years of age, is a phase marked by significant physical, emotional and social changes [1]. During this period, early sexual initiation and limited access to reproductive health information increase the risk of unplanned pregnancy, which constitutes a public health issue in many parts of the world, especially in developing countries like Brazil [2]. Adolescent pregnancy is considered a public health challenge due to its association with a series of obstetric complications, such as maternal anemia, pregnancy-specific hypertension, preterm birth and low birth weight [3]. These issues can lead to serious consequences for both the mother and the newborn, requiring special attention during the gestational and postpartum periods.

In addition to physical complications, early pregnancy can lead to long-term social and economic disadvantages. Pregnant adolescents often face educational and employment barriers, perpetuating cycles of poverty that affect their future opportunities and quality of life [4]. This situation makes adolescent pregnancy not only a health problem but also a significant social challenge. Studies indicate that approximately 21% of births in Brazil occur

among adolescent mothers, an alarming statistic that underscores the need for effective interventions [5]. This scenario is even more concerning in regions with high levels of social inequality, where access to prenatal care and effective contraceptive methods is limited.

The choice of a Brazilian university hospital as the study site is justified by the representativeness of the institution, which serves a diverse population and reflects the reality of pregnant adolescents in similar contexts [6]. Furthermore, the hospital serves as a reference centre for clinical studies, providing a robust database for retrospective analysis. This study aims to analyse the incidence of adolescent pregnancy, types of deliveries, hospitalization categories and obstetric diagnoses. The study period covers from 2019 to 2021, offering a comprehensive view of the challenges faced by this population in a Brazilian hospital context [7].

Based on these data, this study seeks to contribute to a deeper understanding of the factors influencing maternal and infant outcomes in adolescents. The findings of this study may inform the development of public health strategies aimed at reducing adolescent pregnancy rates and improving obstetric care [8].

Objectives

To identify the number, types of deliveries, hospitalization categories and obstetric diagnoses among adolescents aged 10 to 19 years treated at a Municipal University Hospital from January 2019 to August 2021.

Methodology

Study design

This retrospective study was conducted based on the analysis of

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electronic medical records of adolescents treated in the Gynaecology and Obstetrics departments of a Brazilian University Hospital between January 2019 and August 2021. The sample included medical records of patients aged 10 to 19 years.

Inclusion and exclusion criteria

The study included medical records of pregnant adolescents aged 10 to 19 years who received complete obstetric care at the hospital during the study period. The records had to contain complete information on age, number of pregnancies, type of delivery, maternal and neonatal complications, as well as data on postpartum family planning.

Medical records were excluded if they contained incomplete or inconsistent data, duplications, or if the patient was transferred to another unit before completing obstetric care at the hospital. Additionally, records of adolescents with severe pre-existing conditions that could confound results related to obstetric complications specific to adolescent pregnancy were excluded.

Data collection

Data collection was conducted during April and May 2024, using a standardized protocol to ensure consistency and uniformity of the recorded information. The researchers were specifically trained for this task and the collected data underwent double-checking to minimize errors and ensure the integrity of the information.

Variables analysed

The variables collected included:

- **Demographic data:** Age, city of origin.
- **Obstetric history:** Number of pregnancies, types of delivery.
- **Clinical data:** Risk level of hospitalization, length of hospital stay, maternal and fetal complications, obstetric diagnoses.
- **Family planning:** Acceptance of postpartum contraceptive methods, type of method used.
- Gestational age at birth.

Statistical analysis

Data were analyzed using SPSS version 25.0. Descriptive analyses were performed to calculate absolute frequencies, percentages, means, standard deviations and medians. The normality of the data was verified using the Shapiro-Wilk test.

For comparative analysis between groups (e.g., types of delivery and complications), parametric tests, such as Student's t-test for continuous variables with normal distribution and non-parametric tests, such as the Mann-Whitney test, for variables that did not follow normal distribution, were applied. Associations between categorical variables were evaluated using the chi-square test or Fisher's exact test, as appropriate. A p-value of <0.05 was considered statistically significant.

Ethical considerations

This study was approved by the Human Research Ethics Committee under protocol no. 5.761.236, in accordance with Resolution 466/12. All data collected were kept confidential and the patients were not identified at any time during the study.

Results

Sociodemographic characteristics and length of hospital stay

The sociodemographic characteristics of the adolescents and the length of hospital stay are summarized in Table 1. The mean age of the patients was 15 years (median: 14 years; standard deviation: 1.5 years), with an average hospital stay of 4.5 days (median: 3 days; standard deviation: 2 days) (Table 1).

Table 2 details the types of surgeries performed and the access routes used, highlighting the predominance of normal deliveries and the vaginal route.

Obstetric complications and diagnoses are presented in Table 3, with episiotomy being the most common complication and hypothyroidism the most frequent diagnosis.

Family planning data are presented in Table 4, showing that the majority of adolescents refused family planning, with the IUD being the most accepted method among those who agreed.

Table 5 presents data on the gestational age of the newborns, highlighting the mean, median, standard deviation, minimum and maximum for this variable.

Table 1. Sociodemographic characteristics and length of hospital stay.

Variable	Mean	Median	Standard Deviation	Minimum	Maximum
Age (years)	14.5	14	1.5	13	17
Length of Stay (days)	4.5	3	2	1	19

Table 2. Types of deliveries and access routes.

Surgery Description	Frequency (N)	Percentage (%)
Cesarean section	35	34
Normal delivery	68	66
Post-Abortion Curettage	6	5.8
Access Route	Frequency (N)	Percentage (%)
Abdominal	35	34
Vaginal	68	66

Table 3. Obstetric complications and diagnoses.

Complications for Mother and Fetus	Frequency (N)	Percentage (%)
None	36	35
Episiotomy	41	40
Hemorrhage	8	7.7
Laceration	7	6.8
Obstetric Diagnoses	Frequency (N)	Percentage (%)
Hypothyroidism	11	10.7
Pre-eclampsia	5	4.9
Gestational Diabetes	4	3.9

Table 4. Acceptance of postpartum contraceptive methods.

Family Planning	Frequency (N)	Percentage (%)
Accepted	42	40.8
Refused	61	59.2
Contraceptive Method	Frequency (N)	Percentage (%)
Intrauterine Device (IUD)	50	48.5
Injectable	6	5.8
Oral Contraceptive Pill (OCP)	5	4.9

Table 5. Gestational age at birth.

Variable	Mean	Median	Standard Deviation	Minimum	Maximum
Gestational age (weeks)	37.5	38	2.5	29	41

The age distribution of pregnant adolescents is represented in Figure 1, highlighting the predominance of ages between 14 and 17 years.

Figure 2 shows the distribution of postpartum family planning, indicating that the IUD was the most accepted contraceptive method.

Figure 3 illustrates the postpartum contraceptive methods accepted by the adolescents, with the IUD being the most frequent.

The distribution of delivery types among adolescents, highlighting the predominance of vaginal delivery, is illustrated in Figure 4.

Figure 5 illustrates the distribution of the number of abortions and primigravida among the analyzed adolescents.

Figure 6 presents the distribution of gestational age at birth among the newborns.

Discussion

Adolescent pregnancy is a global public health issue with significant implications for both adolescent mothers and their children. Numerous studies have compared obstetric and neonatal outcomes in pregnant adolescents with

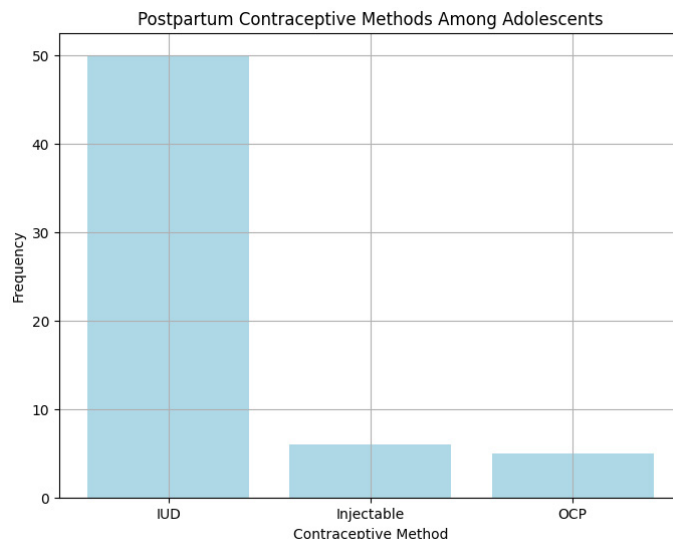


Figure 3. Illustrates the postpartum contraceptive methods accepted by the adolescents, with the IUD being the most frequent.

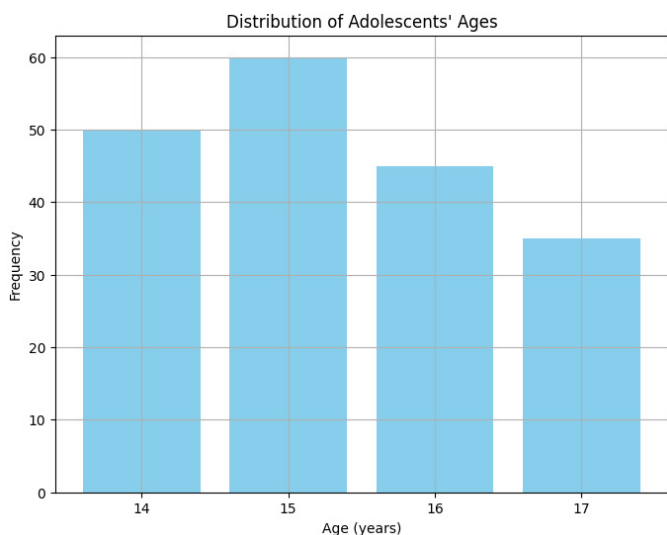


Figure 1. Age distribution of adolescents.

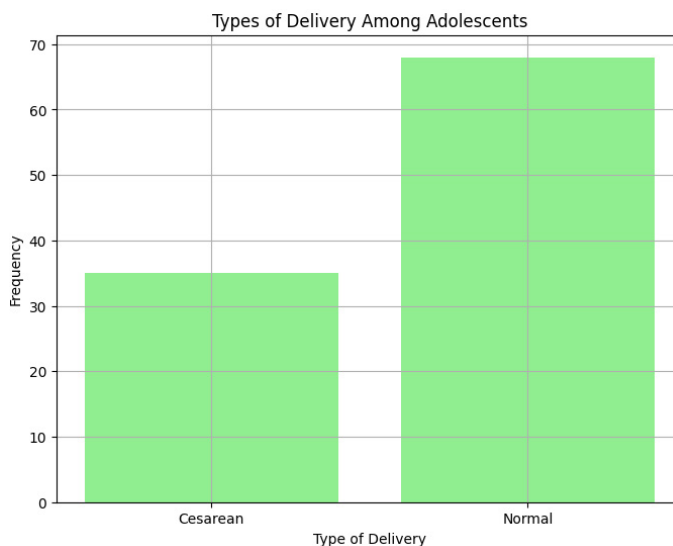


Figure 4. Types of deliveries among adolescents.

Acceptance of Postpartum Contraceptive Methods

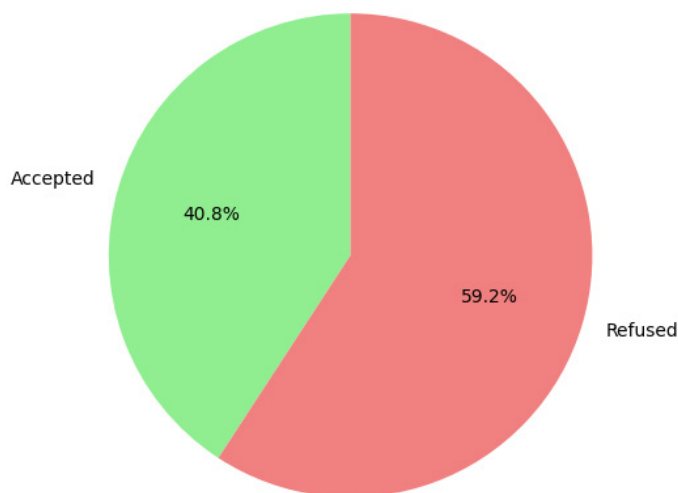


Figure 2. Acceptance of postpartum contraceptive methods.

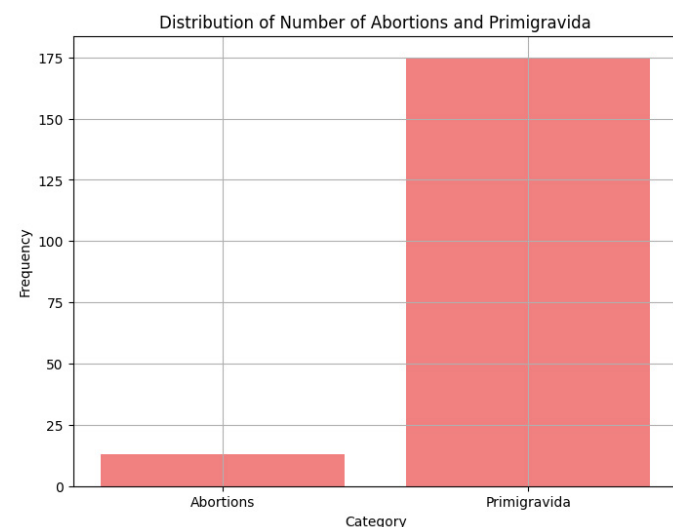


Figure 5. Distribution of the number of abortions and primigravida.

those of adult women, revealing a series of complications associated with adolescent pregnancies [1,9].

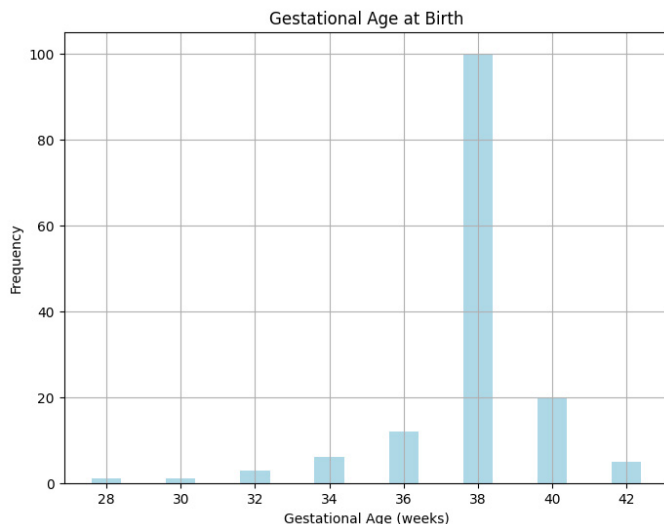


Figure 6. Gestational age at birth.

Studies conducted in different regions of Brazil and other countries show results similar to those of this study. For example, a study conducted in the Northeast region of Brazil found that adolescent pregnancy is frequently associated with obstetric complications such as anemia, gestational hypertension and preterm birth. Another study by corroborated these findings, indicating a higher prevalence of complications such as cephalopelvic disproportion, urinary tract infections and acute fetal distress in pregnant adolescents [10-15].

On an international scale, data from the United Nations Population Fund (UNFPA) show that pregnant adolescents in underdeveloped countries face higher risks of obstetric and neonatal complications due to factors such as limited access to prenatal care and unfavorable socioeconomic conditions. A study conducted in Chile identified that pregnant adolescents have a significantly higher risk of preterm birth, low birth weight and neonatal mortality compared to adult women [16-20].

In the European context, a longitudinal study in England highlighted that pregnant adolescents are more likely to face complications such as pre-eclampsia and gestational diabetes, as well as a greater need for obstetric interventions, including cesarean sections and episiotomies [11]. These findings are consistent with the results of this study, where a significant prevalence of perineal lacerations and episiotomies was observed.

The socioeconomic impact of adolescent pregnancy is also a critical factor to consider. Adolescent pregnancy contributes to the perpetuation of the poverty cycle, as many adolescents are unable to complete their education, limiting their employment opportunities and affecting their financial independence. Point out that the lack of access to effective contraceptive methods and inadequate sex education are key factors contributing to the high rates of adolescent pregnancy in developing countries [10-15].

This study highlights the high acceptance of postpartum contraceptive methods, particularly the intrauterine device (IUD), among adolescents, suggesting an opportunity for educational and reproductive health interventions. Promoting family planning and access to effective contraceptive methods can significantly reduce adolescent pregnancy rates and improve maternal and infant health outcomes [21-25].

Reinforcing the importance of adequate prenatal care, the literature indicates that pregnant adolescents who receive comprehensive prenatal care have better obstetric and neonatal outcomes. Adherence to prenatal consultations is associated with a reduction in complications such as prematurity and low birth weight. Implementing public health programs that promote awareness of the importance of early and frequent prenatal care can play a crucial role in improving health outcomes for this vulnerable population [8,10,13].

Therefore, adolescent pregnancy is a complex phenomenon that requires multifaceted approaches for its prevention and management. Strategies that combine sex education, access to contraceptive methods, psychosocial support and adequate prenatal care are essential to mitigate the negative impacts of adolescent pregnancy. Future studies should focus on effective interventions and the implementation of public policies that address the specific needs of pregnant adolescents, ensuring continuous and comprehensive support from conception to postpartum.

Study limitations

Due to the retrospective nature of the study, some limitations must be considered. The quality and completeness of the data depend on the accuracy and consistency of the medical records. The sample may not adequately represent all pregnant adolescents, which could limit the generalizability of the results. Additionally, some records may be incomplete or contain incorrect information, affecting the validity of the results.

Social impact and clinical applicability

The results of this study have important practical and social implications. The analysis of postpartum contraceptive use among adolescents highlights the need for effective and accessible family planning programs. The increased acceptance of the IUD suggests that educational interventions focused on long-term contraceptive methods may be particularly effective. In clinical practice, healthcare professionals should be trained to provide appropriate contraceptive counseling and continuous support to pregnant adolescents, promoting the use of effective contraceptive methods to prevent unwanted pregnancies.

Furthermore, the findings on obstetric and neonatal complications associated with adolescent pregnancy reinforce the need for rigorous and comprehensive prenatal care for this population. Public health programs should prioritize sex education, access to quality prenatal care and psychosocial support for pregnant adolescents to improve maternal and infant health outcomes and reduce the incidence of obstetric complications.

Conclusion

Adolescent pregnancy continues to be a significant public health challenge with substantial implications for maternal and neonatal health. This study revealed a high rate of obstetric complications among pregnant adolescents, including perineal lacerations, episiotomies and preterm births. Additionally, the high acceptance of postpartum contraceptive methods, particularly the Intrauterine Device (IUD), underscores the importance of educational and reproductive health interventions in this population.

The results indicate that pregnant adolescents face increased risks of complications, reinforcing the need for rigorous and comprehensive prenatal care. Public health programs should be directed towards promoting comprehensive sex education and access to effective contraceptive methods, aiming to reduce the incidence of unplanned pregnancies and improve maternal and infant health outcomes.

To strengthen the evidence base and inform effective policies, future research should focus on longitudinal studies that follow pregnant adolescents and their children over time, evaluating the long-term impacts of obstetric and neonatal complications. Additionally, it is essential to investigate the effectiveness of different educational and reproductive health interventions in reducing adolescent pregnancy rates, with comparisons across different regions and socioeconomic contexts.

In clinical practice, healthcare professionals should be trained to provide appropriate contraceptive counseling and continuous support to pregnant adolescents, promoting the use of effective contraceptive methods to prevent unwanted pregnancies. Implementing public policies that ensure access to quality prenatal care and psychosocial support is crucial to mitigating the negative impacts of adolescent pregnancy.

Investing in strategies that combine sex education, access to contraceptive

methods, psychosocial support and adequate prenatal care can play a decisive role in improving health outcomes for pregnant adolescents. These actions not only promote healthy reproductive health but also contribute to reducing associated complications and breaking the cycle of poverty, providing a more promising future for young mothers and their children.

Acknowledgement

None.

Conflict of Interest

None.

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