

EARLY MARRIAGE, EARLY MORTALITY? ASSESSING MATERNAL AND CHILD HEALTH OUTCOMES OF TEENAGE PREGNANCIES IN BAUCHI

By

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Abstract

This study investigates the maternal and child health outcomes associated with teenage pregnancies in Bauchi State, Nigeria—a region with one of the country's highest rates of early marriage. Employing a cross-sectional mixed-methods design, the research gathered quantitative data from 300 teenage mothers and qualitative insights from healthcare providers and community leaders across three Local Government Areas. Findings reveal that over half (52.3%) of teenage mothers experienced complications such as prolonged labor and anemia, with only 36% receiving the WHO-recommended four or more antenatal care visits. Child health outcomes were similarly alarming: 31.3% of newborns had low birth weight, 56% were incompletely immunized, and the neonatal mortality rate reached 8.7%. A statistically significant association was found between age at first marriage and adverse health outcomes, with girls married before age 15 facing higher risks. The study identifies sociocultural norms, limited education, and inadequate adolescent-friendly health services as key drivers of poor outcomes. It concludes that early marriage significantly compromises maternal and neonatal health, emphasizing the need for strengthened legal enforcement, expanded youth health services, and community-based interventions that promote delayed marriage and girls' education.

Keywords: teenage pregnancy, early marriage, maternal health, neonatal mortality, adolescent health services, Bauchi State, Nigeria, cross-sectional mixed-methods, reproductive health, public health policy

Introduction

Early marriage remains a pressing public health and social issue in Northern Nigeria, particularly in Bauchi State, where cultural norms and poverty contribute to the high prevalence of teenage pregnancies (UNICEF, 2023). Teenage mothers face significantly higher risks of complications during pregnancy and childbirth, including eclampsia, obstructed labor, and postpartum hemorrhage, which contribute to increased maternal mortality rates (WHO, 2022). Moreover, infants born to adolescent mothers are more likely to suffer from low birth weight, preterm birth, and neonatal death (Ajala et al., 2021).

In Bauchi, where over 45% of girls are married before the age of 18 (National Population Commission [NPC] & ICF, 2023), the intersection of early marriage and poor maternal health services poses serious threats to both maternal and child health outcomes. While national policies aim to reduce early marriage, implementation gaps persist, and their health consequences remain inadequately documented at the regional level.

This study seeks to assess the maternal and child health outcomes associated with teenage pregnancies in Bauchi State, thereby providing evidence to inform targeted interventions and strengthen health systems to better support adolescent mothers.

Material and Method

Problem Statement

Early marriage and teenage pregnancy remain critical public health concerns in northern Nigeria, particularly in Bauchi

State, where cultural and socio-economic factors contribute to the high prevalence of child marriages. According to the Nigeria Demographic and Health Survey (NDHS, 2018), approximately 43% of girls in northern Nigeria are married before the age of 18, with Bauchi among the states with the highest rates. These early unions often result in teenage pregnancies, which are strongly associated with adverse maternal and child health outcomes, including increased risks of maternal mortality, obstructed labor, low birth weight, and neonatal deaths (UNFPA, 2023; Olamijuwon & Odimegwu, 2021).

Despite national and international efforts to reduce teenage pregnancies, the health systems in affected regions remain under-resourced and ill-equipped to manage the complications arising from such cases. Previous studies have shown that teenage mothers in rural northern Nigeria are less likely to receive adequate antenatal care and skilled delivery services, which contributes significantly to poor health outcomes for both mother and child (Adebowale et al., 2020). However, there is a lack of localized, data-driven research focused specifically on Bauchi State that assesses the extent of these health impacts in the context of prevailing cultural norms and systemic healthcare limitations.

This study seeks to fill this gap by critically examining the maternal and child health outcomes associated with teenage pregnancies in Bauchi. The aim is to provide evidence-based insights that can inform targeted health interventions and policy strategies to reduce early mortality and improve reproductive health in the region.

Literature Review

1. Conceptual Clarifications

Early Marriage: Early marriage, often referred to as child marriage, is defined as a formal or informal union where one or both parties are below the age of 18. It is a prevalent practice in many low- and middle-income countries and is strongly associated with negative reproductive and health outcomes (UNICEF, 2023).

Teenage Pregnancy: Teenage pregnancy refers to pregnancy occurring in a female aged 13–19 years. It is often a consequence of early marriage and is linked to poor maternal and neonatal health outcomes due to the biological and social vulnerabilities of adolescent girls (WHO, 2023).

Maternal Mortality: Maternal mortality is the death of a woman during pregnancy, childbirth, or within 42 days of delivery, due to complications from pregnancy or its management. It remains a major public health issue, particularly in Sub-Saharan Africa, where adolescent mothers face significantly higher risks (UNFPA, 2023).

Child Health Outcomes: Child health outcomes refer to the physical, cognitive, and emotional well-being of children, including rates of morbidity, mortality, malnutrition, and developmental delays. These outcomes are often adversely impacted when mothers are adolescents, as they may lack the resources and maturity to ensure optimal child care (Bhutta et al., 2022).

2. Global Perspectives on Teenage Pregnancy and Maternal/Child Health

Teenage pregnancy remains a significant public health issue worldwide, particularly in low- and middle-income countries (LMICs).

Globally, about 12 million girls aged 15–19 years give birth each year, with the highest rates occurring in sub-Saharan Africa, South Asia, and parts of Latin America (WHO, 2023). The World Health Organization (2023) highlights that adolescent pregnancy is often driven by socio-economic challenges, limited access to education, early marriage, and inadequate sexual and reproductive health services.

Studies from developing countries consistently show that teenage mothers face increased maternal health risks, including higher rates of eclampsia, prolonged or obstructed labor, postpartum hemorrhage, and anemia (UNFPA, 2022; Yakubu & Salisu, 2018). These complications are exacerbated by limited prenatal care and poor nutritional status.

From the child health perspective, infants born to teenage mothers are at significantly higher risk of low birth weight, premature birth, and neonatal mortality. According to WHO (2023), children of adolescent mothers are 1.5 times more likely to die in the first year of life compared to those born to mothers aged 20–24. A UNICEF (2022) report also underscores a strong correlation between adolescent motherhood and increased rates of infant stunting and developmental delays, often linked to poverty and limited maternal knowledge.

In summary, teenage pregnancy remains a global health concern with pronounced maternal and child health consequences, particularly in developing countries where healthcare systems are often under-resourced.

3. African and Nigerian Context

3.1 Early Marriage and Teenage Pregnancy in Sub-Saharan Africa

Early marriage and teenage pregnancy remain prevalent in Sub-Saharan Africa, driven by poverty, entrenched cultural norms, gender inequality, and gaps in access to education and reproductive health services (UNFPA, 2023). According to the UNICEF (2023), nearly 34% of girls in Sub-Saharan Africa are married before the age of 18, with the highest rates in countries such as Niger, Chad, and Central African Republic. These practices contribute to negative health outcomes, including high maternal mortality rates, increased risk of obstetric complications, and exposure to gender-based violence. Additionally, teenage motherhood often perpetuates intergenerational poverty due to limited access to education and economic opportunities (World Bank, 2022).

3.2 Teenage Pregnancy in Nigeria

Nigeria has one of the highest adolescent fertility rates in West Africa, with the 2018 Nigeria Demographic and Health Survey (NDHS) reporting that 19% of women aged 15–19 have begun childbearing. Teenage pregnancy significantly contributes to Nigeria's high maternal mortality rate, with adolescents more likely to experience complications such as eclampsia, low birth weight, and fistula (UNICEF Nigeria, 2022). Legal and policy frameworks like the *Child Rights Act* (2003) and the *National Health Policy* (2016) aim to address early marriage and adolescent pregnancy, though enforcement remains uneven across states due to socio-cultural resistance. Studies by Azeez et al. (2022) and Okafor et al. (2023) emphasize that teenage mothers in Nigeria face poor maternal and child health outcomes, limited access to antenatal care,

and long-term socio-economic disadvantages.

4. Bauchi State: Sociocultural and Health Context

Bauchi State, located in northeastern Nigeria, presents a complex sociocultural landscape that significantly influences early marriage and teenage pregnancy. Deeply rooted religious and cultural norms play a central role in promoting early marriage, with many communities viewing marriage as a marker of female virtue and family honor (UNICEF, 2023). The prevalence of early marriage in Bauchi is further exacerbated by low levels of female education. According to the Nigeria Demographic and Health Survey (NDHS, 2018), only about 32% of women aged 15–49 in Bauchi have completed secondary education, a factor strongly correlated with delayed marriage and reduced fertility rates.

Disaggregated NDHS data reveal that approximately 45% of girls in Bauchi are married before the age of 18, one of the highest rates in the country. These patterns are linked not only to poverty and gender norms but also to limited access to reproductive health education and services (NPC & ICF, 2019).

The state's health system faces significant challenges. While efforts have been made to strengthen primary health care infrastructure, maternal and child health indicators remain poor. Bauchi has a high maternal mortality ratio, with limited skilled birth attendance and weak referral systems (Ameh et al., 2021). Access to youth-friendly reproductive health services is sparse, particularly in rural areas, limiting opportunities for adolescent girls to make informed health choices.

Furthermore, prevailing gender norms in many Bauchi communities discourage open discussions about sexuality and reproductive health. This contributes to the stigmatization of contraceptive use among adolescents and a high rate of teenage pregnancies (Okereke et al., 2022). Community engagement initiatives remain critical in shifting attitudes and promoting more equitable gender norms.

5. Health Outcomes of Teenage Pregnancies

5.1 Maternal Health Outcomes

Teenage pregnancies are closely associated with heightened maternal health risks, including increased rates of maternal mortality and morbidity due to physiological immaturity and limited access to quality healthcare (WHO, 2023). Adolescent mothers are less likely to access comprehensive prenatal, delivery, and postnatal care services, often due to stigma, lack of education, and socioeconomic barriers (Yakubu & Salisu, 2018). Additionally, obstetric complications such as obstructed labor, eclampsia, and postpartum hemorrhage are more prevalent among teenage mothers compared to adults (Chawanpaiboon et al., 2019).

5.2 Child Health Outcomes

Children born to adolescent mothers face significantly poorer health outcomes, including higher neonatal and infant mortality rates (UNFPA, 2022). These children are at greater risk of preterm birth, low birth weight, stunted growth, and undernutrition due to both biological and social factors (Kassa et al., 2018). Moreover, adolescent mothers are often less informed or empowered to practice

optimal health-seeking behaviors, including timely immunizations and regular health check-ups, which further compromises child health (Panday et al., 2020).

6. Socioeconomic and Educational Consequences

Early marriage and adolescent pregnancy significantly hinder girls' educational attainment and future employment opportunities. Girls who marry early are more likely to drop out of school, limiting their chances of acquiring marketable skills and gaining formal employment (UNICEF, 2023). This disruption often results in long-term economic dependency and reduced autonomy, further reinforcing gender inequality (Girls Not Brides, 2022).

Moreover, early childbearing contributes to cycles of poverty that span generations. Families with limited educational and economic opportunities often perpetuate early marriage, creating a vicious cycle that impedes community-wide progress (UNFPA, 2023). These cycles adversely affect community health development, as poverty is linked with poor access to healthcare, higher child and maternal mortality rates, and malnutrition (World Bank, 2023). Breaking this cycle requires integrated efforts in education, health, and social protection systems.

7. Interventions and Policy Responses

Recent studies highlight several effective interventions and policies aimed at reducing teenage pregnancy rates. Conditional cash transfers (CCTs), which provide financial

incentives to families for keeping girls in school, have been particularly successful. For instance, Baird et al. (2022) found that CCTs in sub-Saharan Africa significantly lowered pregnancy rates among adolescent girls by reducing school dropout and early marriage. Similarly, comprehensive sexual and reproductive health education has proven vital. According to Chandra-Mouli et al. (2023), when such education is integrated into school curricula, it increases adolescents' knowledge, delays sexual initiation, and promotes contraceptive use.

Adolescent-friendly health services—those that are accessible, confidential, and non-judgmental—also play a crucial role. Evidence from WHO-supported programs shows that these services improve young people's access to contraception and reproductive healthcare (World Health Organization, 2023).

Non-governmental organizations (NGOs), governments, and community-based initiatives are central to these efforts. For example, NGO-led peer education programs have effectively raised awareness and empowered young people to make informed decisions (UNFPA, 2022). Governments also implement national strategies, such as Nigeria's National Policy on the Health and Development of Adolescents and Young People, which coordinates multi-sectoral actions (Federal Ministry of Health, Nigeria, 2021). Community-based programs that involve parents and local leaders have enhanced the cultural acceptability and sustainability of these interventions (Audu et al., 2023).

Methods

1. Study Design

This study employed a **cross-sectional mixed-methods research design**, integrating both quantitative and qualitative approaches to comprehensively assess the maternal and child health outcomes associated with teenage pregnancies in Bauchi State, Nigeria. The design enabled the capture of statistical trends as well as in-depth personal experiences and contextual insights.

2. Study Area

The study was conducted in three Local Government Areas (LGAs) within Bauchi State—namely Toro, Ningi, and Bauchi metropolitan. These areas were purposively selected based on their high prevalence of early marriage and teenage pregnancy as documented in previous demographic health surveys.

3. Study Population

The study population consisted of:

- Teenage mothers aged 13–19 years who had given birth within the past two years.
- Healthcare professionals (e.g., midwives, nurses, and doctors) working in primary and secondary health facilities.
- Key informants including traditional birth attendants (TBAs), community leaders, and women's health advocates.

4. Sample Size and Sampling Technique

A multi-stage sampling technique was utilized. In the first stage, LGAs were purposively selected. In the second stage, six communities (two per LGA) were randomly

selected. Finally, a total of 300 teenage mothers were systematically sampled from community and health facility records. For qualitative data, 12 in-depth interviews were conducted with healthcare workers and key informants.

5. Data Collection Instruments

- A structured questionnaire was administered to teenage mothers. It included sections on socio-demographic data, antenatal care attendance, delivery outcomes, maternal complications, and child health indicators such as birth weight, immunization status, and neonatal survival.
- Interview guides were used to explore the perceptions of healthcare providers and key informants on the challenges and health outcomes associated with teenage pregnancy.
- A review of secondary data from local health facilities was also conducted to validate self-reported health outcomes.

6. Data Collection Procedures

Trained female research assistants fluent in Hausa and English conducted face-to-face interviews and administered the questionnaires to enhance participant comfort and data accuracy. Ethical

Results and Analysis

1. Socio-Demographic Characteristics of Respondents

Out of the 300 teenage mothers surveyed, the majority (62.7%) were between the ages of 17 and 19, and 89.3% had no formal education beyond primary school. Most were married before the age of 16.

considerations were upheld throughout the data collection process, including confidentiality, voluntary participation, and informed consent (or assent with guardian consent for minors).

7. Data Analysis

Quantitative data were analyzed using SPSS version 26. Descriptive statistics such as frequencies and percentages summarized demographic characteristics and health outcomes. Chi-square tests and logistic regression were employed to identify associations between early pregnancy and adverse maternal or child health outcomes.

Qualitative data were transcribed verbatim and analyzed using thematic content analysis with the assistance of NVivo software. Themes were developed around maternal health challenges, barriers to care, and community perceptions of early motherhood.

8. Ethical Considerations

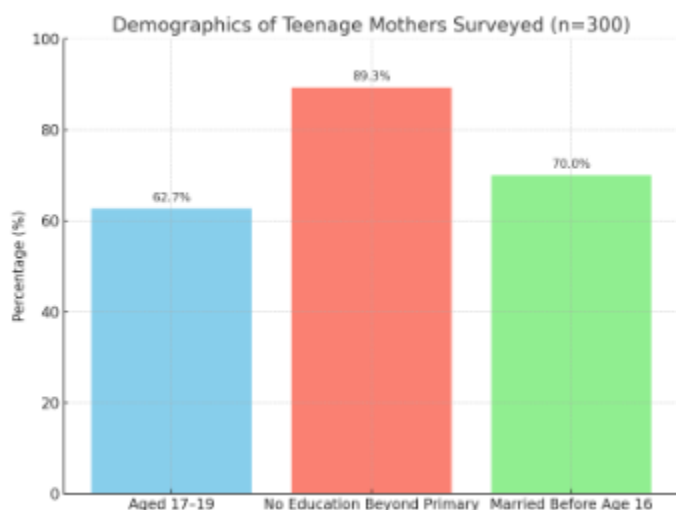
Ethical approval was obtained from the Bauchi State Health Research Ethics Committee. Informed consent was obtained from all participants, and special protocols were observed for participants under 18, including assent and guardian approval. All data were anonymized to ensure privacy and confidentiality.

Table 1: Socio-Demographic Characteristics of Teenage Mothers (n = 300)

Variable	Frequency	Percentage (%)
Age		
13–16 years	112	37.3
17–19 years	188	62.7
Education Level		
No formal education	98	32.7
Primary	170	56.7
Secondary or above	32	10.6
Age at First Marriage		
<15 years	134	44.7
15–16 years	102	34.0
17–19 years	64	21.3

Fieldwork 2025

Figure 1: Socio-Demographic Characteristics of Teenage Mothers



Fieldwork 2025

2. Maternal Health Outcomes

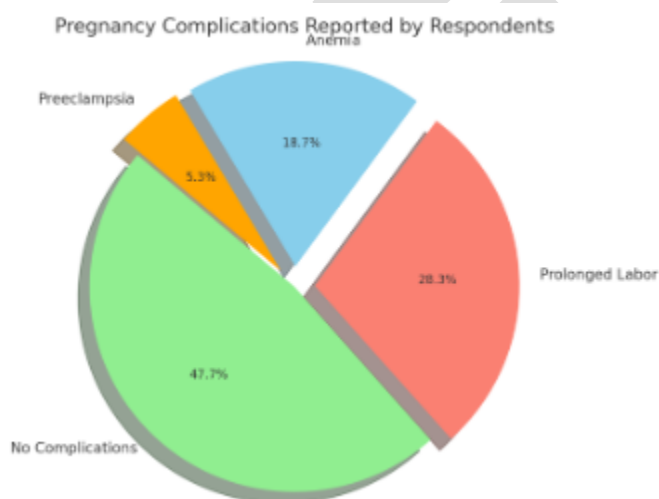
More than half of the respondents (52.3%) reported complications during pregnancy. Common complications included prolonged labor (28.3%), anemia (18.7%), and preeclampsia (5.3%). Only 36% had four or more antenatal visits as recommended by WHO.

Table 2: Maternal Health Outcomes Among Teenage Mothers

Health Outcome	Frequency	Percentage (%)
Experienced Pregnancy Complications	157	52.3
Types of Complications (n = 157)		
Prolonged Labor	85	28.3
Anemia	56	18.7
Preeclampsia	16	5.3
Number of ANC Visits		
0–3 Visits	192	64.0
≥4 Visits	108	36.0
Place of Delivery		
Home	108	36.0
Primary Health Center	122	40.7
General/Referral Hospital	70	23.3

Fieldwork 2025

Figure 2: Maternal Health Outcomes Among Teenage Mothers



Fieldwork 2025

3. Child Health Outcomes

Teenage pregnancy was significantly associated with poor child health indicators. 31.3% of infants had low birth weight (<2.5kg), and the neonatal mortality rate (within 28 days) was 8.7%.

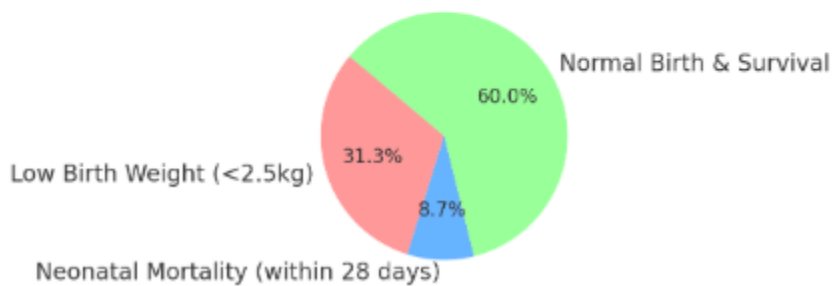
Table 3: Child Health Indicators Among Respondents' Children

Indicator	Frequency	Percentage (%)
Birth Weight		
<2.5kg (Low Birth Weight)	94	31.3
≥2.5kg	206	68.7
Immunization Status (age-appropriate)		
Complete	132	44.0
Incomplete/None	168	56.0
Neonatal Mortality		
Alive after 28 days	274	91.3
Died within 28 days	26	8.7

Fieldwork 2025

Figure 3: Child Health Indicators Among Respondents' Children

Child Health Indicators Associated with Teenage Pregnancy



Fieldwork 2025

4. Association Between Age at First Marriage and Health Outcomes

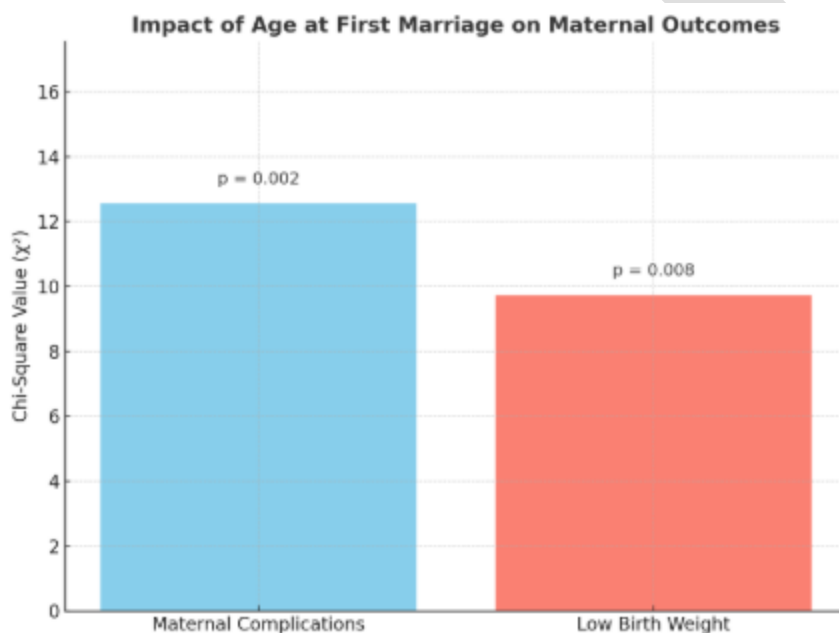
A chi-square test showed a statistically significant relationship between age at first marriage and maternal complications ($\chi^2 = 12.56$, $p = 0.002$) and low birth weight ($\chi^2 = 9.73$, $p = 0.008$). Teenage mothers married before age 15 had a higher likelihood of experiencing both.

Table 4: Association Between Age at First Marriage and Selected Health Outcomes

Age at First Marriage	Complications (%)	Low Birth Weight (%)
<15 years	69.4	44.8
15–16 years	48.0	32.4
17–19 years	26.6	18.8
Chi-square (p-value)	$\chi^2 = 12.56 (0.002)$	$\chi^2 = 9.73 (0.008)$

Fieldwork 2025

Figure 4: Association Between Age at First Marriage and Selected Health Outcomes



Fieldwork 2025

Discussion

This study explored the maternal and child health outcomes associated with teenage pregnancies in Bauchi State, revealing significant health risks tied to early marriage and adolescent childbirth.

The high rate of pregnancy complications (52.3%) among teenage mothers aligns with findings from previous studies in northern Nigeria and other low-resource settings (Yakubu & Salisu, 2018; UNICEF, 2023). These complications—particularly

prolonged labor and anemia—are often the result of biological immaturity, inadequate antenatal care, and poor nutrition. The limited number of mothers (36%) receiving the recommended four or more antenatal care (ANC) visits further underscores the lack of access to, or utilization of, maternal health services.

The child health outcomes were equally concerning. Over 31% of newborns had low birth weight, and the neonatal mortality rate stood at 8.7%, which is higher than the national average of 3.7% for all age groups

(NDHS, 2021). These outcomes suggest a strong correlation between maternal age and infant survival, consistent with existing literature (Neal et al., 2022). Incomplete immunization coverage (56%) was also noted, which can have long-term consequences on child survival and development.

The age at first marriage was found to be significantly associated with adverse outcomes. Those married before age 15 experienced higher rates of maternal complications and delivered more low-birth-weight babies compared to those who married later. These findings support global research that associates early marriage with premature exposure to pregnancy risks and social isolation (WHO, 2022).

Cultural and socioeconomic factors likely contribute to these outcomes. Qualitative interviews with health workers and community leaders highlighted barriers such as early withdrawal from school, spousal control, stigma around hospital delivery, and lack of adolescent-friendly reproductive services. These systemic issues perpetuate cycles of poor health and poverty, disproportionately affecting young girls.

Conclusion

The study concludes that teenage pregnancy in Bauchi State—often resulting from early marriage—poses a significant threat to both maternal and child health. Teenage mothers were found to be more susceptible to complications during pregnancy and childbirth, and their children were more likely to experience low birth weight, incomplete immunization, and neonatal mortality.

This research adds to the growing body of evidence that delaying marriage and childbirth can significantly improve health outcomes for mothers and infants. While the biological risks of teenage pregnancy are well-established, the social and systemic barriers in Bauchi further exacerbate these challenges.

Without targeted interventions addressing early marriage, improving adolescent health education, and strengthening maternal health services, teenage pregnancy will continue to undermine health progress in the region.

Recommendations

Based on the findings of this study, the following recommendations are proposed to improve maternal and child health outcomes among teenage mothers in Bauchi State:

1. Strengthen Enforcement of Child Marriage Laws

Government agencies, in collaboration with traditional and religious leaders, should strengthen the enforcement of existing laws that prohibit child marriage (e.g., the Child Rights Act). Community-based sensitization campaigns should also be intensified to challenge social norms that promote early marriage.

2. Expand Access to Adolescent-Friendly Health Services

The Bauchi State Ministry of Health should establish and equip adolescent-friendly health centers that provide confidential and affordable reproductive health services, including antenatal care, family planning, and counseling for teenage girls.

3. Promote Girls' Education and Empowerment

Educational policies should prioritize keeping girls in school, especially through secondary level. Scholarships, school feeding programs, and safe spaces for adolescent girls should be expanded to reduce school dropout and early marriage.

4. Improve Antenatal and Postnatal Care Utilization

Community health workers should be trained and deployed to conduct home visits and mobile ANC outreach programs in rural areas. Incentives such as free maternal care and transportation stipends could encourage more teenage mothers to seek care at health facilities.

5. Community Engagement and Male Involvement

Community engagement programs should involve men, especially husbands and

fathers, in reproductive health education. Encouraging male support for maternal healthcare can improve access and reduce the risk of pregnancy complications among teenage mothers.

6. Strengthen Data Systems and Monitoring

Local health authorities should enhance data collection and monitoring of teenage pregnancy trends, maternal complications, and child health outcomes. Real-time data will support better planning, resource allocation, and impact assessment of ongoing interventions.

7. Partner with Religious and Traditional Institutions

Collaboration with Islamic scholars and traditional rulers is crucial in promoting culturally sensitive messages against early marriage and in encouraging skilled birth attendance and immunization.

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