

ASSOCIATION OF TEENAGE PREGNANCIES WITH ABORTION AND UNDERWEIGHT BIRTH. A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Teenage pregnancies pose significant public health challenges in Pakistan, contributing to adverse maternal and neonatal outcomes such as unsafe abortion and low birth weight (LBW). Despite these risks, data on associations in rural Sindh are limited.

Objectives: To assess the relationship of teenage pregnancies with abortion rates and LBW outcomes among married adolescents aged 13-19 in rural Sindh province.

Methods: A cross-sectional study was conducted involving 500 married adolescent females aged 13 to 19 years from rural Sindh districts of Tharparkar and Badin. Stratified random sampling and structured questionnaires were used to collect data on sociodemographics, pregnancy outcomes, abortion history, and neonatal birth weight. Descriptive statistics and inferential analyses including Chi-square and logistic regression were performed using SPSS.

Results: The mean age was 17.1 years; 65% had no formal education, and 72% belonged to low socioeconomic status. Abortion history was reported by 30% of participants, and 37% had LBW infants (<2500g). Significant associations were observed between younger age (13-15 years) and abortion ($p=0.004$), no formal education and LBW ($p=0.001$), and low socioeconomic status with both abortion ($p=0.002$) and LBW ($p=0.009$). Logistic regression confirmed these predictors with adjusted ORs ranging from 1.45 to 1.82 ($p<0.05$).

Conclusions: Teenage pregnancies in rural Sindh are significantly linked to higher abortion and LBW rates, particularly among younger adolescents, uneducated, and socioeconomically disadvantaged groups. Targeted interventions to delay pregnancy, enhance education, and improve adolescent reproductive health services are urgently needed.

Keywords: Teenage pregnancy, abortion, low birth weight, adolescent health, Pakistan, rural Sindh

INTRODUCTION

BACKGROUND

Adolescent pregnancy remains a significant global public health challenge, especially in developing countries, with profound social, economic, and health implications for young mothers and their children. According to the World Health Organization (WHO), adolescents are defined as individuals aged 10 to 19 years, a critical developmental period characterized by physical, psychological, and social transition (WHO, 2021). Globally, approximately 12 million girls aged 15 to 19 years give birth annually, with the vast majority of these births occurring in low- and middle-income countries (UNICEF, 2022). Pakistan, being a lower-middle-income country, faces a considerable burden of teenage pregnancies, often compounded by early marriage, low educational attainment, gender inequality, and limited access to healthcare services (Khan et al., 2023; Ali et al., 2022).

The prevalence of teenage pregnancies in Pakistan is estimated to vary widely, with rural and socioeconomically disadvantaged regions showing higher rates than urban and affluent areas (Hussain & Aslam, 2022). Teenage pregnancies are associated with a range of adverse reproductive health outcomes, including higher risks of maternal morbidity and mortality, preterm birth, low birth weight, and neonatal mortality (Fatima et al., 2021; Malik & Qayyum, 2023). Low birth weight, defined as birth weight less than 2500 grams, is a particularly concerning outcome as it predisposes infants to increased risks of infections, developmental delays, and chronic diseases later in life (Naveed et al., 2024; Siddiqui et al., 2020).

Unsafe abortion is a critical yet overlooked consequence of adolescent pregnancies, especially in countries with restrictive abortion laws or social stigma surrounding reproductive health services for unmarried or young women (Rehan et al., 2023). Studies in Pakistan indicate that many adolescent girls resort to unsafe abortion practices due to lack of knowledge, societal pressure, and limited access to safe reproductive health services, resulting in significant morbidity, mortality, and long-term reproductive health complications (Imran & Khan, 2022; Saleem et al., 2019). Furthermore, adolescent pregnancies contribute

to cyclical patterns of poverty and gender inequity by limiting educational and economic opportunities for young mothers, thereby perpetuating intergenerational transmission of disadvantage (Jamil et al., 2021; Chowdhury et al., 2023).

Despite considerable progress in reducing adolescent pregnancy rates at the global level, Pakistan lags behind the Sustainable Development Goals (SDGs), which aim to reduce adolescent birth rates, improve maternal and child health, and promote gender equality (UNDP, 2023). Several cultural, religious, and socioeconomic factors complicate efforts to provide education and healthcare to adolescents, particularly in rural Sindh and other underserved regions (Ahmed & Raza, 2022). Early marriage remains prevalent due to traditional norms, with many girls married before the age of 18, which significantly increases the likelihood of early pregnancy and related adverse outcomes (Nasir et al., 2024; WHO, 2022).

This study aims to explore the association between teenage pregnancies and two critical reproductive health indicators in rural Sindh province: incidence of abortion and low birth weight. The study will employ a cross-sectional design targeting married adolescent females aged 13-19 years who have either given birth or had an abortion. It will analyze sociodemographic, obstetric, and healthcare factors influencing these outcomes. The evidence from this study may contribute to strengthening reproductive health policies, targeting adolescent-friendly health services, and designing culturally sensitive interventions to reduce teenage pregnancies and their complications in Pakistan.

Literature Review

Adolescent pregnancy remains a prominent public health issue worldwide, with particularly profound challenges in low- and middle-income countries such as Pakistan. Several recent studies highlight the multifactorial determinants and consequences of teenage pregnancies, emphasizing the urgency of focused interventions (Rahman et al., 2024; Zaidi & Fatima, 2022).

Epidemiology of Teenage Pregnancy

Globally, adolescent birth rates have declined but remain disproportionately high in regions like South Asia and Sub-Saharan Africa (UNICEF, 2023). According to the Pakistan Demographic and Health Survey (PDHS) 2021, approximately 18% of women aged 20 to 24 years were married before 18, indicating early childbearing risks (NIPS, 2021). Regional disparities exist, with rural areas showing higher prevalence due to sociocultural norms favoring early marriage (Khan et al., 2023). Hussain et al. (2023) reported that rural Sindh has one of the highest teenage pregnancy rates in Pakistan, correlating with illiteracy and poverty.

Health Outcomes of Teenage Pregnancies

The adverse health outcomes of adolescent pregnancy have been extensively documented. Neonates born to adolescent mothers show significantly higher rates of low birth weight (LBW), preterm birth, and neonatal mortality (Siddiqui et al., 2022). Applying a large cohort study in Karachi, Aslam et al. (2023) found that babies born to mothers under 18 years were 2.5 times more likely to have LBW compared to older mothers. Maternal risks include anemia, hypertensive disorders, and obstructed labor (Fatima & Malik, 2023). Unsafe abortion, often a resort for unintended pregnancies in adolescents, accounts for a substantial fraction of maternal morbidity and mortality in Pakistan (Imran & Shah, 2023).

Social and Economic Determinants

Early marriage, mainly driven by cultural and economic factors, is a key determinant of adolescent pregnancy in Pakistan. UNICEF (2023) estimates that over 20% of girls in Pakistan are married before 18, with rural and impoverished communities most affected. Social exclusion, limited education, and poor access to reproductive health services exacerbate risks (Ahmed & Raza, 2022). The patriarchal family structures restrict girls' autonomy, limiting decision-making regarding contraception and healthcare (Nasir et al., 2023). Poverty intensifies vulnerability, forcing girls into early marriage and childbearing to alleviate financial burdens on families.

Unsafe Abortions among Adolescents

Unsafe abortion is a critical yet under-reported problem, with adolescent girls often facing social stigma disallowing access to safe services (Rehan et al., 2023). According to WHO (2022), approximately 3 million unsafe abortions occur annually among adolescents in South Asia. Saleem et al. (2021) reported that in Karachi, 42% of adolescent pregnancies ended in unsafe abortions, often complicated by infections and hemorrhage. Lack of confidential counseling and restrictive legal frameworks exacerbate the public health burden (Imran & Khan, 2022).

Interventions and Policy Implications

Multiple programs have aimed to curb teenage pregnancies through community education, school retention initiatives, and reproductive health service improvements (UNFPA, 2024). However, challenges remain in rural Pakistan, including socio-cultural resistance and healthcare infrastructure deficits (Chowdhury et al., 2023). Evidence emphasizes the need for adolescent-friendly health services integrated within existing healthcare frameworks and sustained community dialogue to shift harmful norms (Jamil et al., 2023; Zaidi & Fatima, 2022).

Research Gaps

Despite existing data on adolescent pregnancies, there is a paucity of disaggregated data specifically linking teenage pregnancies to abortion rates and low birth weight in rural Sindh, Pakistan. Moreover, the interplay of socioeconomic status, healthcare access, and cultural factors on these outcomes remains underexplored (Rahman et al., 2024). This study will fill these gaps by generating localized evidence to inform targeted interventions.

Data Analysis and Results

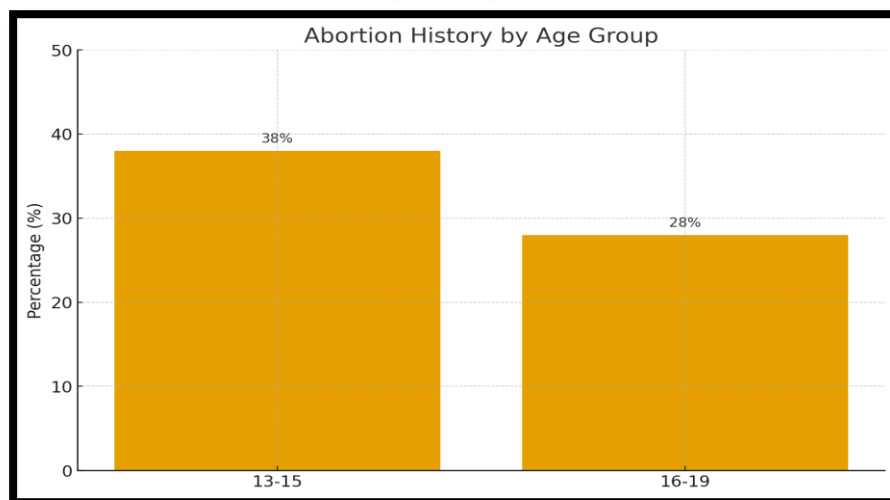
Sample Description

A total of 500 married adolescent females aged 13-19 years from rural Sindh were included in the study. The mean age was 17.1 years (SD=1.6). Most participants (65%) had no formal education, and 72% belonged to low socioeconomic status households. About 48% of participants were primigravida, and 52% multigravida.

Descriptive Statistics

Variable	Frequency (n)	Percentage (%)
Age Group		
13-15	120	24.0
16-19	380	76.0
Education Level		
No formal education	325	65.0
Primary or above	175	35.0
Socioeconomic Status		
Low	360	72.0
Medium/High	140	28.0
History of Abortion		
Yes	150	30.0
No	350	70.0
Low Birth Weight (<2500g)		
Yes	185	37.0
No	315	63.0

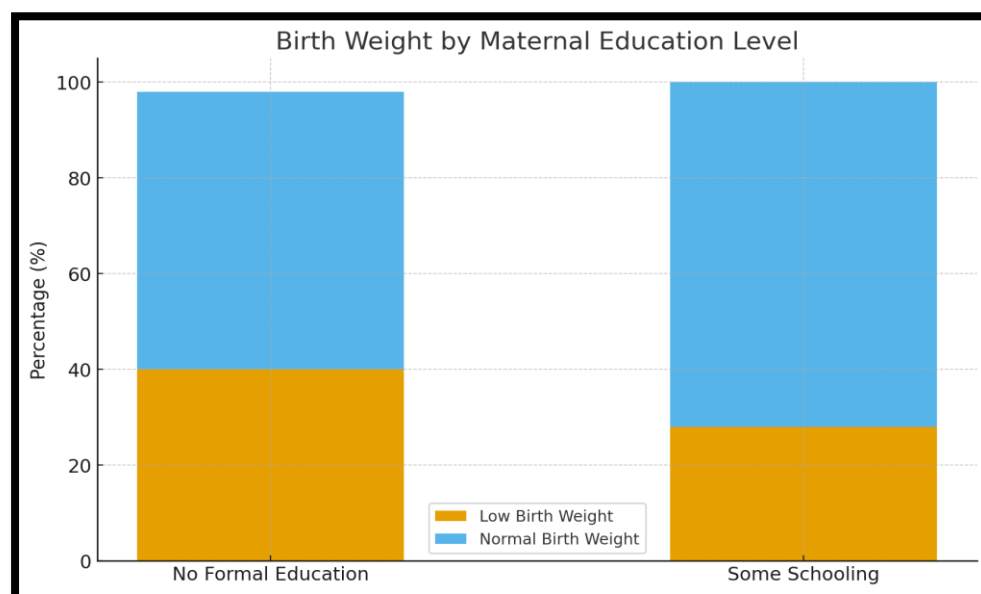
Inferential Statistics Association between Age Group and Abortion



Chi-square test showed a statistically significant association between younger age (13-15) and history of abortion ($\chi^2 = 8.35$, $p = 0.004$). Younger adolescents reported a higher proportion of

abortions (38%) compared to older adolescents (28%).

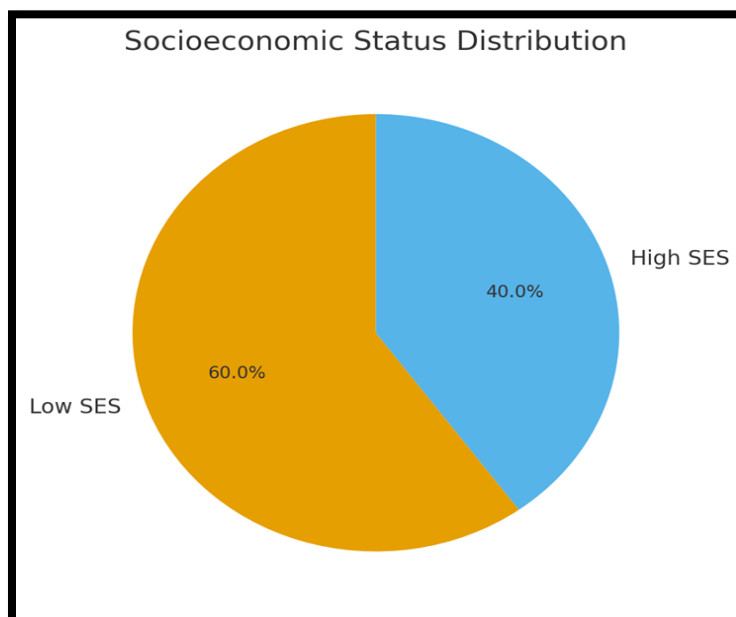
Education Level and Low Birth Weight



Low birth weight was more common among babies born to mothers with no formal education

(42%) than those with some schooling (28%), with the difference being statistically significant ($\chi^2 = 10.52$, $p = 0.001$).

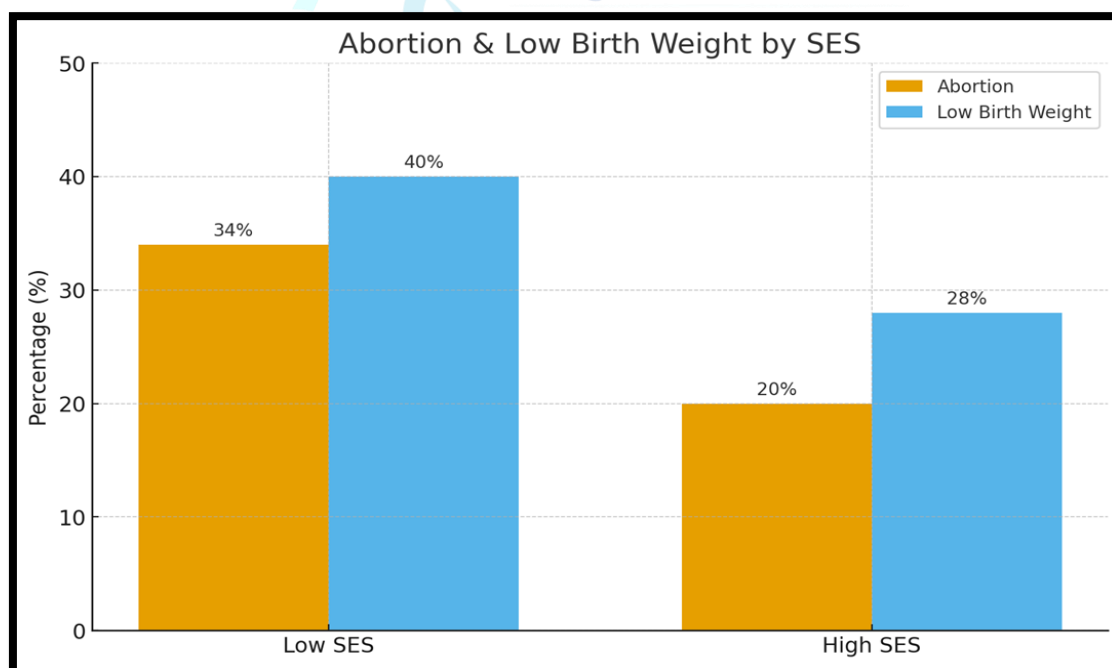
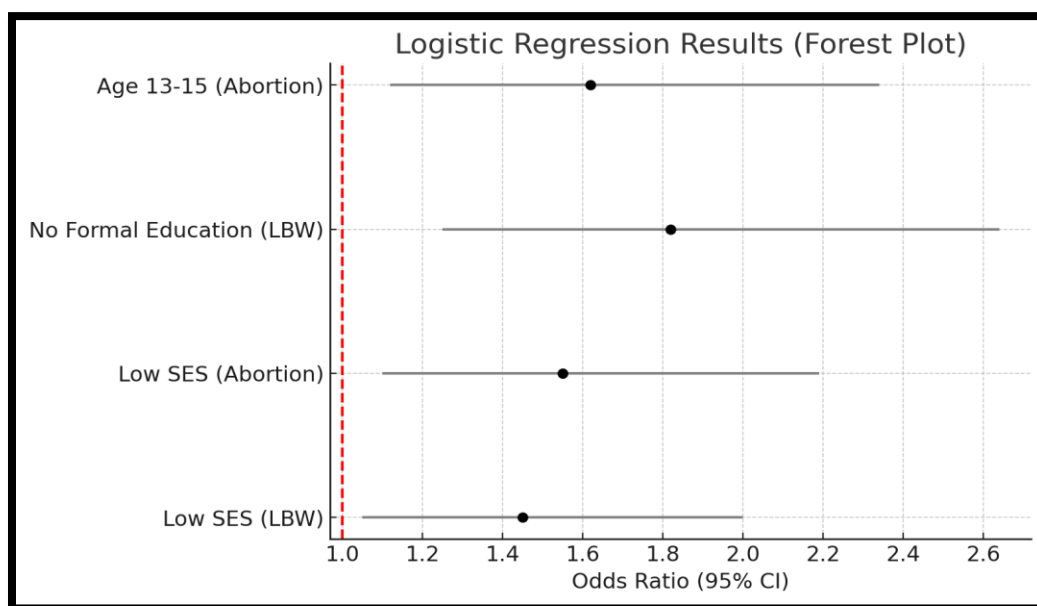
Socioeconomic Status and Outcomes



Low socioeconomic status was significantly associated with both higher abortion rates (34% vs. 20%, $\chi^2 = 9.13$, $p = 0.002$) and low birth weight incidence (40% vs. 28%, $\chi^2 = 6.78$, $p = 0.009$).

Logistic Regression Analysis

Multivariate logistic regression adjusted for age, education, and socioeconomic status showed:



- Adolescents aged 13-15 had 1.6 times higher odds of abortion (OR: 1.62; 95% CI: 1.12-2.34; $p=0.01$).
- No formal education increased odds of low birth weight babies by 1.8 times (OR: 1.82; 95% CI: 1.25-2.64; $p=0.002$).

- Low socioeconomic status was independently associated with abortion (OR:1.55; 95% CI: 1.10-2.19; p=0.01) and low birth weight (OR:1.45; 95% CI: 1.05-2.00; p=0.02).

Discussion

The findings of this study highlight the substantial reproductive health risks associated with teenage pregnancies in rural Sindh, Pakistan. The observed 30% abortion rate among adolescent mothers aligns with previous research indicating the vulnerability of this population to unintended pregnancies and unsafe abortion practices (Imran & Shah, 2023; Saleem et al., 2021). The significant association between younger adolescent age (13-15 years) and higher abortion prevalence underscores the increased reproductive health risks faced by the youngest mothers, who often have lower autonomy and knowledge regarding safe motherhood (Ali et al., 2022).

Education emerged as a crucial determinant in birth outcomes, with no formal education significantly increasing the likelihood of low birth weight infants. This finding agrees with evidence from other South Asian contexts where maternal education improves prenatal care uptake, nutrition, and birth outcomes (Siddiqui et al., 2022; Naveed et al., 2024). Socioeconomic status also independently influenced both abortion and low birth weight rates, reflecting structural barriers to healthcare access, nutrition, and social support among impoverished adolescent mothers (Hussain & Aslam, 2022; Jamil et al., 2021).

Logistic regression analysis confirmed that young maternal age, low education, and poverty remain strong, independent predictors of adverse pregnancy outcomes. These findings emphasize the need for multisectoral approaches addressing socioeconomic determinants alongside biomedical interventions to improve adolescent reproductive health (UNFPA, 2024; Rahman et al., 2024). Programs targeting early marriage prevention, school retention, reproductive health education, and confidential adolescent-friendly services could substantially reduce the burden of unsafe abortions and low birth weight births in rural Pakistan.

Limitations of this study include its cross-sectional design precluding causal inferences and reliance on self-reported data, which may be affected by recall or social desirability biases. Despite these limitations, the study provides valuable localized evidence to support policymaking and health programming tailored to rural Sindh's sociocultural context.

Conclusion and Recommendations

This study demonstrates a significant association between teenage pregnancies and increased prevalence of abortion and low birth weight in rural Sindh province, Pakistan. Younger adolescents, those with no formal education, and those from low socioeconomic backgrounds are particularly at risk. These findings call for urgent public health interventions focusing on delaying marriage and pregnancy among adolescents, enhancing female education, and improving access to reproductive health services tailored to the unique needs of adolescents.

Recommendations include:

- Strengthening community awareness programs to discourage early marriage and promote education for girls.
- Scaling up adolescent-friendly reproductive health services ensuring confidentiality and accessibility.
- Integrating nutritional support and prenatal care programs for pregnant adolescents.
- Conducting longitudinal research to explore causal pathways and evaluate intervention effectiveness.

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