Factors Associated with Adolescent Pregnancy in Nepal: An Analysis from the Demographic and Health Survey 2022

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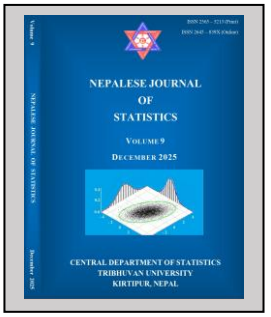

ABSTRACT

Background: Adolescent pregnancy is a critical global issue that poses a significant health risk to young mothers who are unprepared for safe motherhood. It also hinders their access to education, employment, and financial independence, perpetuating poor health, gender inequality, and poverty. Addressing this issue is vital for improving health and socio-economic outcomes.

Objective: To identify the factors associated with adolescent pregnancy in Nepal using data from the Nepal Demographic and Health Survey of 2022.

Materials and Methods: The secondary dataset from the most recent Nepal Demographic and Health Survey, 2022, was used in the study. The study includes a weighted sample of 2,643 female adolescents aged 15 to 19. The prevalence of adolescent pregnancy across various socio-demographic variables, along with the factors associated with adolescent pregnancy, was identified through multivariate logistic regression. Model adequacy was confirmed through the Hosmer-Lemeshow test and the ROC curve analysis. All statistical analyses were performed in the R programming language.

Results: The findings confirmed a declining trend in adolescent pregnancy in Nepal. Eight variables were significantly associated with adolescent pregnancy, including education level (basic, secondary, and above), ethnicity (Dalit, Janajati, others), occupation (non-agriculture), exposure to mass media (at least once a week), use of contraceptive measures (no), household wealth quintile (richer, middle, poorer), time to reach the nearest health facility (more than half an hour), and province of residence (Madhesh, Karnali). Each of these factors influenced the likelihood of adolescent pregnancy in different ways across the country.

Conclusion: This study underscored the continued prevalence of adolescent pregnancy and its disproportionate effect on socially and economically marginalized populations in Nepal. Targeted interventions focusing on education and media campaigns, particularly among socioeconomically disadvantaged groups in Madhesh and Karnali provinces, should be introduced to mitigate adolescent pregnancy in Nepal.

Keywords: Adolescent pregnancy, demographic and health survey, logistic regression, Nepal.

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INTRODUCTION

Adolescent pregnancy is a significant global health and social concern (Gurung et al., 2020; Pietras et al., 2024). It refers to a situation in which a girl aged between 10 and 19 years is carrying a child. In 2021, approximately 14 million girls under the age of 19 encountered pregnancy worldwide (Shukla et al., 2023). Adolescent pregnancy adversely affects the health of both the mother and the infant, as young girls are not sufficiently developed, both physically and mentally, to support a healthy pregnancy (Pietras et al., 2024). This condition carries substantial health risks, including maternal mortality, perinatal complications, premature birth, and psychological distress (Ganchimeg et al., 2014; Roy & Khatun, 2022). Beyond these biological risks, adolescent pregnancy also incurs long-lasting socio-economic repercussions (Gideon, 2013), restricting access to education, employment, and financial opportunities, which perpetuates poorer health outcomes, gender inequality, and entrenched poverty for young mothers, their families, and communities (Kennedy et al., 2011). Early pregnancies often result in school dropout, severely limiting educational and career opportunities for young women. Moreover, adolescence is a critical stage for the formation of behavioural attitudes; adolescent mothers, due to their lack of maturity, often struggle to provide adequate care for their new-borns, resulting in additional psychological challenges (Guzzo et al., 2019). Although the global adolescent pregnancy rate has been steadily decreasing, significant regional disparities in birth rates are still evident (World Health Organization, 2024). In particular, the South Asia region, including Nepal, has experienced a notable reduction in adolescent pregnancy cases (Shukla et al., 2023). In 2023, approximately 10% of adolescent girls in South Asia gave birth, which is less than half the rate observed in the African region (24%) and also less than the global average (13%) (UNICEF, 2024).

In Nepal, 14% of adolescents aged 15-19 years have experienced pregnancy, reflecting a 3% decrease in cases over the past decade. (Ministry of Health and Population et al., 2023). In 2022, the age-specific fertility rate for this age group was 71 births per 1,000 women, with a target to reduce this to 30 births per 1,000 women by 2030, in line with one of Nepal's Sustainable Development Goals related to health and well-being (National Planning Commission, 2020). The differential of adolescent pregnancy prevalence among females aged 15 to 19, as observed in the last three rounds of the Nepal Demographic and Health Survey (NDHS), is illustrated in Fig. 1, highlighting notable age-specific and temporal trends between 2011 and 2022. The prevalence of adolescent pregnancy increases with age, peaking at 19 years. In 2011, the prevalence was highest at 38.80%, slightly decreased to 35.50% in 2016, and significantly dropped to 30.70% in 2022.

However, for individuals older than 16, the prevalence rises by 10% for each additional year of age, indicating the varying risks at different stages of adolescence.

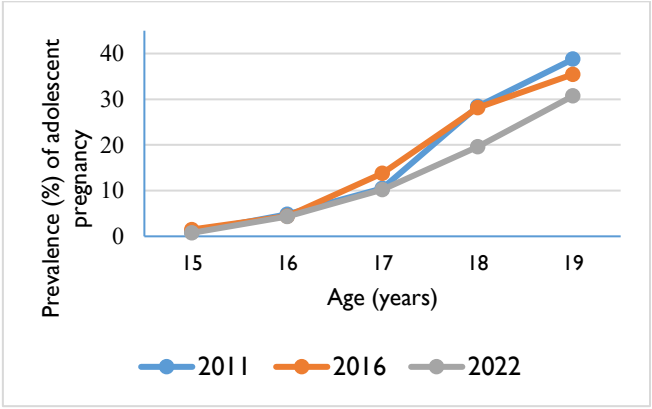

Fig. 1. Prevalence of adolescent pregnancy in Nepal (2011-2022).

Although adolescent pregnancy rates in Nepal are gradually declining, it remains a significant public health issue, particularly in rural and low-income communities. Despite the legal marriage age being set at 20 years to mitigate early marriage (NHRC & UNICEF, 2024), early childbearing persists due to the complex interplay of social, cultural, and economic factors. Numerous studies have highlighted various determinants of adolescent pregnancy. Socio-economic factors play a pivotal role in the onset of adolescent pregnancy, as they extend beyond access to resources to include the knowledge of contraceptive options and the autonomy to make decisions (Bersamin et al., 2010). Factors such as educational attainment (Nshimiyimana et al., 2025), employment status (Alukagberie et al., 2023), use of contraceptive methods (Habito et al., 2019; Monari et al., 2022), exposure to mass media (Malunga et al., 2023), access to healthcare services, and poverty (Poudel et al., 2018) have all been identified as key contributors to adolescent pregnancy in different studies (Mathewos & Mekuria, 2019). In this context, it is imperative to examine how these determinants manifest among Nepalese adolescents today. This study analyzes the demographic, socio-economic, and geographic factors associated with adolescent pregnancy in Nepal using nationally representative data from the 2022 NDHS. Through bivariate and multivariate regression analyses, the study identifies the most influential predictors of adolescent pregnancy and provides empirical insights into emerging trends. By examining recent data, the study aims to generate clear, evidence-based recommendations to inform targeted interventions and policy strategies focused on reducing early pregnancies and improving adolescent health outcomes in Nepal.

MATERIALS AND METHODS

Data source and description

The study analyzed secondary data from the 2022 Nepal Demographic and Health Survey (NDHS), a nationally representative household survey that collects detailed information on key demographic and health-related indicators. Data collection was conducted from January 5 to June 22, 2022, by New ERA under the Ministry of Health and Population (MoHP), with technical assistance from ICF International and financial support from the US Agency for International Development (USAID).

Sampling design and representativeness

The NDHS employed a stratified, two-stage cluster sampling design to ensure national representativeness. The seven provinces were stratified into urban and rural areas, creating 14 strata. In the first stage, 476 Primary Sampling Units (PSUs) were selected using a probability proportional to size method. In the second stage, 30 households per PSU were sampled, resulting in a total sample of 14,280 households (Ministry of Health and Population et al., 2023). This sampling approach ensured national representativeness across administrative (province and district) and geographical (mountain, hill, and terai) regions.

Dataset and study population

Access to the dataset was authorized through the DHS Program, and the Individual Recode (IR) dataset was used. The IR dataset contains detailed information on women aged 15-49, including their demographic characteristics, sexual and reproductive history, maternal and child health, and household context. The dataset had a record of 14,845 women interviewed (8,019 from urban and 6,826 from rural areas). For the study, a weighted subset of 2,643 women aged 15–19 years was extracted as the study population. All analyses applied NDHS sampling weights (variable v005, normalized by dividing by 1,000,000) to account for unequal probabilities of selection and to ensure national representativeness. The use of sampling weights aligns with the DHS guidelines.

Study variables

The selection of predictor variables was initially based on a review of relevant literature and prior research findings. A total of 14 variables were included, with one dependent variable and 13 predictor variables.

Dependent variable

The response variable was derived from two indicators: the total number of children ever born to a woman and her current pregnancy status. A woman was classified as having experienced an adolescent pregnancy (coded as '1') if she had given birth to at least one child or was pregnant at the time of data collection. Otherwise, she was not considered to have experienced adolescent pregnancy (coded as '0').

Independent variables

Thirteen predictor variables were included in the analysis. These variables are as follows:

1. Education level (no education, basic, secondary, and above)
2. Ethnicity (Brahmin/Chhetri, Dalit, Madheshi, Janajati, Others)
3. Religion (Hindu, Buddhist, Muslim, Others)
4. Occupation (not working, agriculture, non-agriculture)
5. Exposure of mass media (not at all, less than once a week, at least once a week)
6. Contraceptive use (yes, no)
7. Number of household members (less than or equal to 6, more than 6)
8. Sex of the household head (male, female)
9. Household wealth quintile (richest, richer, middle, poorer, poorest)
10. Time to reach the nearest health facility (≤ 30 minutes, >30 minutes)
11. Place of residence (rural, urban)
12. Province (Koshi, Madhesh, Bagmati, Gandaki, Lumbini, Karnali, Sudurpaschim)
13. Ecological region (mountain, hill, terai).

Some variables, such as education, ethnicity, religion, and occupation, were recoded to ensure adequate sample sizes within each category and maintain statistical validity. For instance, education was summarized into three levels (no education, basic, secondary, and above) to align with the structure used in NDHS reports and to reflect meaningful educational attainment stages in Nepal. Similarly, ethnicity and religion were grouped based on cultural similarity and to address sparse data in certain subgroups (e.g., merging Newar and Muslim into "Others"). Occupational categories were summarized into three groups (not working, agriculture, and non-agriculture) to distinguish between economic participation types while preserving interpretability.

Statistical analysis

Both descriptive and inferential statistical analyses were performed. The descriptive results included weighted frequencies, percentages, cross-tabulations, and Chi-square tests to summarize key characteristics and assess bivariate associations of predictors with adolescent pregnancy (Table 1). Based on the significance of the association between predictor variables and adolescent pregnancy status, only the significant variables at a 5% level of significance were included in the regression analysis. Those that were not significant were dropped. Since the outcome variable was dichotomous (1= adolescent pregnancy, 0 = no pregnancy), a binary logistic regression model was employed to establish the relationship between adolescent pregnancy and predictors. The adjusted effects of predictors are reported as Adjusted Odds Ratios (AORs) with a 95% confidence interval (C.I.). Let Y_i =1 denote pregnancy during adolescence, and Y_i =0 denote no pregnancy. The logistic regression model for *k* predictors $X_1, X_2, \ldots, X_k$ is given as:

$$\pi_i(x) = P(Y_i = 1 \mid X_1, \ldots, X_k) = \frac{e^{\beta_0 + \sum_{j=1}^{k} \beta_j x_j}}{1 + e^{\beta_0 + \sum_{j=1}^{k} \beta_j x_j}} \qquad (1)$$

With the logit transformation, it is given by:

$$\text{logit}(\pi_i) = \ln\left(\frac{\pi_i(x)}{1-\pi_i(x)}\right) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_k x_k \quad (2)$$

The binary logistic regression model assumes a dichotomous outcome, independence of observations, absence of multicollinearity among predictors, and an adequate sample size for reliable estimation. To ensure the validity of the fitted model, two model adequacy tests, the Hosmer-Lemeshow (HL) test and the Receiver Operating Characteristic (ROC) curve, were performed. The HL test measures the goodness of fit for logistic regression. It evaluates how well the predicted probabilities from the model correspond to observed cases. Thus, a non-significant Chi-square statistic indicates that predicted and observed cases do not differ significantly, suggesting an adequate model fit. The ROC curve provides the graphical assessment of the model's discriminative power by plotting sensitivity (true positive rate) against 1- specificity (false positive rate) for an entire range of possible cut-points. The Area under the curve (AUC) ranges from 0 to 1, quantifies the extent to which the model can distinguish between adolescents who experienced pregnancy and those who did not. Higher AUC values indicate stronger performance. All statistical analyses were performed using the R programming language.

RESULTS

Descriptive and bivariate findings

Table 1 summarizes the demographic, social, and economic characteristics of the 2,643 adolescents included in this study. It also provides insights into the bivariate analysis of predictor variables and their association with adolescent pregnancy across different sub-populations. The analysis revealed that adolescent pregnancy was most prevalent among respondents with no formal education (32.73%) and among those with no exposure to mass media (20.21%). A higher prevalence (54.92%) was also observed among respondents who were using contraceptive measures at the time of the survey. Socioeconomic variations were evident. Adolescents from poorer households had a higher prevalence of pregnancy (about 17%), while those in the richest quantile had the lowest prevalence (3.79%). Access to health facilities had an impact: respondents living more than 30 minutes away from the nearest health facility had a pregnancy prevalence of 21.60%. Geographically, adolescents residing in rural regions had a higher prevalence (14.37%) compared to the urban population. Among provinces, Karnali (20.13%) and Madhesh (18.89%) had higher prevalence rates of adolescent pregnancy. Ecologically, the mountain region had a notably higher prevalence rate of 15.24%. The Chi-square test found a significant association between adolescent pregnancy and several predictors, including education, ethnicity, religion, occupation, exposure to mass media, contraceptive use, household size, household wealth status, time to reach the nearest health facility, and the province of residence ($p<0.05$). These variables were considered for multivariate analysis.

Table 1. Descriptive summary and prevalence of adolescent pregnancy in Nepal.

Variables	Categories	Adolescent pregnancy		χ^2 (p-value)
		Yes n (%)	No n (%)	
Education*	No education	46 (32.73)	94 (67.27)	117.31 (<0.001)
	Basic education	176 (18.93)	752 (81.07)	
	Secondary and above	125 (7.95)	1450 (92.05)	
Ethnicity*	Brahmin/Chettri	54 (7.45)	670 (92.55)	46.48 (<0.001)
	Dalit	94 (19.89)	377 (80.11)	
	Madhesi	59 (13.52)	376 (86.48)	
	Janajati	95 (12.57)	663 (87.43)	
	Others	45 (17.68)	210 (82.32)	
Religion*	Hindu	276 (12.72)	1892 (87.28)	14.07 (0.03)
	Buddhist	14 (8.99)	142 (91.01)	
	Muslim	37 (21.51)	136 (78.49)	
	Others	20 (13.49)	126 (86.51)	
Occupation*	Not working	171 (12.59)	1186 (87.41)	22.47 (<0.001)
	Agriculture	159 (16.01)	833 (83.99)	
	Non-agriculture	17 (5.87)	277 (94.13)	
Exposure to mass media*	Not at all	101 (20.21)	399 (79.79)	41.30 (<0.001)
	Less than once a week	114 (14.88)	651 (85.12)	
	At least once a week	132 (9.57)	1246 (90.43)	
Contraceptive use*	No	256 (10.33)	2222 (89.67)	283.85 (<0.001)
	Yes	91 (54.92)	74 (45.08)	
Number of household members*	<=6	232 (11.66)	1759 (88.34)	15.98 (<0.001)
	6+	115 (17.6)	537 (82.4)	
Sex of household head	Male	228 (13.28)	1489 (86.72)	0.11 (0.76)
	Female	119 (12.83)	807 (87.17)	
Household wealth status*	Richest	17 (3.79)	419 (96.21)	54.81 (<0.001)
	Richer	66 (11.6)	505 (88.4)	
	Middle	72 (13.57)	461 (86.43)	
	Poorer	101 (17.72)	467 (82.28)	
	Poorest	91 (17.01)	444 (82.99)	
	<= 30 minutes	285 (12.1)	2074 (87.9)	21.08 (<0.001)

Variables	Categories	Adolescent pregnancy		χ^2 (p-value)
		Yes n (%)	No n (%)	
Time to reach the nearest health facility*	>30 minutes	61 (21.6)	223 (78.4)	
Place of residence	Urban	220 (12.49)	1538 (87.51)	1.92 (0.17)
	Rural	127 (14.37)	758 (85.63)	
Province*	Koshi	51 (12.5)	358 (87.5)	47.80 (<0.001)
	Madhesh	117 (18.89)	502 (81.11)	
	Bagmati	37 (7.66)	452 (92.34)	
	Gandaki	30 (12.57)	208 (87.43)	
	Lumbini	41 (9.36)	394 (90.64)	
	Karnali	41 (20.13)	162 (79.87)	
	Sudurpaschim	30 (11.9)	220 (88.1)	
Ecological region	Mountain	22 (15.24)	125 (84.76)	1.59 (0.46)
	Hill	124 (12.22)	888 (87.78)	
	Terai	201 (13.52)	1283 (86.48)	

* Refers to variables having a significant association with adolescent pregnancy.

Multivariate logistic regression results

A multivariate logistic regression analysis was employed to identify the demographic and socioeconomic factors associated with adolescent pregnancy in Nepal, presented in Table 2. The analysis identified eight significant determinants of adolescent pregnancy. The education level (basic, secondary, and above), ethnicity (Dalit, Janajati, others), occupation (non-agriculture), exposure to mass media (at least once a week), use of contraceptive measures (no), household wealth quintile (richer, middle, poorer), time to reach the nearest health facility (more than half an hour), and province of residence (Madhesh, Karnali) were identified as the significant factors associated with adolescent pregnancy. These factors contributed to the likelihood of adolescent pregnancy in different ways in Nepal.

Table 2. Results of the multivariate binary logistic regression model.

Variables	Categories	Odds Ratio	Lower C. I.	Upper C. I.	p-value
Education	No education ®				
	Basic education	0.51***	0.32	0.81	<0.001
	Secondary & above	0.25***	0.15	0.42	<0.001
Ethnicity	Brahmin/Chhetri ®				
	Dalit	1.68*	1.07	2.65	0.02

	Madhesi	1.52	0.86	2.67	0.15
	Janajati	1.72*	1.10	2.71	0.02
	Others	2.94**	1.19	6.76	0.01
Religion	Hindu ®				
	Buddhist	0.77	0.36	1.55	0.48
	Muslim	0.58	0.23	1.52	0.25
	Others	0.92	0.49	1.64	0.79
Occupation	Not working ®				
	Agriculture	0.95	0.72	1.24	0.69
	Non-agriculture	0.42***	0.24	0.71	<0.001
Exposure to mass media	Not at all ®				
	Less than once a week	0.90	0.64	1.27	0.55
	At least once a week	0.65**	0.47	0.91	0.01
Contraceptive use	Yes ®				
	No	0.10***	0.07	0.14	<0.001
Number of household members	<= 6 ®				
	6+	1.13	0.85	1.51	0.39
Household wealth status	Richest ®				
	Richer	2.18**	1.22	4.1	0.01
	Middle	2.05*	1.12	3.94	0.02
	Poorer	2.32**	1.27	4.44	0.01
	Poorest	1.97	1.01	3.97	0.05
Time to reach the nearest health facility	<= 30 minutes ®				
	>30 minutes	1.75**	1.18	2.59	0.01
Province	Bagmati ®				
	Koshi	1.27	0.72	2.27	0.41
	Madhesh	1.94*	1.02	3.72	0.04
	Gandaki	1.79	0.99	3.24	0.05
	Lumbini	1.09	0.59	2.01	0.79
	Karnali	2.73***	1.46	5.13	<0.001
	Sudurpaschim	1.61	0.84	3.10	0.15

® refers to the reference category,

*, **, and *** refers to the p-value significant at 5%, 1% and 0.1% respectively.

Model adequacy tests

The Hosmer-Lemeshow test yielded a Chi-square statistic value of 10.39 at 8 degrees of freedom and a p-value of 0.23, indicating that there is no statistically significant difference between the predicted and observed values. Hence, the model has an acceptable goodness of fit. The Receiver Operating Characteristic (ROC) curve was used to evaluate the regression model's ability to distinguish cases of adolescent pregnancy. The Area under the curve (AUC) was 0.758 (95% C.I. 0.73-0.78), illustrated in Figure 2, indicating acceptable discriminatory performance of the model (Lantz, 2013). This value suggests that the model can correctly differentiate between adolescents who experienced pregnancy and those who did not in 75.80% of cases when presented with randomly selected pairs of observations. Such performance demonstrates the model's reliability in predicting adolescent pregnancy status based on the selected predictors, identifying high-risk groups and informing policy design.

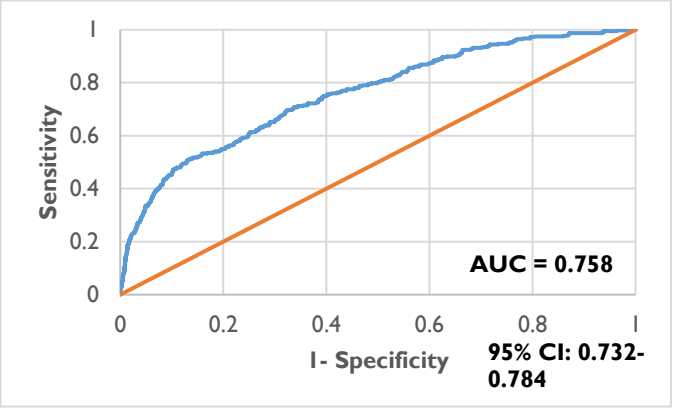

Fig 2. Receiver Operating Characteristics Curve for assessing the model adequacy.

DISCUSSION

Adolescent pregnancy remains a significant public health issue in Nepal, particularly among marginalized communities. Despite a gradual decline, the prevalence of adolescent pregnancy differs widely across sub-populations based on various socio-economic, geographic, and demographic factors. Education consistently emerged as a key factor associated with adolescent pregnancy (Pant et al., 2024). Our study found that teenage girls with no formal education were 50% to 75% more likely to experience pregnancy than their educated counterparts. This finding of higher odds of adolescent pregnancy among adolescents with no education is in line with previous research in Asian countries such as Nepal(Poudel et al., 2018), India (Shukla et al., 2023), Bangladesh (Hossain et al., 2024), as well as in African countries (Nshimiyimana et al., 2025; Worku et al., 2021). This may be because educated adolescents are aware of reproductive and sexual health, including contraceptive use, the risks of early pregnancy, family planning, maternal and neonatal mortality, and sexually transmitted diseases- factors that are crucial in preventing unintended pregnancies

(Kalulu et al., 2024). In addition to formal education, the role of mass media- such as radio, television, and print media- is critical in mitigating adolescent pregnancies (Poudel et al., 2023). Our findings revealed that adolescents exposed to mass media at least once a week were 35% less likely to experience pregnancy. Globally, mass media are highly effective tools for disseminating salient knowledge and raising awareness. Various media campaigns, advertisements, and programs are likely to contribute to adolescents' understanding of the risks and consequences of adolescent pregnancy (NHRC & UNICEF, 2024). Furthermore, in contexts where sexual education is constrained by cultural or religious norms, mass media provides an accessible alternative platform for delivering essential sexual and reproductive health education (Das et al., 2024; Zakar & Iqbal, 2024).

Ethnicity and caste hierarchies in South Asia, including Nepal, significantly contribute to the higher incidence of adolescent pregnancy among marginalized groups such as Dalits and Janajatis (Bhatta et al., 2024; Bhusal, 2024). In Nepal, Brahmin and Chhetri are regarded as more privileged ethnic groups, while Dalits and Janajatis are often disadvantaged. These disadvantaged ethnic groups typically experience lower literacy rates, limited access to healthcare facilities, poor socioeconomic conditions, societal discrimination, and consequently are prone to health-related issues (NHRC & UNICEF, 2024). Our study found the higher odds of pregnancy (1.68-1.72) among adolescent girls from these disadvantaged ethnic groups (Dalit/Janajati). This finding corroborates prior studies revealing that disadvantaged groups face an elevated risk of adolescent pregnancy (Poudel et al., 2023). The findings also showed that employed girls had a lower likelihood of pregnancy compared to those who were not working, consistent with findings from previous studies (Poudel et al., 2018; Worku et al., 2021) . Employed adolescent girls in the non-agricultural sector were 58% less likely to experience pregnancy compared to unemployed girls, as employment fosters a future-oriented mindset and goal-setting (Bersamin et al., 2010), and make informed decisions in time regarding family planning, conception, and contraceptive use (Malunga et al., 2023).

The odds of pregnancy were higher among adolescents using contraceptives. In Nepal, pre-marital sexual relationships are socially and culturally unacceptable (Nepal et al., 2018). As a result, contraceptive use is primarily confined to sexually active, married individuals (Angdembe et al., 2022) who often face societal pressure to conceive, resulting in pregnancies. Accordingly, our findings suggest that adolescents who did not use contraceptives were 91% less likely to become pregnant, similar to findings reported in previous studies (Habito et al., 2019; Kalulu et al., 2024). The economic status was identified as a key determinant of adolescent pregnancy. Adolescents from the lower or middle wealth quintiles consistently had higher odds of adolescent pregnancy compared to those from the richest quintile, a finding consistent with previous research (Hossain et al., 2024; Poudel et al., 2018). This may be attributed to limited access to education and healthcare facilities among adolescents from poorer families (Alukagberie et al., 2023). Additionally, factors such as school dropout, early marriage, and lack of awareness about sexual and reproductive health further foster the environment for adolescent pregnancy (Shrestha et al., 2022). The study also emphasized the critical role of access to healthcare facilities. Adolescents who lived more than half an hour's walking distance from these facilities were 1.76 times more likely to experience

adolescent pregnancy, as longer travel times to healthcare clinics were linked to a higher risk of early sexual debut, underscoring the importance of geographic access in influencing adolescent fertility behaviors (Bersamin et al., 2010; Damtew et al., 2024).

Finally, the province of residence also played a significant role in adolescent pregnancy. Compared to Bagmati province, adolescents from Madhesh and Karnali provinces were more likely to experience pregnancy. Karnali Province has the longest average travel time to education and healthcare facilities, while Madhesh Province has the lowest literacy rate. Both provinces also have the highest proportion of individuals who have never attended school, which could contribute to the elevated risk of adolescent pregnancy in these regions (National Statistics Office, 2024). The findings underscored the prevalence of adolescent pregnancy and its disproportionate effect on socially and economically marginalized populations. Furthermore, the identified determinants offer valuable insights for developing targeted interventions aimed at mitigating adolescent pregnancy. The results suggest that interventions focusing on education and media campaigns, particularly among socioeconomically disadvantaged groups in Madhesh and Karnali, could be pivotal in addressing adolescent pregnancy in Nepal.

Limitations

This study utilized the most recent country-representative survey data from the NDHS 2022, enhancing the generalizability and providing an up-to-date assessment of adolescent pregnancy in Nepal. However, the study has limitations. Since the data were obtained from a cross-sectional design, establishing a temporal relationship between adolescent pregnancy and predictor variables was not possible. Additionally, the self-reported nature of data may be subject to recall bias and social desirability biases. The study did not account for miscarriages or aborted pregnancies in the assessment of adolescent pregnancy outcomes. As a secondary dataset, the analysis was constrained by the variables available, limiting the exploration of other vital determinants. Finally, although the NDHS employs a rigorous sampling design and sampling weights were applied, non-sampling errors such as misclassification, interviewer biases, and data entry inconsistencies may still exist, which could affect the precision of population-level estimates.

CONCLUSION

Adolescent pregnancy in Nepal continues to persist despite its gradual decline, primarily due to disparities in education, socio-economic status, and geographic location. The study found that education, ethnicity, occupation, exposure to mass media, use of contraceptives, household wealth quintile, time to reach the nearest health facility, and province of residence are key factors associated with adolescent pregnancy. The study identified that girls with no or only basic schooling are vulnerable due to a lack of adequate sexual and reproductive health knowledge. Socio-economic inequality and regional disparities, especially in Madesh and Karnali provinces, elevate risk by limiting access to health services, educational opportunities, and economic resources, thereby reinforcing early marriage, reduced autonomy, and unmet reproductive health needs. The study also highlighted that regular exposure to mass media is a protective factor, suggesting that communication-based

interventions can complement school-based education and extend outreach to underserved communities. Overall, the study highlights the need for targeted, equity-focused interventions that address educational gaps, expand sexual and reproductive health information, and reduce geographic and economic disparities. These insights provide valuable guidance for national policies and ongoing government efforts aimed at achieving Nepal's goals for reducing adolescent pregnancy.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

AUTHOR CONTRIBUTION

JA conceptualized the study, analyzed the DHS data, and prepared the draft report. DS assisted in the preparation of the draft report. Both authors jointly reviewed and finalized the manuscript.

FUNDING

No funding was available for this study.

DATA AVAILABILITY

This study used the secondary dataset from the 2022 Nepal Demographic and Health Survey for the analysis. The dataset is available upon request from the DHS Program website (https://dhsprogram.com) after registration and approval of a brief explanation of the study purpose.

ETHICAL STATEMENT

The analysis used fully anonymized secondary data; therefore, no additional ethical approval was required. The survey obtained ethical approval from the Ethical Review Board of the Nepal Health Research Council and the ICF Institutional Review Board (IRB). Lastly, informed consent was obtained from each respondent.

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