

Socio-Cultural Factors Associated with Teenage Pregnancy among Adolescent Girls in Jewi Refugee Camp, Gambella Region, Ethiopia

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Abstract Teenage pregnancy remains a pressing public health issue with profound health, social, and economic consequences for adolescent girls, their families, and communities. It is associated with many socio-cultural factors that influence the occurrence of teenage pregnancy and sexual and reproductive health risk behaviors. This study assessed the prevalence of teenage pregnancy and socio-cultural factors among adolescent girls in Jewi Refugee Camp, Gambella Region. A community-based cross-sectional study was conducted from February 1 to March 30, 2026, employing a systematic sampling technique among female adolescents aged 13 to 19 years. Data were collected using a structured, pretested questionnaire with Kobo Collect software and analyzed in SPSS version 25. Pregnancy was confirmed using urine Human Chorionic Gonadotropin (HCG) test kits. A modified Poisson regression model was applied, and statistical significance was declared at $p < 0.05$. All 383 female adolescents participated in this study, yielding a response rate of 100%. The prevalence of teenage pregnancy was 33.2%. The mean age at first pregnancy was 15.46 years. Factors significantly associated with teenage pregnancy were age group (APR=1.354, 95% CI: 1.073 – 1.708), family planning use (APR = 2.755; 95% CI: 1.669 – 4.546), transactional sex (APR = 0.328; 95% CI: 0.206 – 0.523), parent-adolescent communication (APR=0.24, 95% CI: 0.114 – 0.51), and family pressure for early marriage (APR = 1.560; 95% CI: 1.144 – 2.128). The prevalence of teenage pregnancy was high. Comprehensive intervention is needed to strengthen access to family planning services, discourage child marriage, and address socio-cultural norms. Future qualitative research is needed to validate these findings.

Keywords Adolescent Pregnancy, Jewi Refuge, Socio-Cultural Factors, Teenage Pregnancy.

Introduction

Teenage pregnancy remains a significant global public health challenge with profound implications for health, education, and socio-economic development [1]. It is a significant contributor to maternal and child morbidity and mortality, and perpetuates cycles of poor health, school dropout, limited economic opportunities, and intergenerational poverty [2]. Globally, complications of adolescent pregnancy and childbirth are the leading causes of death among girls aged 15–19 years. An estimated 99% of these deaths occur in LMICs, where adolescent mothers are more prone to eclampsia, puerperal endometritis, and systemic infections compared to women aged 20–24 years [3].

An estimated 21 million girls aged 15–19 years and 2 million girls under the age of 15 years become pregnant annually in developing regions. Each year, approximately 16 million births occur among adolescents aged 15 to 19 years, while an additional 2.5 million births occur among girls younger than 16 years. Approximately half of these pregnancies are unintended, and 55% of unintended pregnancies ended in unsafe abortions [4]. Despite recent declines in adolescent fertility rates, teenage pregnancy continues to pose a significant global challenge with severe health and economic consequences [5].

The burden of teenage pregnancy is particularly high in Sub-Saharan Africa (SSA), where poverty, social exclusion, gender-based violence (SGBV), and early marriage remain widespread. [6]. In many communities, socio-cultural norms, family expectations, poverty, lack of sexual education, and limited access to reproductive health services contribute significantly to the high prevalence of adolescent pregnancy [7]. Evidence suggests that maternal health outcomes are strongly influenced by socio-economic status, educational attainment, age at conception, and number of pregnancies [8]. Adolescent pregnancies are often unintended, whether

mistimed (occurring earlier than desired) or unwanted (pregnancy occurring when no children were desired), and are associated with unsafe abortion, obstetric complications, and poor maternal and neonatal outcomes [9]. Healthy reproduction or the safest period for pregnancy and childbirth is generally considered to be between the ages of 20 and 30 years. Pregnancies occurring before or after this age range are associated with a significantly higher risk of maternal and neonatal complications [9].

Early marriage is a significant driver of teenage pregnancy. In low- and middle-income countries, more than 30% of girls marry before the age of 18, and 14% marry before 15 years [10]. Rising rates of teenage pregnancy are a major contributor to maternal and child mortality in Africa, including Ethiopia [11].

Several studies conducted in SSA have identified multiple determinants of adolescent pregnancy, including poverty, peer influence, low educational attainment, child marriage, family instability, lack of parental supervision, and poor parent-adolescent communication on SRH [7]. The region (SSA) continues to report the highest adolescent fertility rates globally. Countries such as Nigeria, Mali, Angola, Mozambique, Guinea, Chad, Malawi, and Cote d'Ivoire have persistently high rates of teenage childbearing. Furthermore, a study conducted in Palabek refugee camp in northern Uganda reported a teenage pregnancy prevalence of 41.2% among adolescent girls [12]. According to the United Nations Population Fund (UNFPA), approximately one in four girls in Sub-Saharan Africa gives birth before the age of 18 years [13].

Globally, evidence suggests that in some settings, more than one-third of girls report experiencing coerced sexual debut, highlighting the significant role of gender-based violence in adolescent reproductive health outcomes [10]. Refugee settings present a particular challenge since adolescent girls face risks of gender-based violence, sexual

abuse, and restricted access to SRH services, leading to higher rates of unplanned pregnancy compared to the non-refugee population [14].

In Ethiopia, the prevalence of teenage pregnancy varies considerably across regions and population groups [11]. Previous studies have reported teenage pregnancy prevalence rates ranging from 28.6% to over 30%, with community-based studies documenting similar findings for both unintended pregnancy and adolescent childbearing [15-17]. Socio-cultural and religious practices continue to influence reproductive health behaviors and maternal health outcomes [6]. Consequently, public health interventions aimed at reducing teenage pregnancy must address cultural norms surrounding early marriage and childbearing while actively engaging community leaders, religious institutions, parents, and adolescents [10].

The Gambella region hosts the largest South Sudanese refugee population in the country. Adolescents constitute a substantial proportion of this population and face numerous socio-cultural, economic, and structural vulnerabilities that increase their risk of teenage pregnancy. A study conducted in Kule refugee camp reported that more than one-third of adolescent girls had experienced teenage pregnancy [18]. Despite the high burden of teenage pregnancy in refugee settings, there is limited evidence regarding the socio-cultural factors influencing adolescent pregnancy among refugee girls in the Gambella region, Ethiopia. Previous studies conducted in Ethiopia refugee camps have focused on the prevalence and general determinants of teenage pregnancy. However, none have specifically assessed the socio-cultural factors using a mixed-methods approach that incorporates both survey and biological confirmation of pregnancy status in the Gambella region. Addressing these gaps is essential for developing context-specific interventions and policies aimed at reducing teenage pregnancy and improving adolescent

reproductive health outcomes in the refugee populations.

Methods and Materials

Study Setting and Design

A community-based cross-sectional study was conducted from February 1 to March 30, 2026, to assess the prevalence of teenage pregnancy and identify the socio-cultural factors influencing it. This quantitative research focused on adolescent girls aged 13 to 19 years residing in the Jewi Refugee Camp located in the Gambella region of Southwest Ethiopia. Jewi Refugee Camp is located 18 kilometers east of Gambella Town and 748 kilometers from Ethiopia's capital city, Addis Ababa. Jewi Refugee Camp has a population of 69,778 according to a UNHCR report [19].

Study Area and Period

This study was conducted from February 1 to March 30, 2026, in Jewi Refugee Camp in the Gambella region. Jewi Refugee Camp is one of the seven refugee camps in Gambella and has a population of 69,778 with 13,956 households, according to a UNHCR report [19]. It is located 748 kilometers West of Ethiopia's capital, Addis Ababa, and 18 kilometers East of Gambella town.

Gambella town is the capital city of Gambella Region, located around 766 kilometers southwest of Ethiopia's capital, Addis Ababa. Gambella Region borders South Sudan to the west, Oromia Region to the northeast, and the South West Ethiopia Peoples' Region (SWEPR) to the southeast. It covers an area of approximately 29,783 square kilometers and has a population of around 525,000, according to the report of UNICEF Ethiopia [20].

Study Population

The study population included all adolescent girls aged 13 to 19 years who had lived in the study sites for at least one year. The study specifically focused on female

teenagers aged 13 to 19 years from the selected households who participated in this research.

Inclusion and Exclusion Criteria

Adolescent girls aged 13–19 years residing within the Jewi refugee camps for at least one year and who signed a written consent form to participate in this study while adolescent girls aged 13–19 years who were sick during the data collection and who had a mental illness or who refused to participate in the study as well as those who did not reside in Jewi refugee camps for one year were excluded in the study.

Sample Size Determination and Techniques

The required sample size was determined using the single population proportion formula based on the Cochran formula by considering z as the normal standard deviation set at 1.96, with a confidence interval (CI) level of 95%, d = margin of error assumed to be 5%, p = 34.6%, the prevalence of teenage pregnancy according to the previous study

conducted in Kule refugee camp [18], and a 10% non-response rate.

Based on the above formula and substituting values, the sample size was 348 and adding a 10% non-response rate of 348. Therefore, the final sample size will be 383.

Sampling Techniques and Procedure

The study selected Jewi Refugee Camp using the lottery technique. The study included all four zones in the camp. The number of households in each zone was assigned using a proportional allocation based on the total sample size for Jewi Refugee Camp. The study identified participants from the selected households using a systematic sampling technique. For households with more than one teenage girl, a lottery sampling technique was applied to select one teenage girl for the interview and testing for pregnancy that is not physically observed. Households without a teenage girl were skipped to find those with an adolescent girl as indicated in (Figure 1) below.

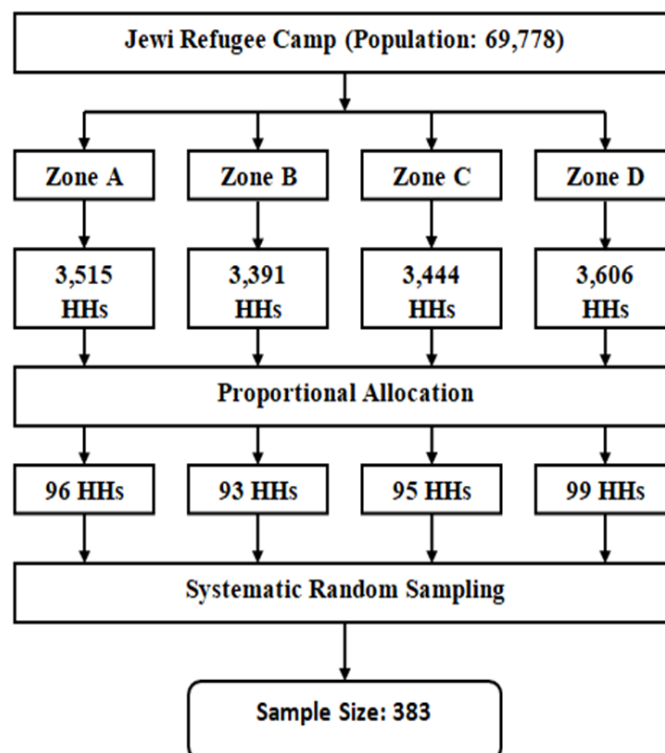


Figure 1. Sampling Technique Used for the Selection of the Study Population in Jewi Refugee Camp, Gambella Region, Southwest Ethiopia, 2026

Study Variables

Dependent Variable

Teenage pregnancy (TP): Teenage pregnancy (Yes/No) will be assessed in teenage girls aged 13–19 years who had ever been pregnant ending in live birth, abortion, stillbirth, or pregnant during the time of the data collection.

Independent Variables

Socio-Demographic Characteristics: include age, educational level, school attendance, and living arrangement.

Individual Behavioral Factors Characteristics: Contraceptive knowledge and use, access to sexual and RH services, age at first sexual intercourse, and substance use; and Sexual-based violence variable: Rape, Coercion, and Sexual assault (intimate-partner violence).

Family & Community Characteristics: includes Parent–adolescent communication, family pressure for marriage (Age at first marriage), household income, polygamous families, Socio-cultural factors: Early marriage, religious beliefs, gender norms.

Operational Definition

Teenage Pregnancy: is a pregnancy in girls within the ages of 13–19, or it is when a female becomes pregnant before the age of 20.

Early Sexual Intercourse/Debut: is defined as having had first sexual intercourse at or before age 15 years.

Early Marriage Pressure: is a marriage that takes place under the age of 18 years due to pressure from family or community.

Zone in Refugee Camp: It is an administrative unit within the refugee camp that divides it into several sections or zones, such as Zone A, B, C, and D, for administrative purposes.

Felt Pressure or Forced to Sexual Intercourse: is a situation where someone is being pushed towards intimacy without their

consent, or any sexual activity that occurs without consent.

Data Collection Instruments and Quality Control

Data collection was conducted by trained data collectors using a structured questionnaire following a pre-testing phase. The questionnaire was adapted from the WHO [21] and developed with modifications from different literature. It was initially prepared in English, then translated into Nuer, and subsequently translated back into English to ensure consistency. A peer-to-peer data collection approach was adopted to remove gender- and age-related social barriers and to create mutual trust between the interviewees and interviewers. Data were collected by four female Nurses (Diploma holders) using the KoboCollect Android software and intensive supervision was done throughout the data collection by one public health professional (with a degree).

Pregnancy in adolescent girls was determined using urine human chorionic gonadotropin (HCG) test kits. Each study participant was asked before collecting a urine sample if she was pregnant or if the pregnancy was visible to the data collectors at the time of data collection. Urine samples were collected from all study participants who had never been pregnant previously, except for those whose pregnancies were visible and confirmed.

Data Quality Control

Data were collected by four female nurses and one field supervisor. The data collectors and supervisor underwent three days of training focused on interviewing techniques, the study's objectives, informed consent, and ensuring confidentiality. The procedures for data collection and the use of data collection tools were also clarified. Fieldwork and ethical issue manuals were utilized during training and provided to data collectors and the supervisor as reference materials for actual

data collection. The supervisor checked the completeness, accuracy, and clarity of the collected data daily. The questionnaire was pretested on 5% of the sample size in refugee camps other than Jewi Refugee Camp to validate and estimate the time for data collection.

Data Processing and Analysis

The data collected by Kobo Collect (version 2024.1.3) were exported to the Statistical Package for Social Science (SPSS) version 25 for data cleaning, transformation, and analysis. Descriptive statistics, such as mean, frequencies, and Standard deviations, were used to summarize study variables, with categorical data presented in tables.

Bi-variable modified Poisson regression was done to identify the potential predictors of teenage pregnancy. Variables with P-values less than 0.25, including relevant factors and confounders, were included in multivariable modified Poisson regression models to identify independent predictors. Modified Poisson regression models or Poisson regression with robust standard errors were preferred over log-binomial regression for validating binary outcome results (p-values and confidence intervals). Adjusted risk ratios (ARRs) with 95% confidence intervals (CIs) were reported with statistical significance set at p-value < 0.05 and 95% CIs excluding 1. Model fitness was evaluated using deviance statistics or Pearson's chi-square goodness-of-fit test. Multicollinearity was assessed using the variance inflation factor (VIF).

Results of the Study

Socio-Demographic Characteristics

A total of 383 female adolescents participated in this study, yielding a response rate of 100%. The participants were aged between 13 and 19 years, with a mean age of 17.08 years (17.08 ± 1.79). Nearly half of the respondents, 193 (50.4%), were aged 18 to 19, indicating they were in late adolescence. All

the socio-demographic characteristics of the respondents are summarized in (Table 1) below.

The majority of the respondents, 298 (77.8%), were attending school at the time of the study, of whom 235 (61.4%) were enrolled in primary education. Among the respondents, 85 individuals (22.2%) dropped out of school. The leading reasons were early marriage (61, 72%), followed by unplanned pregnancy (12, 14%) and financial constraints (12, 14%). Regarding parental educational status, 207(54.2%) of fathers had attained secondary or university level, whereas the majority of mothers, 347 (90.6%), had no formal education.

Of the respondents surveyed, two-thirds (252 or 65.8%) had never been married, while 131 (34.2%) reported being married between the ages of 13 and 18. The mean age at first marriage among married adolescents was 16.40 years (16.40 ± 0.98), indicating a high prevalence of early marriage. All participants identified as Christian, with Protestant being the largest denomination at 153 participants (39.9%), closely followed by Seventh-day Adventist with 149 participants (38.9%).

Regarding household characteristics, more than half of the respondents (205; 53.5%) lived in households comprising ten or more family members. Additionally, 173 (45.2%) belonged to polygamous and extended family households. More than half of the households (214; 55.9%) reported a monthly income of less than 3,500 ETB. Humanitarian assistance was the primary source of household income for the respondents as indicated in Table 1.

Individual and Family Characteristics on Sexual and Reproductive Health

The study found that more than half, 217 (56.7%), of the respondents had ever engaged in sexual intercourse, and 116 (30.3) initiated sex at an early age (early sexual debut) between the ages of 13 and 15 years, with a mean age at first sexual intercourse of 15.5

years. Individual characteristics on sexual and reproductive health services have been summarized in Table 2 below.

Most respondents, 326 (85.1%), reported knowing sexual and reproductive health (SRH) services, and their primary sources of sexual and reproductive health information were health workers (156; 47.9%), followed by peers and media (87; 26.7) and school teachers (66; 20.2%). Despite the relatively high level of awareness, only 139 (36.3%) respondents reported ever using a family planning method. Among those who had used contraceptives, the methods mostly used were condoms (130; 33.9%) and oral contraceptive pills (111; 29.0%). The leading reasons for non-use of contraceptives were religious beliefs (132; 34.5%) and lack of adequate knowledge about contraceptive methods (88; 23%) (Table 2). The majority of family planning users, 113 (29.5%), obtained contraceptive

methods from health centers and health posts. However, the frequency of contraceptive utilization was generally low, with most of the respondents reporting that they used family planning methods only rarely or sometimes.

Among the respondents, 173 (45.2%) belonged to polygamous and extended family households. Additionally, 205 individuals (53.5%) reported living in a household with ten or more members. Around 276 (72.1%) were raised by both biological parents, while 74 (19.3%) reported that they had a family history of teenage pregnancy. The family characteristics on sexual and reproductive health services are summarized in Table 3.

Hundred and fifty-four (40.2%) reported that they had communicated with their parents about sexual and reproductive health-related issues. The majority, 229 (59.8%), had not discussed sexual and reproductive health related matters with their parents.

Table 1. Socio-Demographic Characteristics of the Respondents in Jewi Refugee Camp, Gambella Region, Southwest Ethiopia, 2026

Variables	Number	Percent
Age in years		
13–17 years	190	49.6%
18–19 years	193	50.4%
Marital status		
Never married	252	65.8%
Ever married	131	34.2%
School attendance		
Currently in school	298	77.8%
Drop-out from school	85	22.2%
Reason for school drop-out (N=85)		
Early marriage	61	72%
Unplanned pregnancy	12	14%
Financial constraints	12	14%
Educational level of the respondent		
Informal and primary level	235	61.4%
Secondary level	148	38.6%
Educational status of the father		
Informal to primary educational level	176	46%
Secondary to college/university educational level	207	54%
Educational status of the mother		
Informal educational level	347	90.6%

Primary educational level and above	36	9.4%
Educational status of the spouse (N= 131)		
Informal to secondary education level	59	45%
College and university educational level	72	55%
Religion		
Protestant	153	39.9%
Seven Day Adventist	149	38.9%
Catholic	81	21%
Occupational status of the father		
Employed or small business	150	39.2%
farmer	133	34.7%
Unemployed	100	26.1%
Occupational status of the mother		
Employed or small business	41	10.7%
Farmer	188	49.1%
Unemployed	154	40.2%
Household per capita		
< 350 birrs	186	48.6%
> 350 birrs	197	51.4%
Primary sources of household income		
Employed and Small business	16	4.2%
Humanitarian assistant	367	95.8%

Table 2. Individual Level Characteristics on Sexual and Reproductive Health of the Adolescent Girls in Jewi Refugee Camp, Gambella Region, Southwest Ethiopia, 2026

Variables	Number	Percent
Age at first sexual intercourse (217)		
13–15 years	116	53.5%
16–18 years	101	46.5%
Age at first marriage (N = 131)		
14–15 years	24	18%
16–17 years	90	69%
18–19 years	17	13%
Age at first pregnancy (N = 127)		
13–15 years	12	9.4%
16–17 years	98	77.2%
18–19 years	17	13.4%
Had ever been pregnant		
Yes	127	33.2%
No	256	66.8%
Had sexual intercourse in exchange for money & gifts (N = 217)		
Yes	90	41.5%
No	127	58.5%
Had information about sexual and RH services and family planning		
Yes	326	85.1%

No	57	14.9%
Source of information about sexual and RH services and family planning (N = 326)		
Health workers	156	47.9%
Peer and social media	87	26.7%
School teachers	66	20.2%
Parents or guardians	17	5.2%
Had ever used family planning or contraceptive methods		
Yes	139	36.3%
No	244	63.7%
Place family planning or contraceptive methods obtained		
Hospital/Health center or Health post	113	29.5%
Private clinic or pharmacy	26	18.7%
Type of family planning methods used		
Condom	130	33.9%
Oral contraceptive pills (OCPs)	111	29%
Depo-Provera (Injectable)	84	22.7%
Emergency contraceptive pills	11	3.4%
Calendar or rhythm	9	2.3%
Reasons for non-contraceptive use (N = 244)		
Cultural norm or religious	132	54.1%
Lack of knowledge	88	36.1%
Fear of side effect	14	5.7%
Partner refusal	10	4.1%

Note: RH = Reproductive health

Table 3. Family Characteristics on Sexual and Reproductive Health of Adolescent Girls in Jewi Refugee Camp, Gambella Region, Southwest Ethiopia, 2026

Variables	Number	Percent
Type of family in the household		
Nuclear family	182	47.5%
Polygamous and extended family	173	45.2%
Single-parent & child-headed household family	28	7.3%
Type of parent who raised or lived with the girl		
Both parent	270	72.1%
Single parent	83	21.7%
Guardian/ relative or peer	24	6.2%
Family size		
< 10 members	178	46.5%
> 10 members	205	53.5%
Family history (mother/ sister) of teenage pregnancy		
Yes	74	19.3%
No	309	80.7%
Discussed with parents about sexual and reproductive health related issues		
Yes	154	40.2%

No	229	59.8%
Frequency of discussion about Sexual and RH related issues (N = 154)		
Often to very often	22	14.3%
Sometime	93	60.4%
Rarely	39	25.3%
Persons usually talk to girls about Sexual and RH-related issues (N = 154)		
Parents and siblings	73	47.4%
Health workers/ teachers or friends	81	52.6%
Girls' feelings about discussing sexual and RH issues with parents (N = 154)		
Comfortable to very comfortable	58	37.7%
Uncomfortable to very uncomfortable	96	62.3%
Reasons for not discussing sexual and RH issues with parents (N = 229)		
Community considered as taboo and shameful	186	81.2%
Parents felt uncomfortable	19	8.3%
Fear of encouraging promiscuity	15	6.6%
Lack of parents' knowledge on sexual & RH	9	3.9%
Parents supervised and monitored girls' movement and activities after school		
Yes	192	50.1%
No	191	49.9%
Family members pressured the girl to marry		
Yes	191	49.9%
No	192	50.1%
Reasons for family members to pressure the girls for early marriage		
Bride price or dowry	194	50.7%
Fear of premarital pregnancy	104	27.2%
Cultural or traditional expectation	43	11.2%
To strengthen family relationship or tie	42	10.9%

Note: RH= Reproductive Health

Prevalence of Teenage Pregnancy

The overall prevalence of teenage pregnancy among the respondents was 127 (33.2%). The mean age at first pregnancy was 15.46 years, and from the pregnant adolescents, 27 (21.3%) reported becoming pregnant before the age of 18 years. The study showed that 217 (56.7%) of the respondents were sexually active and 90 (41.5%) had

experienced transactional sex. The prevalence of teenage pregnancy was higher among the age group of 13–17 years, with 3.65 times more likely to experience teenage pregnancy compared to those aged 18–19 years (PR= 3.645; 95% CI: 2.506–5.305, $p < 0.001$). The prevalence of teenage pregnancy in Jewi refugee camp is shown in (Figure 2) below.

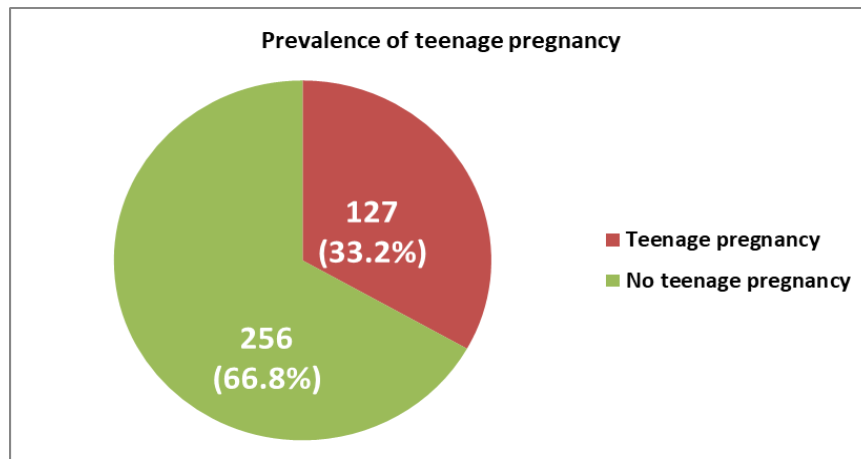


Figure 2. Distribution of Adolescent Girls Pregnancy Status among Adolescent Girls in Jewi Refugee Camp, Gambella Region, Southwest Ethiopia, 2026

Socio-Demographic Factors

Associated Teenage Pregnancy

Table 4 presents the bi-variable analysis of socio-demographic characteristics associated with teenage pregnancy among the adolescent girls in Jewi refugee camp. Age was significantly associated with teenage pregnancy. Adolescents aged 13–17 years were 3.65 times more likely to experience teenage pregnancy compared to those aged 18–19 years (PR = 3.65; 95% CI: 2.506–5.305, $p < 0.001$). Fathers' occupation also showed a significant association with teenage pregnancy. Adolescents whose fathers were farmers and unemployed had 1.33 and 1.41 times more likelihood of teenage pregnancy (PR= 1.33; 95% CI: 0.896–1.983, $p = 0.05$), and (PR = 1.42; 95% CI: 0.95–2.11) than adolescents whose fathers had employment.

In addition, years lived in the refugee camp showed a borderline association with teenage pregnancy, with adolescents residing in the camp for more than 10 years having a higher prevalence of teenage pregnancy than those who had lived in the camp for less than 10 years (PR = 1.55; 95% CI: 0.98–2.45). School attendance status showed a significant association. Those attending school had a 62.7% lower prevalence of teenage pregnancy than school dropouts (PR = 0.37; 95%

CI: 0.29–0.48, $p < 0.001$). Household per capita income was significantly associated with teenage pregnancy.

Educational attainment was another significant factor. Adolescents with informal and primary education had a lower prevalence of teenage pregnancy compared to those at secondary education (PR = 0.60; 95% CI: 0.43–0.94, $p < 0.001$). Similarly, respondents whose fathers had attained informal and primary educational levels were less likely to report teenage pregnancy than those whose fathers had secondary and university educational level (PR = 0.55; 95% CI: 0.41–0.74, $p < 0.001$).

Regarding occupation, students had a significantly lower prevalence of teenage pregnancy than employed respondents (PR = 0.41; 95% CI: 0.31–0.54, $p < 0.001$), whereas no statistically significant difference was observed among employed respondents and other occupational groups. Marital status demonstrated a strong association with teenage pregnancy. Married adolescents living with their partners had a significantly different prevalence of teenage pregnancy compared to those who had never married (PR = 0.26; 95% CI: 0.19–0.35, $p < 0.001$) according to Table 4.

Table 4. Socio-Demographic Characteristics of the Respondents that Influenced Teenage Pregnancy in Jewi Refugee Camp, Gambella Region, Southwest Ethiopia, 2026

Variables	Teenage Pregnancy		PR (95% CI)
	Yes (%)	No (%)	
Age group			
13–17 years	27 (14.2)	163 (85.8)	3.65 (2.51 –5.31)**
18–19 years	100 (51.8)	93 (48.2)	1
School attendance status			
Attending school currently	72 (24.2)	226 (75.8)	1
Drop-out from school	55 (64.7)	30 (35.3)	0.37 (0.29 –0.48)**
Highest educational level completed			
Informal and primary school	92 (39.1)	143 (60.9)	0.60 ((0.43–0.94)**
Secondary school level	35 (23.6)	113 (76.4)	1
Educational level of the father			
Informal to primary level	77 (43.8)	99 (56.3)	0.55 (0.41–0.47)**
Secondary to university level	50 (34.2)	157 (75.8)	1
Educational level of the mother			
Informal educational level	115 (33.1)	232 (66.9)	1.01 (0.62–1.63)
Primary educational level	12 (33.3)	24 (66.7)	1
Marital status			
Never married	85 (64.9)	46 (36.1)	1
Ever married	42 (16.7)	210 (83.3)	0.26 (0.19–0.35)**
Occupational status of the respondent			
Employed	11 (37.9)	8 (42.1)	1
Unemployed	39 (61.9)	24 (38.1)	0.41 (0.31–0.54)**
Students	77 (25.6)	224 (74.4)	0.94(0,31 –0.54)
Occupational status of the father			
Employed	52 (34.7)	98 (65.3)	1
Farmer	49 (36.8)	84 (63.2)	1.33 (0.90–1.98)*
Unemployed	26 (28.0)	74 (74.0)	1.42 (0.95–2.11)*
Household monthly income in ETB			
> 3500 birrs	49 (29.0)	120 (71.0)	1
< 3500 birrs	78 (36.4)	136 (63.6)	0.80 (0.59–1.07)*
Household average monthly income or per capita income in Ethiopian birr (ETB)			
> 350 birrs	55 (27.9)	142 (72.1)	1
< 350 birrs	72 (38.7)	114 (61.3)	0.72 (0.54–0.96)**
Years lived in refugee camp			
> 10 years	111 (35.5)	202 (64.5)	1.55 (0.98–2.25)*
< 10 years	16 (22.9)	54 (77.6)	1

Note: ETB = Ethiopian birr

Individual and Family Level Factors Associated with Teenage Pregnancy

Table 5 below presents the results of the bivariate Poisson regression analysis examining the association between sexual and reproductive health (SRH), family-related factors, and teenage pregnancy. Variables with a p-value < 0.05 were considered statistically significant.

Teenagers who had never heard about sexual and reproductive health (SRH) services were 2.34 times more likely to experience teenage pregnancy compared to those who had heard about sexual and reproductive health services or family planning (PR = 2.34; 95% CI: 1.262–4.339, $p < 0.001$). Similarly, adolescent girls who had never heard about family planning methods had a higher prevalence of teenage pregnancy (PR = 2.34; 95% CI: 1.262–4.339, $p < 0.001$).

Adolescents who receive sexual and reproductive health (SRH) information from their parents or school teachers experience a 1.35 times higher rate of teenage pregnancy compared to those who obtain information from health workers. The prevalence ratio is 1.346, with a 95% confidence interval of 0.945 to 1.917 ($p < 0.001$). Although this association is significant, it is considered marginal. For girls who obtained information from peers, friends, and media, there was no significant association with teenage pregnancy (PR = 0.834; 95% CI: 0.521–1.334). Use of family planning methods was strongly associated with teenage pregnancy. Adolescents who had never used family planning methods or contraceptive methods were 6.44 times more likely to report teenage pregnancy than those who had ever used contraceptive methods (PR = 6.44; 95% CI: 3.497–11.867, $p < 0.001$) (Table 5).

Sexual risk behaviors (had sexual intercourse in exchange for money, gift, or support) showed a different prevalence of teenage pregnancy (PR = 0.102; 95% CI: 0.064–0.164, $p < 0.001$). Those adolescents who had sexual intercourse in exchange for money had an 89.8% lower prevalence of teenage pregnancy compared with those who had never experienced sexual intercourse in exchange for money, gifts, or support.

Family characteristics were also important determinants. Adolescents from polygamous or single-parent families had a higher prevalence of teenage pregnancy compared with those from nuclear or extended families (PR = 1.59; 95% CI: 0.771–3.280, $p < 0.25$), although the association was not statistically significant. Family pressure for early marriage was one of the strongest predictors identified in the analysis. Adolescents who reported pressure from their families to marry early were nearly seven times more likely to experience teenage pregnancy than those who had never experienced pressure from their parents to marry early (PR = 6.974; 95% CI: 4.297–11.319, $p < 0.001$).

Parent-adolescent communication emerged as a strong protective factor. Adolescents who discussed SRH-related issues with their parents had a substantially lower prevalence of teenage pregnancy compared to those who did not (PR = 0.074; 95% CI: 0.033–0.163, $p < 0.001$). Family history of teenage pregnancy was also associated with teenage pregnancy in reverse. Adolescents whose mothers or sisters had experienced teenage pregnancy had a lower prevalence of teenage pregnancy (PR = 0.408; 95% CI: 0.316 – 0.526, $p < 0.001$).

Table 5. Individual and Family Level Factors Associated with Teenage Pregnancy in Jewi Refugee Camps, Gambella Region, Southwest Ethiopia, 2026.

Variables	Teenage Pregnancy	
	Yes (%)	No (%)
Ever heard about family planning and sexual and RH services		
Yes	118 (36.3)	207 (63.7)
No	9 (15.5)	49 (84.5)
Primary source of information on sexual and reproductive health (RH) services		
Health workers	68 (43.3)	89 (56.7)
Parents or school teachers	22 (26.5)	60 (73.2)
Peers/friends or social media	28 (32.2)	59 (67.8)
Ever used family planning or contraceptive methods		
Yes	10 (7.4)	126 (92.6)
No	117 (47.4)	130 (52.6)
Had sexual intercourse in exchange for money/gift/support		
Yes	111 (89.5)	13 (10.5)
No	16 (9.1)	159 (90.9)
Type of family		
Nuclear & extended family	121 (34.1)	234 (65.9)
Polygamous & single parent	6 (21.4)	22 (78.6)
Type of parent who raised (living with) the girl		
Both biological parents	87 (31.5)	189 (68.5)
Single biological parent	27 (32.5)	56 (67.5)
Guardian or relative	13 (54.2)	11 (45.6)
Discussed with parents about sexual and reproductive health issues		
Yes	6 (3.9)	148 (96.1)
No	121 (52.8)	108 (47.2)
Family pressured the girl for early marriage.		
Yes	111 (58.1)	80 (41.9)
No	16 (8.3)	176 (91.7)
Family history(mother/ sister) of teenage pregnancy		
Yes	47 (63.5)	27 (36.5)
No	80 (25.9)	229 (74.1)

Socio-Cultural Factors Influencing Teenage Pregnancy

Table 6 presents the results of the modified Poisson Regression analysis model conducted to explore independent socio-cultural factors associated with teenage pregnancy after controlling for potential confounders. Variables with a p-value < 0.25 in the bi-variable analysis were included in the final model, and statistical significance was defined as a p-value less than 0.05.

After adjustments, age group, ever use of family planning methods, transactional sex, parent –adolescent communication on sexual and reproductive health (SRH) related issues, and family pressure for early marriage remained significantly associated with teenage pregnancy.

Adolescent girls in the age group of 13–17 years were 1.35 times more likely to experience teenage pregnancy than those in the age group of 18–19 years (APR = 1.354,

95% CI: 1.073–1.708, $p = 0.011$). Girls who had never used family planning methods were 2.76 times more likely to report teenage pregnancy than those who had used family planning methods (APR = 2.755; 95% CI: 1.669–4.546, $p < 0.001$). This suggests that contraceptive use plays an important role in preventing unintended teenage pregnancy.

Transactional sex was also significantly associated with teenage pregnancy. Adolescent girls who had engaged in sexual intercourse in exchange for money, gifts, or support were 67.2% less likely to experience teenage pregnancy or had a lower prevalence of teenage pregnancy compared to those who had not engaged in transactional sex (APR = 0.328; 95% CI: 0.206–0.523, $p < 0.001$). Similarly, parent-adolescent communication on sexual and reproductive health-related issues was significantly associated with teenage pregnancy. Adolescents who had not discussed sexual and

reproductive health-related issues with their parents had a 76% lower prevalence of teenage pregnancy compared with those who had communication on sexual and reproductive health-related issues with their parents or guardians (APR = 0.24, 95% CI: 0.114–0.51, $P < 0.001$). Family pressure for early marriage was another significant protector. Girls who reported being pressured by their families to marry early were 1.56 times more likely to experience teenage pregnancy than their counterparts (APR = 1.560; 95% CI: 1.144–2.128, $p < 0.001$).

In summary, the final modified Poisson regression model identified older adolescent age (18–19 years), ever use of family planning methods, coercive sexual experiences, transactional sex, lack of parent-adolescent communication on SRH issues, and family pressure for early marriage as independent predictors of teenage pregnancy among adolescent girls in Jewi refugee camps.

Table 6. Multivariable Modified Poisson Regression Model of Socio-Cultural Factors of Teenage Pregnancy in Jewi Refugee Camp of Gambella, Southwest Ethiopia, 2026

Variables	Teenage Pregnancy		PR (95% CI)	APR (95% CI)
	Yes (%)	No (%)		
Age group				
13–17 years	27 (14.2)	163 (85.8)	3.645(2.51–5.31)**	1.35(1.07–1.71)*
18–19 years	100 (51.8)	93 (48.2)	1	1
School attendance status				
Attending school currently	72 (24.2)	226 (75.8)	1	1
Drop-out from school	55 (64.7)	30 (35.3)	0.37 (0.29–0.48)**	0.98 (0.78–1.24)
Educational status of the respondent				
Informal &primary school	92 (39.1)	143 (60.9)	0.60 ((0.43–0.94)**	0.96 (0.77–1.19)
Secondary school level	35 (23.6)	113 (76.4)	1	1
Educational status of the Father				
Informal to primary level	77 (43.8)	99 (56.3)	0.55 (0.41–0.47)**	0.85 (0.69–1.05)
Secondary to university level	50 (24.2)	157 (75.8)	1	1
Marital status of the respondent				
Never married	85 (64.9)	46 (36.1)	1	1
Ever married	42 (16.7)	210 (83.3)	0.26 (0.19–0.35)**	0.89 (0.70–1.13)
Occupation status of the father				
Employed	52 (34.7)	26 (28.0)	1	1
Farmer	49 (36.8)	84 (63.2)	1.33 (0.90–1.98)*	1.12 (0.87–1.44)

Unemployed	26 (28.0)	84 (63.2)	1.42 (0.95–2.11)*	0.85 (0.67–1.07)
Household average monthly income or per capita income in Ethiopian birr				
> 350 birrs	55 (27.9)	142 (72.1)	1	1
≤ 350 birrs	72 (38.7)	114 (61.3)	0.72 (0.54–0.96)**	0.95 (0.80–1.13)
Ever heard about family planning methods				
Yes	118 (36.3)	207 (63.7)	1	1
No	9 (15.5)	49 (84.5)	2.34(1.26–4.34)**	1.03 (0.82–1.28)
Ever used family planning methods				
Yes	10 (7.4)	126 (92.6)	1	1
No	117 (47.4)	130 (52.6)	6.44 (3.497–11.87)**	2.76 (1.67–4.55)**
Had sexual intercourse in exchange for money, gift or support				
Yes	111 (89.5)	13 (10.5)	0.10 (0.06–0.16)**	0.33 (0.21–0.52)**
No	16 (9.1)	159 (90.9)	1	1
Felt pressured or forced to have sexual intercourse				
Yes	15 (48.4)	16 (51.6)	0.66 (0.44–0.98)**	1.22 (1.01–1.48)
No	112 (31.8)	240 (68.2)	1	1
Discussed sexual and RH related issues with parents				
Yes	6 (3.9)	148 (96.1)	1	1
No	121 (52.8)	108 (47.2)	0.07 (0.03–0.16)**	0.24 (0.11–0.51)**
Family pressured girls for early marriage.				
Yes	111 (58.1)	80 (41.9)	6.97 (4.30–11.32)**	1.56 (1.14–2.13)**
No	16 (8.3)	176 (91.7)	1	1
Family history(mother/ sister) of teenage pregnancy				
Yes	47 (63.5)	27 (36.5)	0.41 (0.32–0.33)**	0.90 (0.75–1.08)
No	80 (25.9)	229 (74.1)	1	1
Type of family				
Nuclear & extended family	121 (34.1)	6 (21.4)	1	1
Polygamous & single parent	234 (65.9)	22 (78.6)	1.59 (0.77–3.28)*	0.83 (0.52–1.33)
Parents raised (living together with) the girl				
Both biological parents	87 (31.5)	189 (68.5)	1	1
Single biological parent	27 (32.5)	56 (67.5)	0.58 (0.39–0.87)**	0.88 (0.66–1.17)
Guardian or relative	13 (54.2)	11 (45.8)	0.60 (0.37–0.97)**	0.86 (0.63–1.16)

Notes: * p -value < 0.25, ** p -value < 0.05,

Abbreviation: PR prevalence rate; APR adjusted prevalence rate

Discussion

This study aimed to assess the prevalence and socio-cultural factors associated with teenage pregnancy in Jewi refugee camp. It identified some socio-cultural determinants of teenage pregnancy after controlling for potential confounding factors. Specifically, age group, use of family planning methods, transactional sex, and parent-adolescent communication on sexual and reproductive

health (SRH) related issues, and family pressure for early marriage remained significantly associated with teenage pregnancy.

The overall prevalence of teenage pregnancy in this study was 33.2%, which is higher than the studies conducted in Rwanda (10.7%, Sub-Saharan Africa 24.9% and a systematic pool review by AJOG Global Reports at a Glance with 17.9% [22, 23]. This might be due to the high prevalence of early

marriage and early sexual initiation in this refugee camp. However, the current finding is lower than those from studies conducted in Somalia, and Zambia, which reported rates of 35.9%, 47.2%, and 48%, respectively [24, 25]. The difference may be justified by variations in socio-demographic characteristics among participants. The findings of this study align with those from studies conducted in Ethiopia [15-17].

The findings of this study showed that adolescents aged 13–17 years were 35.4% more likely to experience teenage pregnancy compared with those aged 18–19 years. Although teenage pregnancy is generally expected to increase with age due to longer exposure to sexual activity, the current findings might reflect the unique socio-cultural context and the humanitarian circumstances of the refugee settings, where younger adolescents are disproportionately exposed to early marriage, early sexual initiation, limited autonomy, and sexual coercion. The younger girls might have limited experience with safe sexual practices and the influence of pornography through watching romantic movies. Similar findings were reported in Ethiopia and among the displaced population and humanitarian settings, where younger girls were particularly vulnerable to harmful traditional practices and gender inequalities [15, 26].

The study further revealed that adolescent girls who had never used family planning methods were nearly three times more likely to report teenage pregnancy than those who had ever used contraceptive methods. These findings are consistent with previous studies conducted in Zambia and other sub-Saharan African countries, which demonstrated that inadequate access to contraceptive information and services remains a major contributor to unintended adolescent pregnancies [27-29] and also consistent with studies conducted on refugee adolescents, which identified barriers to family planning utilization, including

stigma, misconceptions about contraceptive side effects, lack of privacy, and inadequate youth-friendly services [30]. Therefore, improving access to adolescent-friendly SRH services and increasing contraceptive uptake could substantially reduce the burden of teenage pregnancy in refugee camps.

Similarly, parent-adolescent communication on sexual and reproductive health-related issues demonstrates an inverse association with teenage pregnancy. Adolescents who did not discuss sexual and reproductive health-related issues with their parents had a 76% lower prevalence of teenage pregnancy. This study is contrary to the established evidence, which generally indicates that open communication between parents and adolescents promotes informed decision-making and safe sexual behavior. A possible explanation might be the reverse causality inherent in a cross-sectional study, where discussions about sexual and reproductive health occur after adolescents become pregnant or engage in sexual activity. In many communities, conversations surrounding sexuality are often initiated in response to perceived risk behavior rather than protective measures. The other possible explanation might be the knowledge gaps concerning Sexual and reproductive health and socio-cultural beliefs about early marriage, as parents might discuss early marriage. Similar findings have been reported that societies do not encourage an open discussion about sex, as parents do not feel comfortable [5, 31].

Unexpectedly, adolescents who reported engaging in transactional sex had a significantly lower prevalence of teenage pregnancy (67%) than those who did not engage in transactional sex. These findings contradict the existing literature and some studies conducted in Rwanda, Ghana, South Africa, and Sub-Saharan Africa, which identified transactional sex as a risk factor for adolescent pregnancy [14, 32, 33]. One of the possible explanations is that girls who are

involved in transactional sex might be more likely to use condoms or other contraceptive methods to avoid unintended pregnancy due to fear of social consequences. A similar report in a cross-sectional study observed a protective association [34]. Additional qualitative investigations are necessary to understand this relationship.

Family pressure for early marriage was another significant determinant of teenage pregnancy. Adolescent girls who had experienced pressure from their families to marry early were approximately 1.6 times more likely to become pregnant than those who had not experienced pressure from their families. This finding is consistent with the evidence indicating that child marriage remains a major contributing factor for adolescent pregnancy, and early marriage leads to early childbearing in low-resource and humanitarian settings [35-37]. In the refugee camps, where economic hardship and cultural norms may perpetuate early marriage practices, interventions aimed at delaying marriage and promoting girls' education are essential.

Conclusions

Overall, the findings underscore the complex interplay of socio-cultural and sexual and reproductive health factors influencing teenage pregnancy among refugee adolescents. This highlights the need for comprehensive interventions that strengthen access to family planning services, discourage child marriage, promote girls' empowerment, and address socio-cultural norms that predispose adolescent girls to early pregnancy. Given the unexpected findings regarding transactional sex and parent-adolescent communication, future longitudinal and qualitative studies are recommended to establish causal pathways and provide deeper contextual understanding.

Disclosure

The authors declare no conflicts of interest in this work.

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Ethical Approval

Ethical approval and clearance were obtained from the Gambella Regional Health Bureau (RHB) in January 2026. An official letter of permission and collaboration was written and submitted to Jewi Refugee Camp during the data collection period. Before data collection, participants were informed about the study's purpose and their right to decline participation. Confidentiality was maintained by keeping all information strictly confidential and ensuring that data would only be used for the study's purpose. Additionally, both written and verbal consent were obtained from participants and their parents or guardians before data collection, confirming their willingness to participate.

Authors' Contribution

The corresponding author contributed to the study's conception, design, data acquisition, analysis, interpretation, manuscript drafting, and revision for important intellectual content. The corresponding author also submitted the manuscript to the journal and accepts full responsibility for the integrity and accuracy of the work. The co-authors' contributions included scientific guidance, critical review of the manuscript for intellectual content, and final approval of the version to be published,

and they agree to submit the manuscript to the journal.

Data Availability

The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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