Reproductive Health

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From peer influence to parental roles: factors associated with teenage pregnancy in Dire Dawa city, Eastern Ethiopia

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Abstract

Background Although teenage pregnancy causes a considerable challenge to young women, studies among sexually active teenagers and the influence of peers on teenage pregnancy are not widely available. This study aims to determine the prevalence of teenage pregnancy and the association between peer pressure and other factors of teenage pregnancy in Dire Dawa secondary school, Eastern Ethiopia.

Methods Institutional-based cross-sectional study was conducted among 677 identified sexually active students from selected schools. Census was conducted on 2260 teenagers to identify sexually active teenagers using a stage cluster sampling technique. Sexually active teenagers were recruited using a simple random sampling method. Data was entered into EpiData-version 3.1 and exported to STATA version 16 for analysis. Modified passion regression was done to assess the association between of teenage pregnancy and predictor variables and significantly associated at p-value < 0.05.

Result Out of the total sexually active females 135 (19.9%) were pregnant. Teenage pregnancy was higher among teenagers in the 18–19 (APR = 3.21, 95% CI: 2.10–5.18) age group, living with either of their biological parents (APR = 1.9, 95% CI: 1.29–2.69) and neither of the biological parents (APR = 2.7 95% CI: 1.39–3.34), teenagers who had sex due to peer pressure (APR = 2.01, 95% CI: 1.51–2.86) and not knowing the ovation time in the menstrual cycle (APR = 1.6, 95% CI: 1.07–2.28). Teenage pregnancy is lower among teens who have good parent-daughter interaction (APR = 0.6, 95% CI: 0.50–0.91).

Conclusion Nearly one-fifth of the students experienced teenage pregnancy. Teenage pregnancy is higher amongst the age group of 18–19, living with either or neither of the parents, having sex due to peer pressure, not knowing the ovulation time, and lower among teens with good parent-daughter interaction. Teenage pregnancy in Dire Dawa is influenced by a combination of individual, peer, and family-related factors. Addressing these through school-based programs, community involvement, and family-centered interventions is crucial to reducing teenage pregnancy rates.

Keywords Teenage pregnancy, Teens, Sexually active, Peer pressure

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Background

The term"adolescence"or so-called"teenage"is a unique stage in every person's life. It is a period of transition from childhood to adulthood [1] where rapid psychological and physical changes take place resulting in reproductive maturity among adolescents [2]. Many adolescents manage this transformation successfully while others engage

in behaviours that place their well-being in danger, for example, sexual experimentation, exploration, and promiscuity [3]. According to the World Health Organization (WHO) when pregnancy occurs among teenage girls aged between 13 and 19 years it is referred to as teenage pregnancy indicating the girls have not reached legal adulthood [1].

Adolescent birth rates in sub-Saharan Africa Latin America, and the Caribbean remain the highest worldwide, at 104 and 63 births per 1000 adolescent girls, respectively. In sub-Saharan Africa, adolescent birth rates exceed 100 births per 1000 women aged 15–19 years in 23 countries. Ethiopia has one of the highest adolescent fertility rates in sub-Saharan Africa – 72.4 births for every 1000 young women aged 15–19 years [4]. In sub-Saharan Africa it is estimated that 35% of pregnancies among 15–19-year-olds are unintended pregnancies: of which two-thirds end in childbirth and a third result in induced abortion, often performed unsafely [5].

Teenage pregnancy is a major contributor to maternal and child mortality, and to the intergenerational cycle of ill health and poverty [6]. Girls aged 15–19 are two times more likely to die compared to women in their twenties and those under the age of 15 are five times more likely to die during childbirth [7]. Adolescent mothers are also inexperienced with childcare practices including maternal and infant health. Most maternal and child morbidity due to teenage pregnancy are linked to hypertensive disorder of pregnancy, infection, low birth weight, and preterm delivery [8]. Teenage pregnancy exposes women to problems that are less common in adult women such as obstetric fistula often leading them to lifelong consequences because their body growth is not yet completed [9]. Teenage pregnancy has also implications on educational opportunities; It leads to poor educational attainment and high school dropout [10].

In Africa, pre-marital sex is not acceptable due to cultural and religious reasons, especially for young women, unintended pregnancy commonly happens outside marriage. As a result, they are forced to undergo secret, unsafe abortions under unhygienic conditions performed by people who lack the necessary skills [11]. Due to the stigma and cultural sensitivity of pre-marital sex, people live in denial of how sex is common during the teenage years. According to the Ethiopian Demographic and Health survey, 9% of young women reported having sex before the age of 15 and an even higher percentage of women reported having sex before the age of 18 (40%) [12].

The government of Ethiopia including different Non-Governmental Organizations (NGOs) has taken many measures to reduce teen pregnancy and its consequences such as preventing early marriage, adolescent and reproductive health strategies, legalization of abortion, and awareness creation against harmful traditional practices [13]. However, still, teenage pregnancy is very common in Ethiopia, and it is an important demographic factor that makes the country the second most populous country in Africa [14].

Several factors come into play regarding teenage pregnancy, which is often associated with early marriage: In sub-Saharan Africa, one in every four girls has given birth by the age of 18 years [15]. Peer pressure is also a factor worthy of note when it comes to teenage pregnancy [16]. Many adolescents become sexually active at an early age when they do not know how to avoid unwanted pregnancies and sexually transmitted infections: To conform to the norms of their peers, increases the likely hood of early and unprotected sexual intercourse [17].

Studies showed other factors contribute to teenage pregnancy such as the educational status of parents, economic status, family structure, parent-daughter communication, age, media, fertility knowledge, lack of knowledge about Family Planning (FP), contraceptive non-use factors determining teenage pregnancy [10, 14, 18–22]. Despite these, several gaps in the previous literature on teenage pregnancy among adolescents were identified. Studies have included all adolescents (both sexually active and not active) in the denominator and hence might underestimate the actual magnitude of teenage pregnancy. When the rate is recalculated including only sexually active adolescents it is found to have the highest rate of pregnancy, arguing for continued focus on sexually active adolescents to assess teenage pregnancy. To reduce adolescent pregnancy, it is imperative to identify all associated factors comprehensively and focus on sexually active teenagers as well as the effect of peer pressure to fully understand factors surrounding teenage pregnancy. Hence, this study is aimed to investigate and provide information that fills identified gaps in the prevalence and associated factors of teenage pregnancy among secondary school adolescents in Dire Dawa, eastern Ethiopia.

Methods and materials

Study setting and period

A cross-sectional study was conducted in Dire Dawa city from Nov 4–18, 2020 among secondary school female students. Dire Dawa is located in the eastern part of Ethiopia 515 km away from Addis Ababa. Dire Dawa is one of the two federal cities in Ethiopia. Based on the 2012 estimation made by the Central Statistics Agency of Ethiopia, Dire Dawa has a total population of 506,639, of which 248,253 (49%) were males and 258,386 (51%) were females. Out of the total population, 343,490 live in urban and 163,150 live in rural areas. According

to the 2019 statistical report of the Dire Dawa education bureau, there are 21 secondary schools (13 private and 8 governmental) and 9 preparatory (6 private and 3 governmental) schools in the city. A total of 5,534 female adolescent students aged 15–19 years were enrolled in secondary school for the 2020 academic year.

Sample size determination

All selected sexually active female students in secondary school in Dire Dawa city were included in this study. To determine the sample size for this study, the outcome variable and various factors significantly associated with the outcome variable were considered. The final sample size was estimated based on the first and second specific objectives. Separate calculations were made for the first and second specific objectives, a larger sample size was used overall. For the first objective, the sample size was determined by using a single proportion sample size formula considering the following assumptions; 95% confidence interval (CI), 3% margin of error, and 7.7% proportion of teenage pregnancy were taken from a previous study conducted in Arba Minch town, Ethiopia (10). A design effect of 1.5 and 15% of non-responses rate resulted in 696.

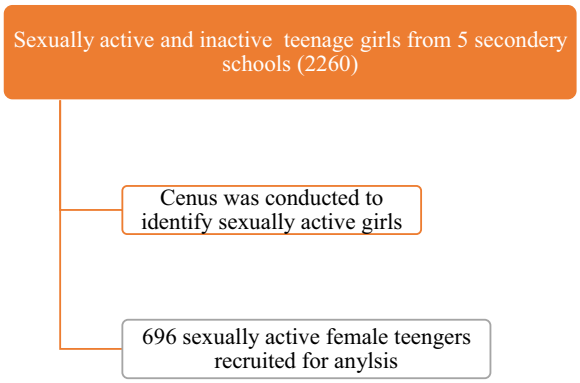

Fig. 1 Illustration of selecting sexually active female teenagers in secondary school, Dire Dawa, Eastern Ethiopia

Sampling techniques and procedure

For this study participants were selected based on their sexual activity. To identify sexually active teenage girls, a census was conducted among all female students (both sexually active and inactive) in the selected schools. Therefore the prevalence of 30.8% of sexually active teenagers from a previous study conducted in Bahirdar town [23] among female secondary school adolescents was considered to estimate the sample for the census and resulted in a sample size of 2260 (Fig. 1).

A single-stage cluster sampling technique was used to select a representative sample of students from the selected schools. There were 30 secondary schools in the city (21 high schools and 9 preparatory schools) and among these five schools were selected by simple random sampling method. Census was done to identify sexually active female teenagers and data were collected from all female secondary students (2260) in the selected schools. Finally, from surveyed 2260 students, those who reported being sexually active teenagers were identified by using a simple random sampling method until the required sample size (696) was reached and used for the analysis of this study (Fig. 2).

Data collection tool and measurements

A structured- self-administered questionnaire was used for data collection. The tool was adopted from the EDHS data collection tool, adolescent SRH toolkit, and other relevant previous published studies [10, 19, 24, 25]. Initially, the questionnaire was developed in

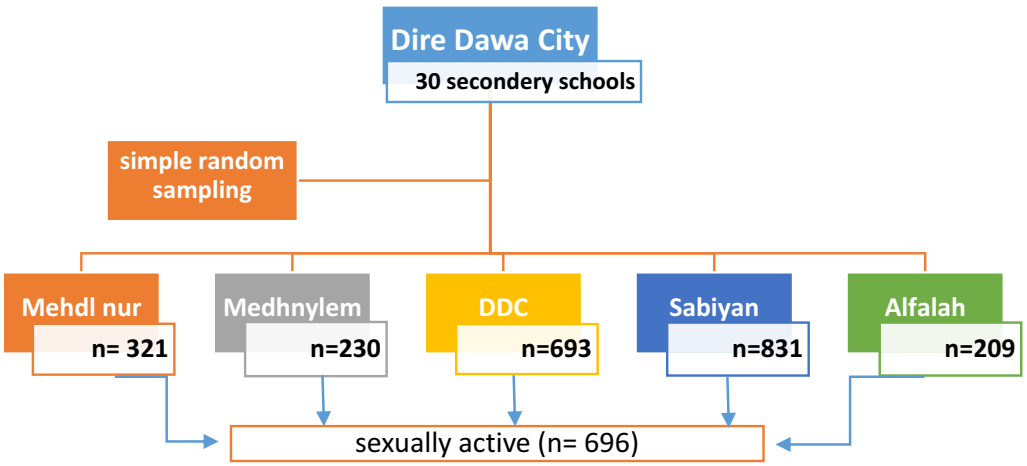

Fig. 2 Sampling procedure for selection of sexual active secondary schools female students in Dire Dawa city, Eastern Ethiopia

English and then translated into Amharic, Afan Oromo, and Af- Somali, and then it was back-translated into English to check for consistency. A pretest was done among female students from non-sampled schools. Following that, modifications were made to improve the clarity and content of the questions. The data was collected by 8 trained female data collectors and 2 two supervisors monitored the whole data collection process in the selected secondary schools. Before data collection, two days of training were given for data collectors and supervisors on the objective of the study, the content of the questionnaire, assenting, and consent processing. Regular monitoring for completeness, consistency, and accuracy of the data was held daily on each day of the data collection period by the assigned supervisors.

A structured questionnaire was used to gather data on participants' socio-demographic characteristics, family characteristics, psychosocial factors, and sexual and reproductive health (SRH) behaviors. Teenage pregnancy is the outcome variable in this study and was measured by the item "Have you ever experienced a pregnancy that resulted in a miscarriage, abortion, live birth, or stillbirth?"The responses were categorized as"1" yes and "0" no [10]. A sexually active is a person who had penetrative sexual intercourse (vaginal) at least once before the study [26]. The family wealth index was done by the Principal Component Analysis (PCA) method by considering locally available household assets and categorizing them into five quintiles (lowest, second, middle, fourth, or highest) [12]. Knowledge of contraception was assessed through awareness of at least one method. Knowledge about the fertile period during the menstrual cycle was an independent variable in this study adapted from literature [12] measured through a "yes- no "question, "From one menstrual period to the next, are there certain days when a woman is more likely to become pregnant? And when are those days in the menstrual cycle?, Then responses were recorded to 1= Knowledgeable(if she answers the letter of the choice that contains the time 4 days before and after the 14 th day of her first menstrual cycle) and 0= Not Knowledgeable (if otherwise).

Parent–daughter interaction was assessed through questions regarding communication about sexuality, relationships, and love with parents. It was measured through the following 4 questions adapted from previous literature [10]. Do your parents communicate with you on issues related to sexuality, love, and friendship openly? Do your parents know about your love or sexual partner? Do your parents follow you where and with whom you stay when you are out of home? The response to each question was categorized as 1= yes and 0= no then, the median score from the four questions was computed and labeled as 1= poor interaction (if scored ≤ 1) and 2= good interaction (if scored >1).

Statistical analysis

The collected data was checked for its completeness before data entry. Across checking it was coded and entered into Epi-Data version 3.1 and then exported to STATA version 16 statistical software for analysis. In addition, the frequency was run to check for any missing values and checked accordingly. A descriptive analysis was done and the result was presented by narration, tables, and graphs. Modified Poisson regression analysis was used to identify factors associated with the outcome variable. Those Variables in bivariate analysis whose p-value is less than 0.25 ($p < 0.25$) were retained in the final model. Crude prevalence ratios (CPRs) and adjusted prevalence ratios (APRs) were calculated with 95% confidence intervals. The multi co-linearity test was carried out using the coefficients' covariance matrix and only variables with covariance <0.5 were included.

Result

Socio-demographic characteristics

A total of 2260 participants were surveyed of whom 1564 were not sexually active and excluded from the analysis. From a total of 696 sexually active female teenagers, 677 sexually active female teenagers aged 14–19 years were eligible and identified for analysis, which makes a response rate of 97.3%. The mean age of respondents was 17.6 (SD ±1.05) years. Four hundred two (55.4%) of the participants were found in the age group of 18–19 years and 643 (95%) were single. Almost all 660 (97%) of the participants are from the urban area and 335 (49.48%) of them are orthodox religious followers. Most were in Grade 12 (54%) and regarding the family wealth quintile 155 (23%) were in the middle wealth quintile (Table 1).

Parenting and family-related factors

Family and parenting-related characteristics of teenagers were assessed; 36 and 52% of respondents' fathers and mothers have not attended formal education respectively. Nearly three fourth of the teenagers reported that they lived with both of their parents. Good parent-daughter interaction was reported by more than half (55%) of the teenagers (Table 2).

Sexual and reproductive health characteristics

Four hundred seventy-two (70%) had their menses between the age of 13–15. Regarding the knowledge about ovulation 475 (70.1%) of female students didn't know the ovulation time in their menstrual cycle. Nearly three-fourth (71.9%) of the teenagers reported having their first sexual debut before the age of 18. The mean

Table 1 Socio-demographic characteristics of teenagers in a secondary school of Dire Dawa city, Eastern Ethiopia, 2020

Variables	Category	Frequency	Percentage
Age in years	14–17	275	40.6
	18–19	402	59.4
Residence	Rural	17	2.51
	Urban	660	97.5
Religion	Orthodox	335	49.5
	Muslim	252	37.2
	Protestant	83	12.3
	Other*	7	1.03
Marital status	Single	643	94.9
	Married	34	5.02
Education level	Grade 10	121	17.9
	Grade 11	185	27.3
	Grade 12	371	54.8
Exposed to media	Yes	585	86.4
	No	92	13.6
Ever use internet	Yes	409	60.4
	No	268	39.6
Family Wealth quintile	Lowest	139	20.5
	Second	133	19.7
	Middle	155	22.9
	Fourth	122	18.1
	Highest	128	18.9

Other*—catholic

age at first sexual intercourse is 16.8 ± (0.04). The minimum and maximum age during their first sex were 12 and 19 respectively. The means of female teenagers for their first sexual encounter among 446 (68.8%) female teenagers was a desire to have sex. 641(94.7%) of the participants knew at least one type of contraceptive method and oral pills were the most known (95.4%) contraceptive method. Ever use of contraceptive methods was reported by 282(41.7%) female students. Ninety-one (13.5%) of teenagers have a history of substance use in their lifetime (Table 3).

Magnitude of teenage pregnancy

One hundred thirty-five (19.94%, 95% CI: 16.9–23) teenagers reported ever being pregnant and among this 13 (9.6%) were pregnant at the time of the survey. Of 115 (85%) the pregnancy was unplanned and more than half, 70 (51.9%) get pregnant for the first time before the age of 18 (Fig. 3). The mean age of the first pregnancy was 17.3 ± 0.07 years.

Factors associated with teenage pregnancy

After controlling the possible confounders, the prevalence ratio of teenage pregnancy in age groups of (18–19 years) was 3.2 times more likely to become pregnant than teenagers in age groups of 15–17 years (APR = 3.21, 95% CI:2.10–5.18). Teenagers living with either of their biological parents and those living with neither of their biological parents are 1.9 (APR = 1.9, 95% CI: 1.29–2.69) and 2.7(APR = 2.7 95% CI: 1.39–3.34) times more likely to experience teenage pregnancy respectively. Teenagers who did not know ovulation time in the menstrual cycle were 1.6 times more likely to experience pregnancy than those who did know (APR = 1.6, 95% CI: 1.07–2.28). Teenage who have engaged in sexual activity by peer pressure were 2 times more likely to become pregnant than their counterpart (APR = 2.01, 95% CI: 1.51–2.86). Teenagers who had good parent-daughter interaction were 40% (APR = 0.6, 95% CI: 0.50–0.91) times less likely to experience teenage pregnancy compared to teenagers with poor parent-daughter interaction (Table 4).

Discussion

Teenage pregnancy represents an important public health issue in the region of developing countries as a majority of the total number of teenage pregnancies is happening in these countries. The prevalence of teenage pregnancy extremely varies in different countries. Some of the reasons for the difference could be variations in the socio-demographic, sexual, and reproductive health characteristics of the respondents. This study showed that the prevalence of teenage pregnancy among sexually active female teenagers was 19.9%. Age, living arrangements, knowledge of the ovulatory cycle, peer pressure, and good parent-daughter communication were significantly associated with teenage pregnancy. The prevalence of this study was confirmed with other studies conducted in Assosa, findings from the EDHS 2016 report of Somali region and Kenya which showed that the prevalence of teenage pregnancy is 20.4% [20], 19% [12], and 23.3% [27] respectively.

This could be due to similarities with some of the reproductive characteristics of the teenagers in the study area. For instance, the study in Assosa, Ethiopia showed that 71.6% of teenagers had their first sexual encounter before the age of 18 which is almost similar to our finding in this study (71.9%). Additionally, the same finding was reported regarding the range of first sexual intercourse by age which is 12–19 years in both of the studies. The median age of first sexual intercourse might come into play as a factor for the comparable magnitude of teenage pregnancy. The median age at first sexual intercourse in the national report of the Somali region was 17 years old which is an equivalent finding to our study.

This finding is much higher than the study conducted in Arbaminch town, Ethiopia which is 7.7% [10], and Cameroon 5.2% [28]. The possible reason for the discrepancy

Table 2 Parenting and family-related characteristics of teenagers in secondary schools of Dire Dawa city, Eastern Ethiopia, 2020

Variables	Categories	Frequency	Percentage
Educational status of father	No formal education	246	36.3
	Primary	172	25.4
	Secondary	154	22.6
	College and above	105	15.5
Educational status of a mother	No formal education	355	52.4
	Primary	156	23.1
	Secondary	115	16.9
	College and above	51	7.5
Occupation of fathers	Farmer	66	9.8
	Daily labourer	159	23.5
	Government employee	239	35.3
	Merchant	168	24.8
	Other*	45	6.7
Occupation of mothers	Farmer	9	1.3
	Housewife	337	49.8
	Government employee	100	14.8
	Merchant	190	28.1
	Other*	41	6.1
Living arrangement	Both parents	487	71.9
	Either of the parents	107	15.8
	Neither of the parents	83	12.3
Parent daughter interaction	Good interaction	379	55.9
	Poor interaction	298	44.0

Other* private employee, no job

is these studies included all adolescents irrespective of the risk of pregnancy (included both sexually active and inactive teenagers). More than half of the study participants in the aforementioned studies were not sexually active and were included in the denominator for calculation which might have underestimated the proportion of pregnancy among teenagers. Whereas this study was conducted on sexually active teenagers only since the risk of pregnancy among these populations is higher among teenagers who have no history of sexual activity.

This finding is also higher than those of the studies conducted in the national report on teenage pregnancy 13.0% [12] and in Nigeria 5.7% [29]. The variation could be due to the presence of some socio-demographic, sexual, and reproductive characteristics of participants since the national demographic survey includes both rural and urban settings. Whereas some of the shreds of evidence showed that rural women begin having sexual intercourse earlier than urban women which further leads to the early experience of pregnancy. However, this study was conducted in urban region of Dire Dawa city. On the other hand, the age range of the study population in Nigeria and Cameroon included teenagers 10–19 and 13–19 years whereas this study included those in the age range of 14–19 years, as the probability of being pregnant, is higher among late adolescents stage than the early stage.

Our study has found a lower proportion compared with the study conducted in northeast Ethiopia [14] and northwest Cameroon [30]. The aforementioned study was conducted in one of the rural districts where early marriage is prevalent and as a result, leads to a high prevalence of early pregnancy. Marriage might force teenagers to curtail their education leaving them with no skills to prevent pregnancy.

In this study, the risk of teenage pregnancy was 3.2 times higher for older teens (aged 18–19) compared with younger teens (aged 14–17 years). This finding is consistent with the study conducted in Kenya [27], a national study in Ethiopia [12], northeast Ethiopia [14], Assosa [20], Tigray [13]. This is not surprising given that the proportions of teenagers who have started their sexual activity as well as longer exposure to biological factors and social factors increase with age [19]. As age increases the risk of being pregnant also increases because they have been already engaged in sexual relations and getting into marriage. There are significantly different views on sexual activities during the adolescent years. Younger

Table 3 Knowledge and SRH-related characteristics of sexually active teenagers in secondary schools of Dire Dawa city, Eastern Ethiopia, 2020

Variables	Categories	Frequency	Percentage
Age at first menses	10–12	205	30.3
	13–15	472	69.7
Knowledge of the fertile period	Yes	202	29.8
	No	475	70.2
Age at first sex	≤17 years	487	71.9
	≥18 years	190	28.1
Means of first sex	Desire to have sex	466	68.8
	Peer pressure	106	15.7
	Parent pressure	12	1.8
	Exchange for money/clothing/gifts	56	8.3
	Rape	37	5.4
Influenced by a peer to have sex	Yes	106	15.7
	No	571	84.3
Sexually abused	Yes	37	5.4
	No	640	94.6
Ever been pregnant	Yes	135	19.9
	No	542	80.1
Planned/unplanned (n = 135)	Planned	20	14.8
	Unplanned	115	85.2
Age at first pregnancy (n = 135)	15–17	70	51.9
	18–19	65	48.2
Currently pregnant (n = 135)	Yes	13	9.6
	No	122	90.4
Know contraceptive methods	Yes	641	94.7
	No	36	5.3
Ever use contraceptives	Yes	282	41.7
	No	395	58.4
Current use of contraceptive	Yes	80	28.4
	No	202	71.6
Condom use at last sex (n = 80)	Yes	58	72.5
	No	22	27.5
Use of substance	Yes	91	13.4
	No	586	86.6

adolescents were significantly more conservative in their views than older participants [31].

The relationship between parent and their children influences teenage pregnancy as it determines the level of information passed to their daughters about pregnancy. In the current study, teenagers who lived with either of their biological parents and neither of their biological parents were 1.8 and 2.1 times risk to be exposed to teenage pregnancy compared to those who were living with both biological parents respectively. This finding is consistent with the study done in Arbaminch town and Ghana [10, 32]. The possible reason could be that teens that live with both biological parents have good parental control and communication about sexual and reproductive issues so that they can get support from their families that minimize their chance of exposure to sexual experience. Other studies are supportive of the relationship between family structure and initiation of sexual intercourse in early adolescence as single parenting influences the initiation of detrimental behavioural patterns in children leading to sexual initiation and unwanted pregnancy [33, 34].

The fact that knowing about the fertile period of the menstrual cycle to prevent pregnancy is strongly supported by the findings from this study. The proportion of teenage pregnancy who know about the fertile period

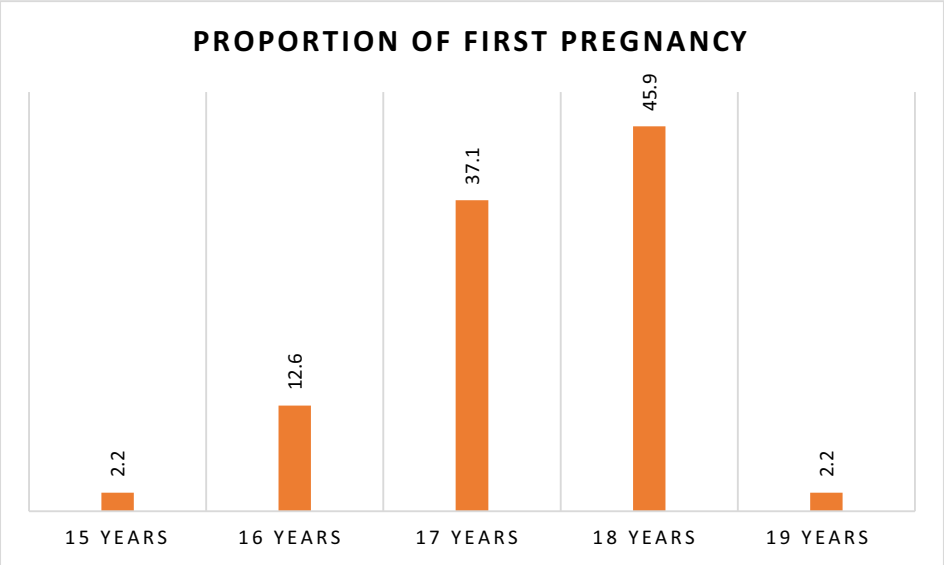

Fig. 3 The proportion of age at first pregnancy among each age category among secondary school female students in Dire Dawa city, Eastern Ethiopia, 2020

was 14 and 22% of teenage pregnancy was among teenagers who do not know about the fertile period. Teens who don't know the fertile period of the menstrual cycle had higher risk of being exposed to teenage pregnancy than their counterparts. The finding is in line with the national study done in Ethiopia [35] Malawi and Ghana [36, 37]. The possible reason may be that ovulation cycle knowledge helps them better understand to avoid unprotected sexual intercourse during fertile days and prevent the occurrence of unwanted pregnancy.

Teens living under good parent-daughter interaction regarding issues of sexuality, love, and pregnancy were less risk to experience teenage pregnancy compared to those who have poor parent-daughter interaction. This finding is in agreement with other studies conducted in Ethiopia and Jamaica. Good interaction between parents and adolescents enables parents to openly discuss and address challenges faced by teenagers ultimately enhancing communication and parent involvement in teenage pregnancy prevention mechanisms. The evidence points to Parent–child relationships that affect the likelihood of sexual initiation [38] and are strongly associated with a child's safer sex practices, including condom use and delayed sexual debut [39, 40].

The findings of this study lend credibility to the hypothesis that having sex due to peer pressure contributes to the occurrence of teenage pregnancy. This is further supported by studies done in Uganda and Ghana [32, 41] that have postulated that peer pressure places teens at a higher risk of teenage pregnancy. Peers play an important role in teenagers' lives; teenagers with sexually active friends are more likely to have sex through the influence of their age group leading to risky behaviour and unprotected sexual activity which may lead to pregnancy. Adolescents spend more time with their peers rather than their parents which becomes a prominent motivation for decisions [42]. A study showed that teens rely on their peers for information so that they can be accepted by in particular social group [43]. Peer pressure and fear of rejection by friends are deemed to be unfavorable conditions for adolescents; for them being in such group is more important rather than being disliked by their peers. For these reasons, teens engage in high-risk sex activities to access a group [44]. Sometimes teen gets misguided by advice from peers that to keep or persuade their boyfriend to marry them is to have sex with him to bear a child for him [45]. This indicates it is essential empowering girls to resist sexual intercourse influenced by building their self-esteem and life skills.

Conclusion

Teenage pregnancy is high indicating more to be done to ensure that teenage pregnancy prevention is effective and improves teenagers' reproductive health. Age, living arrangement of parents, knowledge of the ovulatory cycle, the influence of peer pressure to have sex and parent-daughter interaction were found to have a statistically significant association with teenage pregnancy.

Recommendation

The factors driving teenage pregnancy are complex and require multifaceted interventions. In light of these

Table 4 Analysis of determining factors of teenage pregnancy among secondary school female students in Dire Dawa city, Eastern Ethiopia, 2020

Variables	Ever pregnant		CPR	APR
	Yes	No		
Age				
15–17	21 (7.6%)	254 (92.4%)	1	1
18–19	114 (28.4%)	288 (71.6%)	3.7 (2.39–5.76)	3.2 (2.10–5.18)*
Marital status				
Single	113 (17.6%)	527 (82.4%)	1	1
Married	22 (59.5%)	15 (40.5%)	3.4 (2.45–4.61)	1.46 (0.87–2.46)
Residence				
Rural	6 (35.3%)	11 (64.7%)	1	1
Urban	129 (19.5%)	531 (80.5%)	0.5 (0.28–1.07)	0.6 (0.25–1.63)
Educational status of the father				
No formal education	59 (24%)	187 (76%)	1	1
Primary education	30 (17.4%)	142 (82.6%)	0.72 (0.49–1.07)	1.1 (0.71–1.61)
Secondary education	19 (12.3%)	135 (87.7%)	0.51 (0.31–0.82)	0.9 (0.51–1.57)
Collage and above	27 (25.7%)	78 (74.3%)	1.07 (0.72–1.59)	1.4 (0.92–2.41)
Educational status of a mother				
No formal education	78 (22%)	277 (78%)	1	1
Primary education	26 (16.7%)	130 (83.3%)	0.75 (0.5–1.13)	0.9 (0.6–1.37)
Secondary education	17 (14.8%)	98 (85.2)	0.67 (0.42–1.08)	0.71 (0.42–1.21)
Collage and above	14 (27.5%)	37 (72.5%)	1.24 (0.76–2.03)	0.86 (0.50–1.48)
Living arrangement				
Both parents	65 (13.3%)	422 (86.7%)	1	1
Either of the parents	34 (31.8%)	73 (68.2%)	2.3 (1.56–3.26)	1.8 (1.29–2.69)*
Neither of the parents	36 (43.4%)	47 (56.6%)	3.4 (2.42–4.64)	2.1 (1.39–3.34)*
Parent daughter interaction				
Poor interaction	83 (21.9%)	295 (78.1%)	1	1
Good interaction	52 (17.6%)	247 (82.4%)	0.79 (0.57–1.08)	0.6 (0.50–0.91)*
Know the fertile period in menses				
Know correctly	29 (14.4%)	173(85.6%)	1	1
Doesn't know	106 (22.3%)	369(77.7%)	1.6 (1.02–)	1.56 (1.07–2.28)
Engaged in sex by peer pressure				
Yes	34 (32.1%)	72 (67.9%)	1.8 (1.30–2.51)	2.01 (1.51–2.86)*
No	101 (17.7%)	470 (82.3%)	1	1
Sexually coerced				
Yes	7 (10.7%)	58 (89.3%)	1	1
No	128 (20.9)	484 (79.1%)	1.94 (0.94–3.97)	1.4 (0.69–2.81)
Ever used contraception				
Yes	53 (17.9%)	243 (82.1%)	1	
No	82 (21.5%)	299 (78.5%)	1.2 (0.88–1.63)	1.25 (0.92–1.70)
Use of substance use				
Yes	32 (35.2%)	59 (64.8%)	1	1
No	103 (17.6%)	483 (82.4%)	0.49 (0.35–0.69)	0.71 (0.49–1.03)

*Statistically significant at *p*-value < 0.05

findings The establishment of ASRH clubs or peer education groups in schools where students can receive support, engage in discussions, and access resources related to sexual and reproductive health might be able to reduce teenage pregnancy. Providing knowledge and reinforcing positive social norms through various types of abstinence, and recreation to decrease high-risk behaviour (sexual activity without contraceptive use) among teens

to prevent teenage pregnancy in schools should be a priority. School-based peer-to-peer sexuality education programs and training on life skills to build up self-esteem should be implemented.

Parents and guardians should be mindful of the importance of encouraging open communication with their teens to help them understand with misconceptions they encounter regarding fitting with peers and information on sexual and reproductive health. Parents should be authorized to understand the struggles that comes with their age and environment as well.

Limitations of the study

Knowledge about contraception is not measured in comprehensive questions. Since the experience of pregnancy was collected through self-report, there might be underreporting of pregnancies and providing responses deemed socially acceptable. Due to some questions related to sexual, the study could potentially introduce social desirability bias.

Abbreviations

AOR	Adjusted odds ratio
CI	Confidence interval
CPR	Crude odds ratio
EDHS	Ethiopian Demographic Health Survey
FMOH	Federal Ministry of Health
FP	Family planning
IHRERC	Institutional Health Research Ethics Review Committee
LMICs	Low- and middle-income countries
SRH	Sexual and reproductive health
SSA	Sub-Saharan Africa
WHO	World Health Organization

Author contributions

M.A. had carried out the overall design and execution of the study, performed data collection and statistical analysis. N.A and T.A. have critically revised the design of the study, data collection techniques, and helped with the statistical techniques. S.H. participated in the statistical analysis and drafted the manuscript. All authors reviewed the manuscript and finally approved it for submission.

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Availability of data and materials

The analyzed data for this study could be obtained from the corresponding author based on reasonable request.

Declarations

Ethics approval and consent to participate

The study was conducted following the declaration of Helsinki where ethical clearance was obtained from the Institutional Health Research Ethics Review Committee (IHRERC) of Haramaya University College of Health and Medical Sciences. An official letter was given to the Dire Dawa education bureau and a letter was sent to sample selected schools before data collection was started. Informed, voluntary written and signed consent was obtained from each participant who were 18 years old and above. For minors (less than 18 years of age) informed, voluntary written and signed consent was obtained and given to selected students to sign their family or guardians and asked them to bring on the next day then the data were collected. Confidentiality of the study participant's information was ensured throughout data collection.

Consent for publication

Study participants/guardians agreed publication of aggregate data.

Competing interests

The authors declare no competing interests.

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