Determinants of Teenage Pregnancy in Ethiopia: A Case–Control Study, 2019

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Abstract

Background: Approximately 16 million adolescent girls aged 15–19 years and 2 million adolescents under the age of 15 years give birth annually in the world. In Africa, where premarital sex is not accepted, especially for young women, unintended pregnancies mostly happen outside marriage. Recent data indicate that 18% of adolescent girls aged 15–19 years in eastern/southern region of Africa and 21% in western/central region of Africa had initiated childbearing. Teenage pregnancy and parenting remain important public health issues that deserve continued attention. The specific factors and beliefs that lead to contraceptive nonuse remain obscure, and up-to-date, evidence-based data on personal and environmental determinants of teenage pregnancy and case–control studies also are lacking in Ethiopia. Therefore, this study aimed to identify the determinants of teenage pregnancy to help policymakers, program managers, and health-care authorities with better decision-making in planning and problem-solving in Ethiopia.

Methods: A case–control study was conducted using data set obtained from 2016 Ethiopia Demographic and Health Survey conducted throughout the country from January 18, 2016, to June 27, 2016. All teenagers who had a pregnancy history were enrolled as cases (381) and 1524 teenagers who were not pregnant were taken as controls.. Necessary variables were extracted from the DHS data set after literatures were revised. Then, variables with P 0.25 were analyzed with multivariable logistic regression.

Results: Educational level, wealth index, knowledge of ovulatory cycle after period ended, knowledge of family planning method, contraceptive use, and reasons for not using contraceptives were higher among the cases and were statistically significant.

Conclusion: Knowledge of family planning and ovulatory cycle, primary school educational level, richest wealth category, and contraception use were the determinants of teenage pregnancy. Hence, educational level, knowledge gap, and economy should be emphasized to eradicate teenage pregnancy from Ethiopia.

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Introduction

Approximately 16 million adolescent girls aged 15–19 years and 2 million adolescents under the age of 15 years give birth annually in the world.[1] Pregnancy and childbearing in adolescence contribute to increased risks of maternal mortality and morbidity, especially in very young adolescents.[1,2] Children born to adolescent mothers are more susceptible to premature birth, low birth weight, and other adverse birth outcomes.[3] The prevalence of adolescent motherhood is much higher in low-income countries when compared to high-income countries. Half of all adolescent births occur in only the following seven countries: Bangladesh, Brazil, the Democratic Republic of the Congo, Ethiopia, India, Nigeria, and the United States.[1,2,4]

In Africa, where premarital sex is not accepted, especially for young women, unintended pregnancies mostly happen outside marriage. This often implies secret, unsafe abortions under unhygienic conditions performed by people who lack the necessary skills in places that do not meet minimal medical standards.[5] African countries lead the world in teen pregnancies, with Niger on the top list of 203.6 births/100,000 teenage women, followed by Mali (175.4), Angola (166.6), Mozambique (142.5), Guinea (141.6), Chad (137.1), Malawi (136.9), and Cote d'Ivoire (135.4).[6]

Across sub-Saharan Africa, it is estimated that 14 million unintended pregnancies occur every year, with almost half occurring among women aged 15–24 years.[7] Recent data indicate that 18% of adolescent girls aged 15–19 years in eastern/southern region of Africa and 21% in western/central region of Africa had initiated childbearing.[8]

Ethiopia has one of the highest adolescent fertility rates in sub-Saharan Africa – 72 births for every 1000 young women aged 15–19 years.[1] Studies show that teenage pregnancy is mainly due to lack of adolescent-friendly services, inadequate comprehensive sexuality education, nonavailability and cost of contraceptives, inadequate health personnel, judgmental attitude of service providers, and inadequate counseling.[6]

Teenage pregnancy and parenting remains an important public health problem that deserves continuous attention[3] because they are strongly associated with higher rates of low birth weight, pre-term delivery, respiratory diseases, and infant mortality.[9] Teens may have unintended pregnancies which may lead to a higher rate of induced abortion.[10]

Many family-related factors such as growing up in a single-parent household or a large family, low parental education, single-parent (divorced or separated) families, and teenage pregnancy of the mother or siblings are known to be associated with teenage pregnancy.[11] The specific factors and beliefs that lead to contraceptive nonuse remain obscure, and up-to-date, evidence-based data on personal (e.g., knowledge, attitudes, and skills) and

environmental (i.e., social and structural influences such as social support, reinforcements, and access to contraceptives) determinants of teenage pregnancy are lacking.[5]

Even though there were some studies on the area of teenage pregnancy, there was no case–control study on this specific area in Ethiopia. Therefore, this study aimed to identify the determinants of teenage pregnancy to help policymakers, program managers, and health-care authorities with better decision-making in planning and problem-solving in Ethiopia.

Methods

Population

All teenage girls enrolled in the Ethiopia Demographic and Health Survey (EDHS) 2016 data collection period were the source population. All teenage women selected for this study were the study population, and women with incomplete information in the 2016 EDHS were excluded from the study. The cases comprised all women aged 15–19 years, who are pregnant or had a recent termination of pregnancy. The controls comprised all women who were not pregnant and aged 15–19 years during the data collection period of EDHS 2016.

Study variables

The study variables were developed based on a review of different literatures. The outcome variable was teenage pregnancy, whereas the explanatory variables were socioeconomic and demographic variables (place of residence, region, religion, ethnicity, number of household members, household head status, owning mobile phone, use of the Internet, availability of mass media, age, wealth index, and marital status); sexual and reproductive health variables (entries in birth history, family history of teenage pregnancy, reason for not employing family planning, past and current pregnancy status, parity, planning of current pregnancy, and ever use of contraception); and variables related with access to information (danger period or fertility window for pregnancy, complication of teenage pregnancy, pregnancy prevention methods, information on modern contraception, and information on where to get contraceptive measures).

Sample size determination and sampling procedure

Sample size determination—In the 2016 EDHS, a representative sample of 16,583 women was identified for individual interview. Complete interviews were conducted for 15,683 women, yielding a response rate of 95%.

In this study, all cases (381) and controls (1524) were considered because the desired controls and cases were available from 2016 EDHS data set. The controls were selected randomly from the Statistical Package for Social Sciences (IBM Corp. Released 2015. IBM SPSS, Version 23.0, Armonk) data received from EDHS which came out to be 1524.

Sampling procedure—The sampling frame used for the 2016 EDHS was the Ethiopia Population and Housing Census (PHC), which was conducted in 2007 by the Ethiopian Central Statistical Agency. The census frame is a complete list of 84,915 enumeration areas

(EAs) created for the 2007 PHC. An EA is a geographic area covering an average of 181 households.

The 2016 EDHS sample was stratified and classified into two stages. Each region was stratified into urban and rural areas, yielding 21 sampling strata. Samples of EAs were selected independently in each stratum in two stages. However, for this study, all cases in the data were selected purposively.

Data collection tool

The source of data for this specific research question was the 2016 EDHS conducted throughout the country from January 18, 2016, to June 27, 2016. The 2016 EDHS tool has five components, namely the Household Questionnaire, the Woman's Questionnaire, the Man's Questionnaire, the Biomarker Questionnaire, and the Health Facility Questionnaire. These questionnaires, based on the DHS Program's standard Demographic and Health Survey questionnaires, were adapted to reflect the population and health issues relevant to Ethiopia. The data for the determinants of teenage pregnancy were obtained from relevant section of the Woman's Questionnaire. The variables reviewed to be important for this specific research were collected from the SPSS-filled data received from measuredhs.com, and these data were transferred into a new SPSS data set.

Quality control

The quality of the data was maintained by checking their completeness, cleaning the missing values by running frequencies, and recording some of the variables such as pregnancy status of the teenagers.

Data processing and analysis

The data set was obtained from measuredhs.com as an SPSS file, and each important variable was extracted and re-entered into SPSS version 24.0. Some of the variables such as age of the household head (categorized in the range of 10 years), number of children, current pregnancy situation, and pregnancy termination history (compiled and coded) were categorized and coded.

A bivariate analysis was done to identify the relationship between teenage pregnancy and the potential determinants without adjusting for other explanatory variables. Then, all possible determinants with P 0.25 in the bivariate analysis were used as candidates for multivariate analysis. Determinants identified in the bivariate analysis with teenage pregnancy were entered into a multiple logistic regression model to determine their significant association simultaneously.

The final model used was found to be a valid model with Hosmer–Lemeshow goodness-of–fit test with $P > 0.05$ which was 0.918. Odds ratios with 95% CIs and P value were computed using logistic regression models to assess the relationship between teenage pregnancy and each selected variable.

Results

Determinants of teenage pregnancy

In the multiple logistic regression analysis, age of household head range between 25 and 34 years, educational level, wealth index, knowledge of ovulatory cycle, knowledge of family planning method, contraceptive use, and reasons for not using contraceptives were found to be the determinants of teenage pregnancy, whereas type of place of residence; religion; usage of either radio or television by the household; heard of family planning on television, newspaper/magazine, and text message in the last few months; use of the Internet; and owning mobile phone were not identified as determinants of teenage pregnancy Table 1.

This study demonstrated that household head's age being between 25 and 34 years is 5.3 (adjusted odds ratio [AOR] = 5.30: CI: 3.07–9.14) times more likely to have teenage pregnancy when compared to the age group of 15–24 years.

Being in the poorest category is 3.09 (AOR = 3.09, CI: 1.52–6.31) times, poorer category is 2.26 (AOR = 2.26, CI: 1.07–4.77) times, and middle-income category is 2.67 (AOR = 2.67, CI: 1.27–5.61) times more likely to get pregnant when compared to the richest category.

In this study, teenagers who have the knowledge of ovulatory cycle after period ended (AOR = 0.36, CI: 0.26–0.51), teenagers who have the knowledge of ovulatory cycle in the middle of the period (AOR = 0.61, CI: 0.40–0.91), and teenagers who have the knowledge of ovulatory cycle before period begins (AOR = 0.41, CI: 0.24–0.71) were 64%, 39%, and 59%, respectively, less likely to become pregnant when compared to teenagers who do not know their ovulatory cycle during their period.

In addition, teenagers who were unaware of family planning method were 2.67 (AOR = 2.67, CI: 1.42–5.02) times more likely to get pregnant than those who are aware of family planning methods.

This study shows that teenagers who are using contraceptives (76%) are 0.24 (AOR = 0.24, CI: 0.15–0.37) times less likely to become pregnant when compared to nonusers.

Moreover, teenagers who do not use contraceptives due to reasons such as not having sex, infrequent sex, and religious prohibition with AOR = 0.08, CI: 0.03–0.21; AOR = 0.07, CI: 0.02–0.28; and AOR = 0.09, CI: 0.03–0.35 were 92%, 93%, and 91%, respectively, less likely to become pregnant when compared to those who have no reasons accordingly for not using family planning methods.

Discussion

The level of education of the respondents in this study showed significantly higher pregnancy exposure among women having primary education. Similarly, in a study conducted in India and sub-Saharan African countries, there was a significant increase in primary and secondary education.[10,12,13] This was due to teenagers' exposure to intimacy in school with limited knowledge of sexual health. However, a study conducted in Kenya and Bangladesh reported that teenagers with secondary or higher education were 60%–70%

less likely to have transitioned to first pregnancy at each age compared to those with primary or lower education.[4,14] Urbanization of the study area, development in information sharing, and change in attitude and knowledge about early pregnancy and family planning may cause the difference.

Wealth index was found to be a determinant of teenage pregnancy which seriously increases through the category from the richest to the poorest. In other studies, economic empowerment and self-efficacy were shown to be risk factors for early pregnancie.[4,6] Studies conducted in the USA and East Africa show that how poverty leads adolescents to engage in sexual relations due to different reasons in the early age.[6,9,15–17] Poverty may drive teens to engage in sexual activities to generate income.

Regarding knowledge levels, this study found that the study population who had knowledge on the use of contraceptives and family planning services were less likely to become pregnant. This finding is similar to that of a study done in Kenya.[14] Another study conducted in Malawi states that sexually active teenage females did not prevent pregnancy as revealed by a large proportion of sexually active teenage females who never used modern contraceptive methods (80.6%).[18] Hence, being exposed to education related to reproductive health issues may reduce the number of teenagers from being getting pregnant.

Being knowledgeable about ovulatory cycle reduces the probability of becoming pregnant, a finding which has been suggested by different studies. Studies conducted in Malawi and Ghana explain that women who had knowledge of their ovulatory cycle had 75% higher odds (AOR = 1.75; 95% CI = 1.50–2.05) of using contraceptives than their counterparts who had no knowledge of their ovulatory cycle.[19,20] Teachers in primary and secondary schools have the responsibility to teach teens.

This study showed that contraceptive nonuse was found to be significantly associated with teenage pregnancy, which is in line with a study done in northern part of Ethiopia.[21] According to a study conducted in Kenya, 65.8% of teenagers were comfortable attending family planning services although the uptake of contraceptives was low and 67% were not using contraceptives who are exposed to teenage pregnancy.[22]

Within the broad category of "not using contraception," the most common reasons such as not having sex, infrequent sex, and religious prohibition have significant influence on teens consequently getting pregnant. Qualitative study done in England also suggest that forgetting, not thinking, being "in the moment", the influence of alcohol, and the influence of young men were the potential factors for teens to have pregnancy.[23]

Limitation of the study

Disclosing their pregnancy history is not easy for Ethiopian teenagers due to religious prohibition and cultural hindrance as well because pregnancy before marriage is discouraged. This could minimize the number of teenagers included in this study.

Conclusion

Knowledge of family planning and ovulatory cycle, primary school educational level, richest wealth category, and contraception use were the determinants of teenage pregnancy. Hence, educational level, knowledge gap, and economy should be emphasized to eradicate teenage pregnancy from Ethiopia.

Since educating a female is educating families Ministry of education still need have to perform more since they were exposed to pregnancy due to their limited educational status and knowledge. Bulky numbers of Teens were exposed to pregnancy, unsafe abortion and related problems in primary, secondary and higher education's even if sexual and reproductive health education were initiated in universities it should be initiated similarly in primary and secondary schools by Ministry of health and Ministry of education of Ethiopia.

Declaration Ethical approval

The IRB-approved procedures for DHS public-use datasets do not in any way allow respondents, households, or sample communities to be identified. There were no names of individuals or household addresses in the data files. The geographic identifiers only go down to the regional level (where regions are typically very large geographical areas encompassing several states/provinces). Each enumeration area (Primary Sampling Unit) had a PSU number in the data file, but the PSU numbers do not have any labels to indicate their names or locations. In surveys that collect GIS coordinates in the field, the coordinates were only for the enumeration area (EA) as a whole, and not for individual households, and the measured coordinates were randomly displaced within a large geographic area so that specific enumeration areas cannot be identified.

Acknowledgments

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Table 1:

Determinants of teenage pregnancy in Ethiopia, November, 2018

Variables	Cases, *n* (%)	Controls, *n* (%)	COR (95% CI)	AOR (95% CI)
Type of place of residence				
Urban	61 (16.01)	588 (37.33)	1	1
Rural	320 (83.98)	987 (62.66)	2.26 (1.66–3.08) *	0.62 (0.33–1.15)
Highest educational level				
No education	133 (34.9)	223 (14.15)	1	1
Primary	206 (54.06)	942 (59.80)	2.97 (0.70–12.55)	7.76 (1.59–37.78) *
Secondary	40 (10.49)	366 (23.23)	1.88 (0.43–8.13)	4.11 (0.83–20.31)
Household has: Radio				
No	285 (74.8)	984 (62.47)	1	1
Yes	84 (22.04)	541 (34.34)	0.53 (0.41–0.69) *	1.45 (0.58–3.61)
Not a *de jure* resident	12 (3.14)	50 (3.17)	0.82 (0.43–1.57)	1.53 (0.21–1.73)
Household has: Television				
No	332 (87.1)	1040 (66.03)	1	1
Yes	37 (9.71)	485 (30.8)	0.31 (0.15–0.65) *	0.81 (0.43–1.52)
Not a *de jure* resident	12 (3.14)	50 (3.2)	0.75 (0.39–1.42)	0.8 (0.56–1.71)
Religion				
Traditional	2 (0.52)	4 (0.25)	1	-
Orthodox	86 (22.57)	666 (42.28)	0.25 (0.04–1.43)	-
Catholic	1 (0.26)	13 (0.82)	0.15 (0.01–2.17)	-
Protestant	66 (17.32)	274 (17.39)	0.48 (0.08–2.68)	-
Islam	223 (58.53)	616 (39.11)	0.72 (0.13–3.98)	-
Others	3 (0.78)	2 (0.12)	3.00 (0.25–3.53)	-
Age of household head (years)				
15–24	132 (34.64)	122 (7.74)	1	1
25–34	99 (25.98)	155 (9.84)	0.59 (0.41–0.84) *	5.30 (3.07–9.14) ***
35–44	43 (11.28)	366 (23.23)	0.11 (0.07–0.16) *	1.08 (0.61–1.90)
45–54	47 (12.33)	420 (26.66)	0.10 (0.07–0.15) *	0.85 (0.48–1.48)

Variables	Cases, *n* (%)	Controls, *n* (%)	COR (95% CI)	AOR (95% CI)
55–64	34 (8.92)	300 (19.04)	0.10 (0.07–0.16) *	0.88 (0.48–1.59)
65+	26 (6.82)	212 (13.46)	0.11 (0.07–0.18) *	0.89 (0.56–1.71)
Wealth index				
Poorest	158 (41.46)	337 (21.39)	4.40 (3.21–6.04) *	3.09 (1.52–6.31) **
Poorer	61 (16.01)	183 (11.61)	3.13 (2.13–4.60) *	2.26 (1.07–4.77) *
Middle	63 (16.53)	194 (12.31)	3.05 (2.08–4.46) *	2.67 (1.27–5.61) *
Richer	32 (8.39)	231 (14.66)	1.30 (0.83–2.03)	0.93 (0.43–2.02)
Richest	67 (17.58)	630 (40)	1	1
Knowledge of ovulatory cycle				
During her period	17 (4.46)	66 (4.19)	1	1
After period ended	127 (33.33)	259 (16.44)	2.77 (2.10–3.65) *	0.36 (0.26–0.51) ***
Middle of the cycle	61 (16.01)	301 (19.11)	1.14 (0.82–1.58)	0.61 (0.40–0.91) *
Before period begins	29 (7.61)	118 (7.49)	1.38 (0.89–2.16)	0.41 (0.24–0.71) **
Knowledge of any family planning method				
Knows no method	22 (5.77)	132 (8.38)	0.12 (1.02–1.56) *	2.67 (1.42–5.02) **
Knows family planning method	357 (93.70)	1442 (91.55)	1	1
Contraceptive using				
User	86 (22.57)	64 (4.06)	4.67 (3.24–6.75) *	0.24 (0.15–0.37) ***
Nonuser	137 (35.95)	971 (61.65)	1	1
Reason for not using: Not having sex				
No	113 (88.28)	32 (74.41)	5.42 (2.42–12.13) *	1
Yes	15 (11.718)	11 (25.58)		0.08 (0.03–0.21) ***
Reason for not using: Infrequent sex				
No	119 (92.96)	40 (93.02)	12.35 (3.29–46.39) *	1
Yes	9 (7.03)	3 (6.97)		0.07 (0.02–0.28) ***
Reason for not using: Religious prohibition				
No	368 (96.6)	157 (99.7)	13.76 (4.43–42.73) *	1
Yes	13 (3.4)	0.3 (4)		0.09 (0.03–0.35) ***

Heard about family planning on radio in the last few months

Variables	Cases, *n* (%)	Controls, *n* (%)	COR (95% CI)	AOR (95% CI)
No	325 (85.30)	1192 (75.68)	1	-
Yes	56 (14.69)	383 (24.31)	0.81 (0.58–1.13)	
Heard about family planning on TV in the last few months				
No	332 (87.13)	1133 (71.93)	1	1
Yes	49 (12.86)	442 (28.06)	0.45 (0.32–0.64) *	1.12 (0.68–1.86)
Heard about family planning in newspapers/magazines in the last few months				
No	372 (97.63)	1455 (92.38)	1	-
Yes	9 (2.36)	120 (7.61)	0.49 (0.24–1.02)	-
Heard about family planning by text messages on mobile phone				
No	378 (99.21)	1535 (97.46)	1	-
Yes	3 (0.78)	40 (2.53)	0.52 (0.15–1.76)	-
Owns a mobile telephone				
No	273 (71.65)	1009 (64.06)	1	-
Yes	108 (28.34)	566 (35.93)	0.85 (0.66–1.10)	-
Use of the Internet				
Never	367 (96.32)	1396 (88.63)	1	-
Yes	12 (3.14)	165 (10.47)	0.52 (0.11–2.55)	-

*
P<0.05,

**
P<0.001, and

***
P<0.0001.

CI: Confidence interval, AOR: Adjusted odds ratio, COR: Crude odds ratio