ORIGINAL ARTICLE

Female Adolescents Risky Sexual and Reproductive Behaviour in Amhara Region, Ethiopia: A Multilevel Analysis

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Abstract

Female adolescents' sexual and reproductive behaviour has been recently emerged sustainable development issue in developing countries as exposes teenagers to risky pregnancy and related problems This study examined determinants of female adolescents' risky sexual and reproductive behaviour in Amhara region. The main source of data was the 2016 Ethiopia Demographic and Health Survey. The analysis was based on 1,123 female adolescents selected by a two-stage stratified technique. Data management and analysis were carried out using STATA 14. A Multilevel-Logit Model was used to analyse the data. The findings illustrated that 58.4% of female adolescents practiced high-risk sexual and reproductive behaviour with a considerable variation of premarital sexual initiation (22.9%), teen motherhood (34.1%), and pregnancy termination (17.6%). The odds of exposure to high-risk sexual and reproductive behaviour are significantly higher for rural (OR = 3.99, 95% CI = 2.38-5.22) and non-exposure to media (OR = 2.67, 95% CI = 2.15-3.94). On the other hand, the likelihood of premarital sex is higher for urban (OR = 9.05, 95% CI = 1.30-18.65); secondary education (OR = 5.54, 95% CI = 2.59-7.91); media access (OR = 2.98, 95% CI = 2.26-3.41); late age (OR = 2.07, 95% CI = 1.71-2.46); and Christian (OR = 1.72, 95% CI = 1.58-1.90). Similarly, the risks of pregnancy termination are higher for urban (OR = 9.71, 95% CI = 2.10-14.83); secondary school (OR = 4.63, 95% CI = 2.55-5.99); Christian (OR = 1.89, 95% CI = 1.46-2.29); exposure to media (OR = 3.47, 95% CI = 2.19-4.53); early age (OR = 2.43, 95% CI = 1.80-3.57); and poor (OR = 2.36, 95% CI = 1.61-3.15). In addition, the likelihood of childbearing higher for rural (OR = 5.13, 95% CI = 2.96-6.30); Muslim (OR = 1.42, 95% CI = 1.36-1.75); non-exposure to media (OR = 2.86, 95% CI = 2.71-3.24); late age (OR = 4.29, 95% CI = 2.64-5.77); and illiterate (OR = 3.41, 95% CI = 2.13-4.67). In conclusion, the typical features of female adolescents' sexual and reproductive behaviour were universal for early marriage and births within marital union among rural residents while closely concurrent of premarital sexual activity and pregnancy termination in urban areas. Therefore, the need for initiatives to improve life-planning skills, identify the needs and concerns, involve the communities to provide friendly health services.

Keywords: *Adolescent, Female, Reproductive, Sexual*

1. Introduction

Female adolescents' sexual and reproductive behaviour has recently become sustainable development issue in developing countries as exposes teenagers to risky pregnan-

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cy and related problems (United Nations, 2016; World Bank, 2012). The global health and development initiatives call for action to improve female adolescents' prospects for a healthy and productive adulthood, to reducing risky sexual and reproductive behaviour (Tanabe et al., 2012; United States Agency for International Development, 2015). While young people face many new problems, there are also new opportunities which if combined with the energy and creativity of young people can bring tremendous dividends that can help them play vital role in their family and the society as a whole (Alan Guttmacher Institute, 2012; International Institute for Population Council, 2010).

Behaviours starting in adolescence frequently lead to health problems, which may cause an immense cost to individuals and their society (Lloyd, 2005; Woan et al., 2013). Despite the government's great concern and provision of facilities for reproductive health, the program has not been implemented effectively in developing countries because of the poor involvement of female adolescents (United Nations Population Fund, 2012). Encouraging and enabling female adolescents to take responsibility for their sexual and reproductive behaviour in developing countries where reproductive health goals have not reached are very vital (United Nations, 2008).

Adolescent sexual and reproductive health affected by pregnancy, abortion, sexually transmitted infections, and sexual violence (World Health Organization, 2009). Sexual and reproductive health are also affected by psychosocial well-being, economic, and gender inequities that can make it difficult to avoid forced, coerced, or commercial sex (Denno et al., 2015). Age at first sex and first marriage has important implications for gender relations and the organization of family life in societies (Wellings, 2006). However, it is still unclear which aspects of sexual and reproductive behaviour affect female adolescents and to what degree (Curtis & Sutherland, 2004; Mensh et al., 2006).

In many parts of the world, women marry and begin childbearing during their adolescent years. Pregnancy-related health risks are much higher among women younger than age 18, six times more likely to die during pregnancy or childbirth than women age 20-24 due to prolonged and obstructed labour, haemorrhage, and other factors (World Health Organization, 2014). However, female adolescents sexual and reproductive behaviour are not given due emphasis in Africa –the continent with the highest risk (Nove, 2016; Say, 2015). Female adolescents' sexual activity is on the rise worldwide. Rates are highest in sub-Saharan Africa, where three-quarter of girls aged 15-19 are sexually involved (Vogel, 2015). Over 87 million women married before age 18 in developing countries and more than 34 million girls under the age of 18 will become married each year within the next decade (United Nations Population Fund, 2015). The practice of marrying at a young age, less than 18, is most common in East Africa and Southeast Asia, 79% and 64%, respectively (International Planned Parenthood Federation, 2016; United Nations Children and Education Fund, 2015).

Every year, approximately 80 million unintended pregnancies occurred among women age under 20 years in the world and 95% of these in developing countries (World Health Organization, 2015b). Adolescent unwanted pregnancies often end up in abortion. About one in five abortion worldwide occurs among women age 15-19 and each year more than 7.4 million adolescents in developing countries undergo abortion, and 86% of these procedures are performed under unsafe conditions (United Nations Population Fund, 2016). However, reproductive healthcare services are primarily restricted to adult women health centres, where only adult women are invited for the service which may not describe the real norms that guide sexual and reproductive behaviour focusing on females younger than age 20 (Cleland et al., 2013; Rama et al., 2011; Sedgh, 2016).

The population policy of Ethiopia aims at a significant reduction of high fertility, early marriage, value of children, and childbearing in the early reproductive life span (Transitional Government of Ethiopia, 1993a). The health policy prioritizes the integration of reproductive health with women and child health programs to improve maternal health, child survival, contraceptive use, and thereby fertility reduction (Transitional Government of Ethiopia, 1993b). The women policy acknowledges the need to ensure women's access to reproductive healthcare services to empower women (Transitional Government of Ethiopia, 1993c). One of the major issues of youth policy is improving adolescent and youth reproductive health through service provision (Ethiopia Ministry of Youth Sport and Culture, 2004). The Adolescent Reproductive Health Strategy emphasizes the mechanisms to reduce the risks of sexual and reproductive behaviour (Ethiopia Ministry of Health, 2006). The Health Extension Program targets the delivery of family planning services and information through home visits (Ethiopia Ministry of Health, 2007). The 2000 revised family law fundamentally protects sexual and reproductive rights (Federal Democratic Republic of Ethiopia, 2000). Despite adopting such policies and strategies, it is not known about the relative contributions of sexual and reproductive behaviour components.

Studies on female adolescents' sexual and reproductive behaviour in Ethiopia, however, are very few in number, carried out at a high level of aggregation in urban context (Alemayehu Seifu et al., 2006; Fekadu Zerihun, 2001; Negussie Tafa & Francis, 2004; Rahel Adamu et al., 2003; Tadesse Eyob, 1996). The results might had been affected by the problems of aggregation bias since adolescents' sexual and reproductive behaviour vary from area to area as macro-level analyses not take into consideration of region-specific factors. Moreover, the findings were inconclusive because of the exclusion of appropriate sexual and reproductive behaviour variables in their models.

As research gap, three dimensions were applied in this study of female adolescents' sexual and reproductive behaviour. First, this study included a rural community because the prevalence of risk sexual and reproductive behaviour and commonly observed gender stratification both at the household level and the society at large. Secondly, the present study used multilevel and integrative approaches due to many questions remain about the pathways through which the relationships operate. Third, this study focused on female adolescents because the prominent feature of a wider gender disparity raising from sexual and reproductive behaviour.

Therefore, the purpose of the study was examined determinants of female adolescents' risky sexual and reproductive behaviour in Amhara region of Ethiopia. Detailed study of female adolescents' sexual and reproductive behaviour is vital to support decision-making to advance the initiatives, and to develop effective programs addressing adolescents' needs. In addition, valuable input for planning, implementation, and evaluation of health, youth, women, and population policies as well as the reproductive health programs and multi-sectoral strategies are needed. Moreover, a basis for future projection of changes on the overall level of female adolescents' sexual and reproductive behaviour expected as a result of changing socioeconomic, demographic, health, cultural, psychological, institutional, and environmental realms.

METHODS AND MATERIALS

Data Source

The main data source was the 2016 Ethiopia Demographic and Health Survey conducted by Central Statistical Agency. The Survey was parts of the worldwide Mea-

sure Demographic and Health Survey project. Ethiopia Demographic and Health Survey primarily targeted women age 15-49 and used standardized questionnaires.

2.2 Sample Design and Implementation

The sampling was based on a two-stage stratified sample selection. The primary sampling unit was the Kebeles subdivided into clusters consisting of 150-200 households. The survey randomly selected 150 enumeration area of which 50 were from urban and 100 in rural areas. The households were systematically selected as ultimate sampling unit. A total of 1,123 female adolescents age 15-19 were successfully interviewed in the region.

2.3 Model Variables and Measurements

Table 1 illustrates the model variables and measurements of female adolescents' age 15-19 sexual and reproductive behaviour in Amhara region. The basic components of sexual and reproductive behaviour were considered as a response variable. The covariate variables were residence, education, religion, wealth, age, and media.

Table 1. Model variables and measurements of female adolescents' age 15-19 sexual and reproductive behaviour in Amhara region of Ethiopia, 2016

Variable and category	Description	Measurement scale
I. Outcome variable Multilevel sexual and reproductive behaviour	Constructed by premarital sex, teen motherhood, pregnancy termination, and a composite of sexual activity, childbearing, and abortion before age 18 considered as high-risk behaviour	Dichotomous (1 = Yes and 2 = No)
II. Explanatory variables a) Residence	Place of living to indicate accessibility and availability of services	Nominal (1 = Urban and 2 = Rural)
b) Education	Level of educational achievement to explain knowledge and practices	Ordinal (1 = No education, 2 = Primary, and 3 = Secondary)
c) Wealth index	Constructed using household asset via a principal component analysis to interpret effects of poverty	Ordinal (1 = Poor, 2 = Medium, and 3 = Rich)
d) Age	Current age in completed years to differentiate 15-16 and 17-19 age groups	Continuous but recoded as ordinal (1 = Early and 2 = Late)
e) Religion	Religious affiliation to elaborate perceptions and attitudes	Nominal (1 = Christian and 2 = Muslim)
f) Exposure to media	Access to television, radio, and print media at least once a week to describe awareness and behavioural changes	Nominal (1 = Yes and 2 = No)

2.4 Statistical Analysis

2.4.1 Modelling strategy

Data management and analysis were carried out using STATA 14 (Stata Corporation, College Station, TX, USA). Both descriptive and multivariate analyses were weighted for the sampling probabilities and non-responses using the weighting factor included in the Ethiopia Demographic and Health Survey data. In univariate analysis, the distribution of study population by background characteristics and sexual and reproductive behaviour was analysed. In bivariate analysis, the significant difference between socioeconomic and demographic variables and sexual and reproductive behaviour was examined. In multivariate analysis, a Multilevel-Logit Model was used to determine the effects of socioeconomic status and demographic factors on female adolescents' sexual and reproductive behaviour.

2.4.2 Model building

The four fitted models in this study where the first model considers sexual activity, the second model includes childbearing, the third model contains pregnancy termination, and the final model focused on high-risk sexual and reproductive behaviour. The likelihood-ratio test was used to check the overall fit of the models to compare the models. The odds ratio with 95% confidence intervals were calculated for each model.

2.5 Ethical Considerations

Ethiopian Demographic and Health Survey obtained ethical clearance from Ethiopian Health Nutrition and Research Institute (EHNRI) Review Board, the National Research Ethics Review Committee (NRERC) at the Ministry of Science and Technology of Ethiopia, the Institutional Review Board (IRB) of ICF International. During the data collection, the interviewer read aloud a statement to get consent from the respondents. The respondents provided verbal consent, as Demographic and Health Survey is conducted in areas where not all respondents are able to write. The interviewers then wrote their name to document that the statement was read and that consent was granted or declined. For this study further ethical approval was not applicable since datasets are available in the public domain.

3. RESULTS

3.1 Background Characteristics of Respondents

Table 2 indicates the percent distribution of female adolescents age 15-19 according to background characteristics in Amhara region. About 71.3% and 28.7% of adolescents are sampled from the rural and urban areas, respectively.

Two in five adolescents have never been to school, 3 in 10 attended primary education, and one-quarter of secondary level. In addition, the majority of respondents (62.4%) do not access media. In terms of religious affiliation, 69.2% of adolescents are Christian while the rests (30.8%) are Muslim.

A relatively high percentage of female adolescents are in the low wealth quintile (53.3%). In contrast, very low proportions (18.4%) of adolescents are in the high wealth quintile. On the other hand, 34.9% of the adolescents are at early age and 65.1% at late age.

Table 2. Percent distribution of female adolescents age 15-19 according to background characteristics in Amhara region of Ethiopia, 2016

Variable and category	Percent
Residence	
Urban	28.7
Rural	71.3
Education	
Illiterate	43.4
Primary	32.4
Secondary	24.2
Age	
Early	34.9
Late	65.1
Religion	
Christian	69.2
Muslim	30.8
Wealth index	
Poor	53.3
Medium	29.3
Rich	18.4
Exposure to media	
Yes	37.6
No	62.4
Total (%)	100.0
Number (Weighted)	1,123

Source: Ethiopia Demographic and Health Survey, 2016.

3.2 Differentials of Female Adolescents Sexual and Reproductive Behaviour

The association between socioeconomic and demographic characteristics and female adolescent's age 15-19 sexual and reproductive behaviour in Amhara region is shown in Table 3. In the region, 58.4% of female adolescents practiced high-risk sexual and reproductive behaviour. The proportion varies with background characteristics such as rural (72.2%), illiterate (64.6%), poor (53.5%), non-exposure to media (59.8%), Muslim (46.9%), and early age (49.3%) are more likely to practice sexual and reproductive behaviour than others. Place of residence ($P<0.001$), educational attainment ($P<0.001$), exposure to media ($P<0.001$), religious affiliation ($P<0.01$), wealth index ($P<0.01$), and age ($P<0.01$) are statistically associated with sexual and reproductive behaviour.

About 22.9% of adolescents are sexually active prior to marriage. Adolescents with urban (41.4%), secondary education (35.2%), poor (28.3%), media exposure (30.1%), Christian (25.9%), and late age (27.5%) are reported to have higher premarital sexu-

al intercourse compared to others. Place of residence (P<0.001), educational attainment (P<0.001), exposure to media (P<0.001), religious affiliation (P<0.01), wealth index (P<0.001), and age (P<0.01) are statistically associated with premarital sex.

Overall, 34.1% of adolescents are already mothers or pregnant with their first child. The adolescents of rural (44.0%), illiterate (38.9%), poor (32.6%), non-exposure to media (47.7%), Muslim (33.4%), and late age (55.3%) are more likely to teen mother than others. Place of residence (P<0.001), educational attainment (P<0.001), exposure to media (P<0.01), religious affiliation (P<0.01), wealth index (P<0.001), and age (P<0.001) are statistically associated with childbearing.

The data also indicate 17.6% of adolescents have terminated pregnancy with the highest proportion of urban (30.8%), secondary education (24.7%), poor (27.9%), exposure to media (26.7%), Christian (21.3%), and early age (34.4%). Place of residence (P<0.001), educational attainment (P<0.01), exposure to media (P<0.001), religious affiliation (P<0.001), wealth index (P<0.01), and age (P<0.001) are statistically associated with termination of pregnancy.

Table 3. Chi-square test of socioeconomic and demographic characteristics and female adolescent's age 15-19 sexual and reproductive behaviour in Amhara region of Ethiopia, 2016

	Sexual and reproductive behaviour			
	Premarital sex	Teen motherhood	Pregnancy termination	Composite behaviour
Residence				
Urban	41.4	5.2	30.8	18.9
Rural	5.9	44.0	6.3	72.2
P-value	P<0.001	P<0.001	P<0.001	P<0.001
Education				
Illiterate	9.1	38.9	8.2	64.6
Primary	24.5	29.4	17.6	38.0
Secondary	35.2	7.1	24.7	11.4
P-value	P<0.001	P<0.001	P<0.01	P<0.001
Wealth index				
Poor	28.3	32.6	27.9	53.5
Medium	19.0	29.8	22.6	43.7
Rich	12.7	23.1	15.2	36.5
P-value	P<0.001	P<0.001	P<0.01	P<0.01
Religion				
Christian	25.9	26.5	21.3	42.1
Muslim	14.2	33.4	10.1	46.9
P-value	P<0.01	P<0.01	P<0.001	P<0.01

Exposure to media Yes	30.1	12.6	26.7	20.4
No	8.4	47.7	7.2	59.8
P-value	P<0.001	P<0.01	P<0.001	P<0.001
Age Early	16.8	17.1	34.4	49.3
Late	27.5	55.3	13.0	23.8
P-value	P<0.01	P<0.001	P<0.001	P<0.01
Total (%)	22.9	34.1	17.6	58.4
Number (Weighted)		1,123		

Source: Ethiopia Demographic and Health Survey, 2016.

3.3 Determinants of Female Adolescents Risky Sexual and Reproductive Behaviour

Table 4 depicts the odds ratios for factors associated with female adolescents' age 15-19 sexual and reproductive behaviour in Amhara region. In the first model, the likelihood of premarital sex increases with education level, 3.3 times higher for primary school (OR = 3.31, 95% CI = 3.04-3.68) and 5.5 times higher for secondary level (OR = 5.54, 95% CI = 2.59-7.91) than never attended any type of schooling. The odds of sexual activity before marriage are 9.1 times greater for urban (OR = 9.05, 95% CI = 1.30-18.65); 3 times higher for media access (OR = 2.98, 95% CI = 2.26-3.41); 2.1 times higher for late age (OR = 2.07, 95% CI = 1.71-2.46); and 72% greater for Christian (OR = 1.72, 95% CI = 1.58-190) but 30% less likely for medium quintile (OR = 0.70, 95% CI = 0.61-0.99) and 43% less likely for rich wealth (OR = 0.57, 95% CI = 0.33-0.73).

In Model II, place of residence shows a substantial impact on teenage pregnancy, 5.1 times higher chance for rural (OR = 5.13, 95% CI = 2.96-6.30) than urban counterparts. The odds of childbirth are 2.9 times higher for non-exposure to media (OR = 2.86, 95% CI = 2.71-3.24); 4.3 times higher for early age (OR = 4.29, 95% CI = 2.64-5.77); 3.4 times higher for illiterate (OR = 3.41, 95% CI = 2.13-4.67); 2.2 times higher for primary school (OR = 2.15, 95% CI = 1.86-2.70); and 42% greater for Muslim (OR = 1.42, 95% CI = 1.36-1.75). However, the likelihood of teen motherhood is 26% less likely for rich quintile (OR = 0.74, 95% CI = 0.38-0.93) as compared to the poor.

With regard to abortion (Model III), the risks of pregnancy termination is 9.7 times higher for urban (OR = 9.71, 95% CI = 2.10-14.83); 2.2 times higher for primary school (OR = 2.23, 95% CI = 1.66-3.32); 4.6 times higher for secondary education (OR = 4.63, 95% CI = 2.55-5.99); 89% greater for Christian (OR = 1.89, 95% CI = 1.46-2.29); 3.5 times higher for exposure to media (OR = 3.47, 95% CI = 2.19-4.53); 2.4 times higher for early age (OR = 2.43, 95% CI = 1.80-3.57); 2.4 times higher for poor (OR = 2.36, 95% CI = 1.61-3.15); and 62% greater for medium wealth (OR = 1.62, 95% CI = 1.19-2.20).

In the final model (Model IV), education, media, residence, wealth, and age remain significant predictors of exposure to high-risk sexual and reproductive behaviour. The odds of sexual and reproductive behaviour are 4 times higher for rural (OR = 3.99, 95% CI = 2.38-5.22) as well as 2.7 times higher for non-exposure to media (OR = 2.67, 95% CI = 2.15-3.94) than media access. In contrast, the risk of sexual and re-

productive behaviour is 56% less likely for primary school (OR = 0.44, 95% CI = 0.29-0.51); 90% less likely for secondary education (OR = 0.10, 95% CI = 0.09-0.14); 35% less likely for rich (OR = 0.65, 95% CI = 0.25-0.86); and 50% less likely for late age (OR = 0.50, 95% CI = 0.14-0.64). However, religion is observed as not having important predictors of sexual and reproductive behaviour (OR = 1.03, 95% CI = 1.12-2.37).

Table 4. Odds ratios for factors associated with female adolescents' age 15-19 sexual and reproductive behaviour in Amhara region of Ethiopia, 2016

Variable and category	**Model I**		**Model II**		**Model III**		**Model IV**	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Residence								
Urban	9.05	[1.30-18.65]**	1.00		9.71	[2.10-14.83]**	1.00	
Rural	1.00		5.13	[2.96-6.30]**	1.00		3.99	[2.38-5.22]**
Education								
Illiterate	1.00		3.41	[2.13-4.67]**	1.00		1.00	
Primary	3.31	[3.04-3.68]**	2.15	[1.86-2.70]**	2.23	[1.66-3.32]**	0.44	[0.29-0.51]**
Secondary	5.54	[2.59-7.91]**	1.00		4.63	[2.55-5.99]**	0.10	[0.09-0.14]**
Wealth								
Poor	1.00		1.00		2.36	[1.61-3.15]**	1.00	
Medium	0.70	[0.61-0.99]*	0.80	[0.51-1.34]	1.62	[1.19-2.20]**	0.77	[0.71-1.27]
Rich	0.57	[0.33-0.73]**	0.74	[0.38-0.93]*	1.00		0.65	[0.25-0.86]**
Religion								
Christian	72	[1.58-1.90]**	1.00	1.89	[1.46-2.29]**	1.00		
Muslim	1.00		1.42	[1.36-1.75]**	1.00		1.03	[1.12-2.37]
Media								
Yes	98	[2.26-3.41]**	1.00		3.47	[2.19-4.53]**	1.00	
No	1.00		2.86	[2.71-3.24]**	1.00		2.67	[2.15-3.94]**
Age								
Early	1.00		1.00		2.43	[1.80-3.57]**	1.00	
Late	2.07	[1.71-2.46]**	4.29	[2.64-5.77]**	1.00		0.50	[0.14-0.64]**

Significant level: *P<0.05, **P<0.01.
Note: CI = Confidence Interval, OR = Odds Ratio, 1.00 = Reference Category.

4. DISCUSSIONS

Girls in developing countries are the most at risk of adolescent sexuality, parenting, and pregnancy termination which adversely affect the health, human right, and the process of development (Rowbottom, 2009; Stevenson, 2015; United Nations Population Fund, 2008). This study examined multilevel determinants of female adolescents' risky sexual and reproductive behaviour in Amhara region, Ethiopia. Overall, 3 in 5 of female adolescents practiced high-risk sexual and reproductive behaviour in the region. On the other hand, one adolescent in every five have terminated pregnancies. With regard to childbearing and sexual activity, one-quarter of adolescents are at the risk of premarital sex while one-third are teen mothers.

Finding of the current study reveals strong association between conventional socioeconomic status and demographic indicators and female adolescents' high-risk sexual and reproductive behaviour. The composite of sexual and reproductive components is the most appropriate approach to measure female adolescents' risky behaviour (United Nations, 2008; World Health Organization, 2015a). Several studies showed educational achievement, urban residence, and economic change breakdown traditional means of social control over adolescent sexual and reproductive behaviour (Anderson, 2013; Kishor, 2005; Murphy & Ringheim, 2009; Rwenge, 2000). However, in this study religion is not significantly associated with high-risk sexual and reproductive behaviour due to customary early marriage in the community. The highest prevalence rate of child marriage in Ethiopia is found in Amhara region (87%) as well as all of the girls in the region married before age 20 (National Committee on Traditional Practices of Ethiopia, 2011).

In this study, place of residence found to have a strong association with teen motherhood. The median age at first birth in Amhara region is lower than the country value, 15.3 years versus 21.8 years of the national average (Pathfinder International, 2015). This could be explained by the fact that the obligation of early marriage and childbearing in developing countries of rural society (Armstrong, 2001; Checkland & James, 2009; Friedberg & Webb, 2006). Higher levels of education, a more modern environment, and aspirations for higher levels of living are among the factors which make teen pregnancy and motherhood among urban adolescents to be lower than among rural adolescents (Saikia et al., 2003; Silverstein, 2007). However, Agyei et al. (2008) and Calvès (2000) indicated girls in urban areas were at a higher risk of pregnancy than rural areas.

The strongest association is also observed between place of residence and female adolescents' sexual activity in the current study. The lowest median age at entry into first marital union among girls in Ethiopia is found in Amhara region, 14.1 years as compared to the country value (17.3 years), Oromiya (18.9 years), and Southern Nation Nationalities and Peoples (19.5 years) (National Committee on Traditional Practices of Ethiopia, 2011). Teenage premarital sex is becoming a common phenomenon in sub-Sahara African urban society (Harwood-Lejeune, 2001; United Nations, 2010; World Bank, 2007). Studies reviewed by a recent National Research Council (2005) study of adolescent transitions into adulthood provide contradictory evidence of the relationship between urban residence and adolescent sexual initiation. On the other hand, younger adolescents had a higher rate of premarital sexual intercourse compared to the older despite a delay in the age of marriage (Mensch et al., 2006; Slaymaker et al., 2009; Zaba et al., 2004).

This study shows that educational attainment of female adolescent is the most important predictor of adolescent's childbearing. Lindstrom and Brambila-Paz (2001) and Yabiku

(2005) argued schooling is a transformative experience for girls; it increases their awareness of alternative roles to those of wife and mother; it promotes independence and a greater say in choice of husband; and it weakens the hold of traditional norms regarding the timing and desirability of first sexual intercourse in relation to marriage. However, Rutenberg et al. (2010) and Calvès (2000) found adolescents' births were on the rise, especially among educated. On the other hand, access to media seems to have a significant impact on the outcome of interest. Studies in developing countries documented the childbearing reducing effects of access to media (Seitz, 2001; United Nations, 2012). On the contrary, Armstrong (2001) and Checkland and James (2009) indicated a positive relationship between exposure to media and sexual initiation may be due to social changes.

The current result illustrates that adolescents living in urban areas that are more educated, and with more media access have greater tendency to premarital sexual activity and pregnancy termination. Most studies reported urbanization, increased educational level, and exposure to media associated with a higher risk of sexual intercourse prior to marriage and abortion (Chae, 2016; Singh et al., 2011; Utomo & McDonald, 2009). However, adolescents' sexual initiation and abortion commonly observed in developing countries where poverty is endemic (Biddlecom, 2007; Chandra-Mouli et al., 2015).

This study had some limitations. In particular, sexual activity and pregnancy termination may be underestimated because respondents may be reluctant to admit having intercourse and abortion at adolescent ages and out of marriage. In addition, the study excluded female adolescents' age 10-14 years because obtaining data on sexual and reproductive behaviour directly from those younger than 15 requires overcoming serious challenges. Moreover, the study used data from a cross-sectional community-based that cannot determine the consequences of those behaviours, service and information needs, and effective interventions. This suggests a need to explore perceived adolescents sexual and reproductive behaviour at the society level through qualitative data. In addition, longitudinal designs are needed to better reflect the process of socioeconomic changes and to determine the causal mechanisms that facilitate or alter sexual and reproductive behaviour patterns.

Despite the limitations, the current study had a number of strengths. First, the study utilized large population-based sample, representativeness, high response rate, well-tested validated questionnaire, and high quality of data due to extensive training of data collectors and support during the fieldwork, with concurrent data entry and editing with feedback during fieldwork. Second, multilevel and integrative approach was applied to understand which aspects of sexual and reproductive behaviour affect female adolescents and to what degree. Finally, the study provides comprehensive information for a greater extent in devising more concrete evidence-based women, youth, population, and health policies as well as reproductive health program direction and multi-sectoral strategies.

5. CONCLUSIONS

Female adolescents' high-risk sexual and reproductive behaviour in the region is partly explained by the level of educational attainment, economic status, media access, and socio-cultural factors that shape their roles and perception in the community. Female adolescents living in rural areas were exposed to early marriage and subsequent sexual debut, pregnancy, and motherhood whilst sexual initiation before marriage and termination of pregnancy are common phenomenon in urban residences. A considerable variation was observed across religious affiliations that serve as a proxy variable for socio-cultural settings of the respondents. Another influencing element of adolescent reproductive and sexual behaviour was their exposure to media, which appear to have both positive and

negative consequences. Educational achievement of adolescents was found to have influences on sexual and reproductive behaviour of adolescents, as there was an inverse relationship between educational level of adolescents and their exposure to teen motherhood but an increasing effect on premarital sexual intercourse and pregnancy termination. Moreover, the typical features of female adolescents' sexual and reproductive behaviour in the region are caused by the universality of early marriage and births within marital union among rural residents, less educated, early adolescence, and non-media access while the closely concurrent of premarital sexual activity and pregnancy termination in urban areas, more educated, late adolescence, and exposure to media.

Therefore, a complete explanation of female adolescents' reproductive and sexual behaviour must recognize sexual activity, teen motherhood, and pregnancy termination. On the other hand, the women, youth, health, and population policies and reproductive health programs must incorporate adolescents' life-planning skills, the needs and concerns, and community participation. In addition, accessibility, affordability, availability, accommodation, and acceptability of reproductive healthcare services particularly among the illiterate, rural, and poor female adolescents are highly required.

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