Determinants of early sexual initiation among female youth in Ethiopia: A multilevel analysis of 2016 Ethiopian Demographic and Health Survey

Mastewal Arefaynie (✉ marefaynie@yahoo.com)
   Wollo University   https://orcid.org/0000-0001-9525-0552

Melaku Yalew
   Wollo University

Yitayish Damtie
   Wollo University

Bereket Kefale
   Wollo University

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Abstract

Background: There is limited national representative evidence on determinants of early sexual initiation among female youth especially, community level factors are not investigated in Ethiopia. Thus, this study aimed to assess individual and community level factors associated with early sexual initiation among female youth in Ethiopia.

Method: A secondary data analysis was done on the 2016 Ethiopian Demographic and Health Survey dataset which were collected cross-sectional. A total of 6143 female youth irrespective of their sexual activity were included in the analysis. Multi-level mixed-effect logistic regression analysis was done by STATA version 14.0 to identify individual and community-level factors. Adjusted odds ratio with 95% confidence interval was used to show the strength and direction of association and statistical significance was declared at P value less than 0.05.

Result: Individual-level factors significantly associated with early sexual initiation among female youth were; age group from 19-24 years [AOR=5.77, 95% CI= (4.58, 7.27)], not attend school [AOR=14.1, 95% CI= (8.06, 24.66)], ever chew Chat [AOR= 1.98, 95%CI= (1.32, 2.97)]. From community label factors living in Addis Ababa [AOR= 0.28, 95% CI= (0.17, 0.45)], living in Gambella [AOR=2.7, 95% CI= (1.7, 4.29)] and live in low proportion of poor communities [AOR= 0.66, 95% CI= (0.49, 0.9)] were significantly associated with early sexual initiation among female youth in Ethiopia.

Conclusion: Age, low educational status, ever chewing Chat, region and live in high proportion of poor community had statistical association with early sexual initiation among female youth in Ethiopia. Improving educational coverage, improving community level wealth status are important interventions to delay the age of early sexual initiation among female youth.

Background

Even though, different countries and organizations have different age classification of youth, according to WHO, UNFPA and UNICEF classification, individuals from age 10-19, 15-24 and 10-24 are adolescent, youth and young respectively. It is the transitional stage from childhood to adulthood with biological, social, psychological change (1, 2). Many adult mental process start during this time. So, it is a time of risk and opportunity for future life (3-6).

There is no universal agreement on definition of early sexual initiation. Different scholars define it according to the social and demographic context of the nation (7-9). But, according to Universal Declaration of Human Rights, individuals below 18 years old are considered as child, who cannot make decision in relation to marriage and/or consensual sexual relationship (10). They are mentally, physically and socially not ready to pass through safe sexual practice and gestation. In Ethiopia the minimum age of marriage is 18 (10). By convention, due to the cultural and religious tightness of the nation, Ethiopians initiate sexual activity after marriage. Intercourse before 18 years old is prohibited by law (11). Despite of

the above assumptions and legal issues, more than 60% of women start their sexual intercourse before they celebrate their 18 birth date (3, 5, 11-15).

Early sexual initiation has negative health, social and economic consequences for both the women and feature generation. It is a risk factor for sexually transmitted infection including HIV/AIDS (16-19), unsafe sexual practice (8, 9, 20), unwanted pregnancy (18, 21-23), mental problem and maternal death (16, 18, 24, 25). It increase the risk of school dropout, poor school performance, stigma and discrimination (26-28). It also affects the social and economic status during adulthood (29).

In Ethiopia, different researches have been done on prevalence and/or factors associated with early sexual initiation in female adolescent and youth. Age, residence, educational status, parent- youth connectedness, using addictive substances and religion are determinant factors identified by scholars (3, 5, 11, 12, 14, 15, 30, 31). But, all the studies were done at local level, use small sample size, do not consider the effect of community level factors on early sexual initiation. Besides, the association at the individual level may not work at the community level and vice versa. Even the studies were fitted with standard logistic regression which may leads loss of power. Almost all were done in school students. National representative evidence is important to achieve the national and international goals. Therefore, this study aimed to assess individual and community-level factors associated with early sexual initiation among female youth in Ethiopia by using EDHS 2016which will be important to develop community level information education communication and behavioral change communication to reduce the prevalence and impact of early sexual initiation in the country.

Methodology

Study setting and period

The study was conducted in Ethiopia, which is located in the North-eastern (horn of) Africa, lies between 3^0 and 15^0 North latitude and 33^0 48^0 and East longitudes. This study used the 2016 EDHS dataset which was conducted by the Central Statistical Agency (CSA) in collaboration with the federal Ministry of Health (FMoH) and the Ethiopian Public Health Institute (32). Data were accessed from their URL: www.dhsprogram.com by contacting them through personal accounts after justifying the reason for requesting the data. Then reviewing the account permission was given via the email. A cross-sectional study design using secondary data analysis from 2016 EDHS was done among all female youth (15-24 years old) irrespective of their sexual activity.

A total of 6143 weighted females were include in the analysis. The weight is generated based EDHS suggestion as follows: (weight = v005/1,000,000). EDHS 2016 sample was stratified and selected in two stages. In the first stage, stratification was conducted by region and then each region stratified as urban and rural, yielding 21 sampling strata. A total of 645 (202 urban and 443 rural) enumeration areas (EAs) were selected with probability proportional to EA size in each sampling stratum. In the second stage

affixed number of 28 households per cluster were selected with equal probability systematic selection from the newly created household listing.

Variable measurement

In this study the outcome variable (early sexual initiation) was dichotomized as (yes/no). Youth who started sexual activity at or before 18 years old were consider as having early sexual initiation and those who start sexual act after 18 years old and not started yet during their youth time were considered as not having early sexual initiation which was generated from constructed EDHS-2016 variable (33). The independent variables were individual level factors including (age, religion, chat chewing, drinking alcohol, wealth index, educational status, media exposure) and community level factors were created by aggregating individual level factors in each cluster (region, residence, community level of education, community level wealth index, community level television exposure and community level radio exposure). The community level of wealth index was generated by using the proportion of the two (poorest and poorer) lowest level of wealth index to the total wealth index of the same cluster. Similarly community level of education is generated by using the proportion of the two (no education and primary education) lowest level of educational attainment to the total educational level of the same cluster. Community level of television exposure is also computed by dividing not exposed at all to television for the total television exposure, Community level of radio exposure is computed by dividing not exposed for radio at all to the total radio exposure. Since all the above four variables are not normally distributed we were using median as cutoff point (Above median: female youth live in a cluster with high proportion of poor community, low community educational status, low community media exposure) to dichotomize the variables.

Data processing and analysis

(see Supplementary Files)

Result

Characteristics of the Respondents

A total of 6,143 female youth included in the analysis. Among this, 3,383 (52.85%) were found in the age group of 19-24 years,1,889 (29.51%) study participants completed secondary and higher education. 3,845 (60.07%) of female youth had no exposure to television. About 4,676 (76.11%) of youth resided in rural areas (Table 1).

Table 1: Individual and community level characteristics of Female youth in Ethiopia, EDHS 2016 (n=6143).

Variable	Number	Percent
Age		
15-18	3,018	47.15
19-24	3,383	52.85
Religion		
Orthodox	2,613	40.82
Muslim	2,569	40.13
Others*	1,219	19.04
Educational status		
No education	1,408	22.00
Primary	3,104	48.49
Secondary	1,361	21.26
Higher	528	8.25
House hold Wealth index		
poorest	1,571	24.54
poorer	1,051	16.42
middle	1,183	18.48
richer	1,141	17.83
richest	1,455	22.73
Frequency of watching television		
not at all	3,845	60.07
less than once a week	805	12.58
at least once a week	1,751	27.36
Frequency of listening radio		
not at all	4,017	62.76
less than once a week	1,176	18.37
at least once a week	1,208	18.87
Ever heard about STI		
no	457	7.14
yes	5,944	92.86

Ever chewing chat

no	6,024	94.11
yes	377	5.89

Ever drinking alcohol

no	4,496	70.24
yes	1,905	29.76

Residence

Urban	1,467	23.89
Rural	4,676	76.11

Region

Tigray	498	8.10
Afar	56	0.92
Amhara	1,382	22.50
Oromia	2,229	36.29
Somali	186	3.03
Benishangul	67	1.08
SNNP	1,251	20.37
Gambela	18	0.30
Harari	16	0.26
Addis Ababa	403	6.56
Dire Dawa	37	0.60

Community level of wealth

Low	3,159	51.43
High	2,984	48.57

Community level of education

Low	2,827	46.03
High	3,316	53.97

Community level of television exposure

Low	2,801	45.61
High	3,342	54.39

Community level of radio exposure

No	3,350	54.53
Yes	2,793	45.47

*protestant, catholic, traditional

Individual and community-level factors associated with early sexual initiation

In the final model (model-III) age, educational status, ever chewing Chat, region and community level wealth had statistical association with early sexual initiation. The odds of early sexual initiation was 6 times more among participants whose aged between 19-24 years as compared to their counterparts [AOR=5.77, 95% CI= (4.58, 7.27)]. Female youth who were no attend school were 14 times more likely initiate sex at or before age 18 than attending higher education [AOR=14.1, 95% CI= (8.06, 24.66)]. Female youth who ever chew Chat were 2 times more likely initiate sex early as compared to not [AOR= 1.98,95%CI= (1.32, 2.97)]. Female youth who were live in Addis Ababa were 72% less likely initiate sex early as compared to youth live in Tigray region [AOR= 0.28, 95%CI= (0.17, 0.45)]. Likewise, female youth who were live in Gambella region were 3 times more likely initiate sex early as compared to youth who live in Tigray region [AOR=2.7,95%CI= (1.7, 4.29)]. Female youth who live in low proportion of poor communities were 34% less likely initiate sex early as compared to female youth who live in high proportion of poor community [AOR= 0.66, 95% CI= (0.49, 0.9)]. (Table 2).

Table 2: multilevel logistic regression analysis of individual and community level factors associated with early sexual initiation among female youth in Ethiopia, EDHS 2016 (n=6143).

e	COR	Model-0 ICC=22.59%	Model-I (AOR)	Model-II (AOR)	Model-III (AOR)
	5.11(4.1, 6.36)		5.6(4.45, 7.04)		**5.77 (4.58, 7.27)**
n					
ox					
l	1.56 (1.234, 1.95)		1.27 (0.91, 1.76)		1.35 (0.95, 1.92)
	0.79(0.5, 1.05)		0.79 (0.57, 1.08)		1.06 (0.75, 1.49)
ional status					
cation	9.38(5.77, 15.26)		14.65 (8.5, 25.4)		**14.1 (8.06, 24.7)**
y	2.71(1.72, 4.27)		5.87(3.49, 9.88)		**5.91 (3.49, 10.0)**
ary	1.33 (0.81, 2.19)		2.3 (1.36, 3.89)		**2.32 (1.37, 3.93)**
hold Wealth index					
st	2.35 (1.62, 3.39)		1.09 (0.64, 1.83)		0.82 (0.47, 1.45)
rer	2.51 (1.78, 3.54)		1.1 (0.68, 1.78)		0.92 (0.55, 1.52)
lle	2.54 (1.85, 3.48)		1.15 (0.71, 1.86)		1.04 (0.65, 1.69)
er	1.33(0.99, 1.77)		0.76 (0.49, 1.17)		0.71 (.46, 1.1)
st					

g television

all	1.77 (1.3, 2.41)	0.93 (0.62, 1.42)	0.89 (0.58, 1.37)
an once a	1.29 (0.91, 1.83)	1.04 (0.71, 1.53)	0.95 (0.65, 1.41)
t once a			

g radio

all	1.11 (0.85, 1.45)	0.86 (0.63, 1.17)	0.85 (0.62, 1.18)
an once a	0.77 (0.56, 1.04)		0.75 (0.54, 1.04)
t once a			

eard about STI

	1.08 (0.72, 1.63)	1.43 (0.9, 2.28)	1.4 (0.88, 2.24)

lewing chat

	2.49 (1.72, 3.61)	2.03 (1.36, 3.02)	**1.98 (1.32, 2.97)**

rinking alcohol

	1.23 (1.02, 1.5)	1.4 (1.06, 1.84)	1.29 (0.97, 1.71)

nce

	2.76 (2.19,		0.87 (.55,	1.11(0.65,

	3.47)	1.35)	1.92)
	2.39 (1.56, 3.66)	1.01 (0.66, 1.53)	0.89 (.53, 1.49)
a	1.18 (0.79, 1.77)	1.09 (0.75, 1.58)	1.07 (0.73, 1.58)
l	0.94 (0.62, 1.43)	0.7 (0.48, 1.02)	**0.63 (.41, 0.97)**
	1.15 (0.75, 1.76)	0.54 (0.34, 0.83)	**0.45 (0.25,0.79)**
angul	1.18 (0.76, 1.84)	1.08 (0.70, 1.66)	1.11 (0.69, 1.78)
	0.53(0.35, 0.79)	.42 (0.29, 0.61)	**0.42 (0.26,0.67)**
la	1.89 (1.24, 2.86)	2.1 (1.43, 3.08)	**2.7 (1.7, 4.29)**
	1.06 (0.66, 1.7)	1.09 (0.72, 1.67)	0.82 (0.5, 1.36)
baba	0.27 (0.18, 0.41)	0.39 (0.25, 0.6)	**0.28 (0.17, 0.45)**
wa	0.64 (0.4, 1.02)	0.66 (.42, 1.02)	**0.52 (0.31, 0.86)**
nity level wealth			
	0.45 (0.32, 0.52)	0.58(0.44, 0.77)	**0.66 (0.49, 0.9)**
nity level education			
	0.38 (0.31, 0.47)	0.58 (0.45, 0.76)	0.81 (0.6, 1.1)

nity level television exposure

0.47 (.38, 0.59)		0.9 (0.68, 1.2)	1.02 (0.75, 1.38)

nity level radio exposure

0.51 (0.41, 0.64)		0.99 (0.76, 1.29)	1.11(0.84, 1.47)

Random Effects (Measures of Variation)

Early sexual initiation among female youth varies significantly across each clusters. ICC indicated, 22.59 % of variation in early sexual initiation among female youth was attributed to community level factors. PCV in the final model shows 42.71% of variation in early sexual initiation across communities was explained. Likewise, MOR for early sexual initiation among female you, in the null model was 5.01which shows the presence of variation across each cluster (Table 3)

Table 3: Measure of variation for early sexual initiation among female youth at cluster level in multilevel logistic regression analysis, EDHS 2016.

Measure of variation	Model-0 (null)	Model-I	Model -II	Model-III
Variance	0.96	0.67	0.57	0.55
ICC (%)	22.59	16.92	14.77	14.32
PCV (%)	Reference	30.21	40.62	42.71
MOR	5.01	4.13	3.85	3.79
Model fitness				
Log-likelihood	-3727.4264	-3152.6852	-3647.3358	-3116.9657

Discussion

In the analysis the result of model-III showed that; Individual level factors (age, educational status and Chat chewing) and from community level factors (region and community level of wealth) were determinant factors of early sexual initiation in Ethiopia.

Cohorts of youth from 19-24 years old are more likely start sex early sexual than cohorts of 15-18 years old. The finding is supported by a study conducted in Wollega, Ethiopia (19).   It also congruent with studies conducted in Mexico and Korea (4, 7, 36-38). The possible reason for this association may be due to difference in cultural malpractices like early marriage and abduction were reduced in the last five years as the data represents at what age they started first sex. Moreover, improvement of youth friendly health service through time might be increased knowledge, normalization of sexuality issues, and improved self-efficacy (39)could contribute the difference in early sexual initiation in the two age group cohorts.

As the level of educational attainment increase the risk of early sexual initiation decrease. The finding is consistent with previous researches findings (11, 12, 23, 30, 31, 37, 38). This might be due to education increase information on the effect of early sexual initiation on their mental and social health. Education may bring behavioral change towards reduction of risk factors like, substance use which may expose them to early sexual initiation (40). Moreover, parent-youth communication and supervision might be good in youth who are educated (13, 14, 22, 25, 41).

Chewing Chat was positively associated with early sexual initiation. The finding is consistent with other studies (4, 5, 11, 16, 38, 42, 43). This might be due to substance use affects the intactness of critical thinking about the risk and consequences of early sexual intercourse (15, 22, 24, 25, 44). Moreover, they are more subjected to causal sex and they may use it as a means of income for substance use.

There is regional variation on early sexual initiation. Female youth who live in Addis Ababa, Dire Dawa, SNNPR, Oromia and Somali region are less likely initiate early sexual act when compared with youth who live in Tigray region. Whereas, female youth who live in Gambella region are more likely start early sexual activity than youth who live in Tigray region. Cultural, religious values and norms may be different across the regions. Cultural norms, social changes, family dynamics and government policies influence attitude and expression of sexual behavior in youth (13, 22, 25, 29, 45-47).

When low proportion of poor people lived in the cluster, initiation of early sex was decreased. This is also supported by a study conducted in (35). This might be due to rich peoples may have good health seeking behavior, better knowledge on risk factors, better follow up of their children, and access different behavioral change communication through mass media or social media. The above reasons may change the value and norms of the community towards early sexual initiation and early marriage (9, 16, 45). The result of this study was more representative than other studies and the model considered different levels of analysis as the outcome was affected by community level variables. Despites of this strength, the result may be prone to recall bias because the data were collected from history of event.

Conclusion

After computing multi-level analysis, cohort of old age, low educational status, ever chewing Chat, region and live in high proportion of poor community wealth had statistical association with early sexual initiation among female youth in Ethiopia. Improving universal access to education is important to reduce

the prevalence as well as health and health related complications of early sexual initiation. Advocacy and behavioral change communication among substance user should be area of concern for different organizations who are working on youth reproductive health. Since early sexual initiation differ across community differences, better to develop community sensitive approaches for different communities.

List Of Abbreviations

CSA-Central Statistics Agency, EA- Enumeration Area, ICC-inter cluster coefficient, MOR-Median Odds Ratio, PCV-Proportional Change Variance

Declarations

Ethical Approval and consent to participate

Ethical clearance was obtained from Ethical Review Committee of Wollo University College of Medicine and Health Science. An authorization letter to download EDHS-2016 data set was also obtained from CSA after requesting www.measuredhs.com website. The requested data were treated strictly confidential and was used only for the study purpose. No attempt was done to interact any individual respondent or household included in the survey. Complete information regarding the ethical issue was available in the EDHS-2016 report.

Consent for publication

Not applicable

Availability of data and materials

The datasets used and/or analysed during this study are available from the corresponding author on reasonable request.

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Competing interests

The authors declare that they have no competing interests

Author's Contributions

MA: Initiated the research concept, analyze and interpreted the data; BK and MY: Wrote the manuscript and MA and MY: Edited and revised the manuscript. All authors: critically revise, read and approved the final manuscript.

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