ETHIOPIAN JOURNAL OF REPRODUCTIVE HEALTH

EJRH

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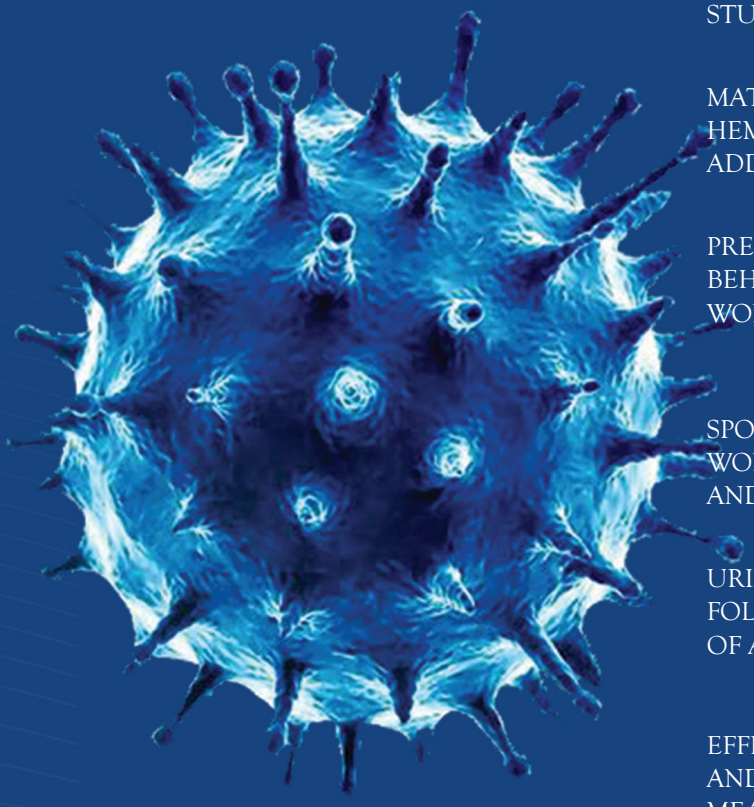
July, 2020 Volume 12, No. 3



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Ethiopian Journal of Reproductive Health (EJRH)

July, 2020

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Ethiopian Journal of Reproductive Health (EJRH)

July, 2020

Table of Contents PAGE

EXPLAINING GENDER DISPARITY IN RISKY SEXUAL BEHAVIOR AMONG UNDERGRADUATE UNIVERSITY STUDENTS IN ETHIOPIA: A DECOMPOSITION ANALYSIS

Birhanu Gutu, MPH [1]

ABSTRACT

BACKGROUND: Young people commonly engage in risky sexual behavior and suffer from the undesirable consequences. Nowadays, gender based inequalities on sexual behaviors and its determinants are serious obstacles to HIV prevention and necessitate emphasis.

OBJECTIVE: The aim of this research is to explain gender disparity in risky sexual behaviors among undergraduate students in Ethiopia.

METHOD: Institution based comparative cross-sectional study design was used. The sample size was calculated using a formula to estimate the difference between two population proportion and a total of 579 subjects participated in this study. Respondents enrolled under other programs than regular program were excluded. Simple random sampling method was used to select the respondents. SPSS 21 was used for data analysis. A decomposition analysis was used to determine the magnitude and drivers of gender disparity in risky sexual behavior.

RESULT: There is a 33.2% extra risk in sexual behavior among males with a 95% CI (26.4, 39.9). Of this disparity, 32.6% with 95% CI (6.5 to 15.1) is attributable to differences in characteristics between boys and girls. The remaining 67.4% with a 95% CI (14.1 to 30.6) of the raw difference is, however, explained by the differences in response behavior to changes in characteristics between the sexes. Being Muslim, communication with parents, communication with friends, substance use and knowledge about HIV/AIDS explained the observed male-female gap in risky sexual behavior.

CONCLUSIONS: Significant gender difference was observed with a higher risk in male respondents compared to female. Being Muslim, communication with parents, communication with friends, substance use and knowledge about HIV/AIDS explained the gap in risky sexual behavior across gender. Therefore, gender sensitive strategies should be developed to reduce the observed gender disparity in risky sexual behavior.

KEY WORDS: Gender; Risky Sexual Behavior; Youth, Sexual and Reproductive Health

(The Ethiopian Journal of Reproductive Health; 2020; 12;1-11)

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INTRODUCTION

Sexual behaviors can have a negative consequence on one's sexual and reproductive outcomes. The extent to which young people engage in risky behaviors may determine the chance of acquiring HIV and other sexually transmitted infections (STI) and/or can result in unintended pregnancy and early childbearing[1]. These behaviors may include having multiple sexual partners, either concurrent or consequent, lack of consistent and proper condom use, paid/commercial sex, sex under the influence of substances, early sexual initiation, unprotected anal and oral sexes, and unprotected sex with someone whose HIV status is unknown. Having experienced at least one of the above sexual activities, one is considered to have risky sexual behavior[1-2]. Young people commonly engage in risky sexual behavior and suffer from the undesirable consequences. A significant number of adolescents around the globe are sexually active and began sexual activity at an early age[3]. Consequent to their sexual behaviors STDs were high among young people age between 15 and 24 years [4]. Evidence also indicates the risk of HIV infection is high, particularly among adolescents[5]. In Sub-Saharan Africa, the chance of young adolescents' exposure to HIV and other STIs is high especially among women [6-7]. The prevalence of risky sexual practices is high in Ethiopia[8-11]. Young Ethiopians usually engaged in risky sexual practice. Studies conducted upon Ethiopian youth revealed various risky sexual behaviors which include early initiation of sexual intercourse, premarital sex, multiple sexual partners, and inconsistent condom use[12-13]. In other study anal and oral sex and transactional sex were also reported [13].

Variation in risky sexual activity among young people is marked across gender. In countries like Sub-Saharan Africa, Asia, and central Asia, more girls are sexually active compared with boys, however, is vice versa in Latin America and Caribbean countries[14-15]. In Ethiopia, a systematic review of sexual behavior studies showed a significant variation across gender in risky sexual behaviors. boys and girls with higher risk among male[8]. A study conducted at Haromaya University also showed that more proportion of male students ever had risky sexual behaviors compared to females[16]. Nowadays, gender based inequalities on sexual behaviors and its determinants are serious obstacles to HIV prevention necessitating due emphasis on gender difference as central issue[17-18]. Many studies conducted concentrated on the prevalence of risky sexual behaviors and its associated factors, and some tried to compare the prevalence across gender. Socio-demographic factors like sex, age, religious affiliation, marital status and family income were found to have significant associations with risky sexual behaviors[8,19-21]. Substance use is another factor consistently linked with young people's risky sexual practices in different studies[22-25]. Alcohol drinking, cigarette smoking, and khat chewing are substances commonly associated with risky sexual behaviors in Ethiopian university students [8-9, 12, 19-20, 26]. Parents and also peers play major role in shaping the behavior of youths. In many cases, youths who had high family connectedness were less likely to commit risky sexual activity[8, 21, 27-30]. Evidence also indicates pressure from peer significantly increases the risk of unsafe sexual practices among young people [8, 27, 30-31].

However, none of these studies have explained the disparities across gender and indeed none of them identified how different factors contributed to disparities in sexual behavior using desirable design and/or analysis in Ethiopia. Therefore, the aim of this research is to assess the magnitude of gender disparity in risky sexual behaviors and factors explaining the disparity among undergraduate students in Ethiopia.

METHOD AND MATERIALS

Study area and period: the study was conducted March to April 2019 at Dambi Dollo University, Oromia Region, Ethiopia. Dambi Dollo University is among Public University in western Oromia, Kellem Wollega zone, Dambi Dollo town at about 652 km from Addis Ababa. In 2019 academic year, the university enrolled 2321 students in a regular undergraduate program from which 1312 (56.53%) were male and 1009 (43.47%) were female.

Study Design

Institution based comparative cross-sectional study design was used. The source population was all undergraduate students of the Dambi Dollo University. Respondents enrolled under other programs than regular program were excluded.

Sample size and sampling technique:

The sample size was calculated using a formula to estimate the difference between two population with different proportions by taking 22% (P1=0.22) and 15% (P2=0.15) of ever had premarital sex among male and female youths respectively [31]; a 95% confidence interval (Z=1.96), and 80% power of study. Considering 10% non-response rate, 358 male and 275 female were included in this study. Computer generated independent simple random sampling methods using SPSS version 21 was used to draw the samples from sampling frames from each group.

Data collection tool and techniques: The data were collected using structured questionnaire. The questionnaire was developed in English after reviewing related literatures. The data were collected by administering structured questionnaires at the students' dorm and. For subjects who were absent from the dorm at the allocation and collection of the questionnaire, revisits were conducted within two days.

Variables and Measurement

Independent variables:

Demographic and socio-economic variables: These variables were used to assess individual background information. These include sex, age, previous place of residence, region, marital status, religion, ethnicity, father's educational status and mother's educational status.

Substance use: this refers to use of three commonly used substances by youth in Ethiopia, alcohol, Khat and cigarette. Finally, the item was analyzed to produce a single dichotomous variable as 'ever substance use" with 'yes or no' responses and used in the decomposition analysis model.

Communication about Sexual and Reproductive Health: this refers to the respondents' status regarding their discussion about sexuality and reproductive health with their parents and friends.

Knowledge about HIV/AIDS: refers to the individual's understanding about HIV/AIDS. We measured four domains by 10 true/false questions. The first domain is about the causative agent and characteristics/natural history of HIV/AIDS measured on three items. The second and third domains are knowledge about modes of transmission and methods of prevention; measured by using three and two items respectively. The fourth domain is about care and treatment of HIV which is assessed by two items. LCA was carried out and produced three latent classes, represented as "subgroups" in the current study. Finally, we hypothesized classes with average marginal probability of 0-0.5, average marginal probability of 0.5-0.74 and average marginal probability of 0.75-1.00 as a group with "poor knowledge", a group with "moderate knowledge" and a group with "very good knowledge" respectively for our consumption in discussion.

Dependent variable

Lifetime risky sexual behavior: refers to lifetime any sexual act that can enhance the transmission of STIs including HIV and unplanned pregnancy.

Data quality assurance

Two different experts evaluated the questionnaire for wordings and content validity. The data collectors and supervisors were trained to ensure the quality of data collection. Pre-test was conducted on 5% of the study sample and necessary modification was made depending on its result.

Data processing and statistical analysis

Decomposition of gender disparity in risky sexual behavior between youths of two groups, boys (comparison) and girls (reference) was used in the analysis. Decomposition yields in components attributable to differences in characteristics, endowment, and a component attributable to differences in the effects of characteristics or behavioral responses, that is the coefficients. The endowment reflects the expected change in risky sexual behavior if respondents in the comparison group were given the distribution of

covariates prevailing in the reference group. The characteristic component reflects the expected change in risky sexual behavior if respondents in the reference group experienced behavioral responses of the comparison group for each covariates [32].

Ethical consideration

Ethical approval and clearance sought from Institutional Review Board in Dambi Dollo University. A consent sheet prepared and attached to the questionnaire in a separate page and contains information about the purpose of this study. All measures to ensure confidentiality and right of the participants were explained on the consent sheet.

RESULT

Descriptive Result

Descriptive statistics for all variables used in this study is provided in Table 1. A total of 579 (91.5%) subjects completed and returned the questionnaire with male to female ratio of 1.3. The mean and median age of the study subjects were 20.7 (SD=1.3) and 21.0 years, respectively. About 6 in 10 of the students were from rural origin; 557 (96.2%) of them were single, and 254 (43.9%) were Protestant. While only 68 (11.7%) of the respondents ever discussed about sexuality and reproductive health with their mother, more female respondents found to discuss the information with their mothers than male respondents, 29(42.6%) male and 39(57.4%) female **(Table 1)**.

Table 1: Distribution of socio-demographic characteristics by sex for a study on explaining Gender Disparity in Risky Sexual Behavior among Undergraduate University Students in Ethiopia: A Decomposition Analysis, 2020.

Variables			Response by Sex		Total
			Male: 330	Female:249	N (%)
Socio-demographic characteristic	Year of study	First	164(49.7%)	118(47.4%)	282 (48.7)
		Second	166(50.3%)	131(52.6%)	297 (51.3)
	Previous Place of Residence	Urban	131(39.7%)	130(52.2%)	261 (45.1)
		Rural	199(60.3%)	119(47.8%)	318 (54.9)
	Marital status	Single	313(94.8%)	244(98.0%)	557 (96.2)
		Ever married	17(5.2%)	5(2.0%)	22(3.8)
	Religion	Orthodox	133(40.3%)	111(44.6%)	244 (42.1)
		Protestant	137(41.5%)	117(47.0%)	254(43.9)
		Muslim	36(10.9%)	16(6.4%)	52(9.0)
		Others	24(7.3%)	5(2.0%)	29(5.0)
	Ethnic group	Oromo	172(52.1)	143(57.4%)	315(54.4)
		Amhara	103(31.2%)	82(32.9%)	185(32.0)
		Others	55(16.7%)	24(9.6%)	79(13.6)
	Father's Education	Illiterate	126(38.2%)	62(24.9%)	188(32.5)
		Can read and Write	104(31.5%)	82(32.9%)	186(32.1)
		Literate	100(30.3%)	105(42.2%)	205(35.4)
	Mother's Education	Illiterate	152(46.1%)	80(32.1%)	232(40.1)
		Can read and Write	89(27.0%)	76(30.5%)	165(28.5)
		Literate	89(27.0%)	93(37.3%)	182(31.4)
	Father's Occupation	Farmer	207(62.7%)	171(68.7%)	378(65.3)
		Gov employee	66(20.0%)	38(15.3%)	104(18.0)
		Merchant	37(11.2%)	28(11.2%)	65(11.2)
		Others	20(6.0%)	12(4.8%)	32(5.6)
	Mother's Occupation	Housewife	160(48.5%)	145(58.2%)	305(52.7)
		Farmer	86(26.1%)	50(20.1%)	136(23.5)
		Merchant	44(13.3%)	27(10.8%)	71(12.3)
		Govt employee	35(10.6%)	19(7.6%)	54(9.3)
		Others	5(1.5%)	8(3.2%)	13(2.2)
Ever Substance use	Alcohol	Yes	139(42.1%)	60(24.1%)	199(34.4)
		No	191(57.9%)	189(75.9%)	380(65.6)
	Kchat	Yes	69(20.9%)	(10.0%)	94(16.2)
		No	261(79.1%)	224(90.0%)	485(83.8)
	Cigarette	Yes	19(5.8%)	2(0.8%)	21(3.6)
		No	311(94.2%)	247(99.2%)	558(96.4)
Ever discussion about Sexual and reproductive health	With fathers	Yes	80(24.2%)	59(23.7%)	139(24.0)
		No	250(75.8%)	190(76.0%)	440(76.0)
	With mothers	Yes	29(8.8%)	39(15.7%)	68(11.7)
		No	301(91.2%)	210(84.3%)	511(88.3)
	With friends	Yes	184(55.8%)	80(32.1%)	264(45.6)
		No	184(55.8%)	80(32.1%)	264(45.6)

LCA of HIV/AIDS related knowledge

Four domains of HIV/AIDS related knowledge were assessed. The LCA model produced three latent classes, represented as "subgroups" in the current study. The first subgroups are likely to know about causative agent and disease characteristics. This class possibly is the hypothesized "poor knowledge" subgroup. The second subgroup is characterized by a moderate probability to over all knowledge questions with mixed probability in the mode of transmission and a low probability of knowledge about characteristics of the disease and hypothesized "moderate knowledge" subgroup. In the third subgroup, the marginal probabilities for correct response are high for all items except for the natural history and care/support items. This class mightily is the hypothesized "very good knowledge" subgroup **(Table 2)**.

Table 2: Latent Class Analysis of HIV/AIDS knowledge among undergraduate students in Dambi Dollo University, 2019

Knowledge Domains	HIV/AIDS related knowledge items	Margin (Delta Method		
		Subgroup 1	Subgroup 2	Subgroup 3
Causative agent and Natural history	HIV is an immune compromising virus	0.66	0.77	0.68
	HIV infected person can have negative HIV test	0.69	0.14	0.50
	HIV infected person may not have AIDS	0.60	0.13	0.35
Mode of transmission	Lip kissing is a major mode of HIV transmission	0.16	0.84	0.94
	Eating food prepared by an HIV-infected person transmits HIV	0.27	0.92	0.92
	Hand shaking with a person with AIDS transmits HIV infection	0.31	0.91	0.99
Prevention methods	You can't get HIV the first time you have sex	0.14	0.80	0.99
	There is a "morning after" pill that prevents HIV infection	0.53	0.66	0.96
Care/support	HIV can be cured if treated early	0.42	0.67	0.83
	HIV infected person can live normal life as usual with care and support	0.85	0.51	0.12

Description of Sexual Behavior across Gender

Of the total study subjects, 218(37.7%) of them had sexual intercourse at least once, from which 169(77.5%) of them were male while 49(22.5%) were female respondents. Of the total respondents, 235(40.6%) of them have history of risky sexual behavior in their life from which 218 ever had sexual intercourse **(Table 3)**. However, 17(7.23%) of students, not provided in the table, reported either anal oral sex without sexual intercourse.

Table 3: Distribution of Lifetime Sexual behavior among undergraduate students in Dambi Dollo University, 2019

Lifetime sexual behavior		Response by Sex		Total
		Male	Female	Freq (%)
Age at first sexual intercourse (n=218)	<18 years	95(56.2%)	28(57.1%)	123(56.4)
	>=18 years	74(43.8%)	21(42.9%)	95(53.6)
Sexual intercourse with a stranger (n=218)	Yes	47(27.8%)	9(18.4%)	56(25.7)
	No	122(72.2%)	40(81.6%)	162(74.3)
Ever had transactional sex (n=218)	Yes	28(16.6%)	8(16.3%)	36(16.5)
	No	141(83.4%)	41(83.7%)	182(83.5)
Sex with HIV status unknown person (n=218)	Yes	27(16.0%)	6(12.2%)	33(15.1)
	No	142(84.0%)	43(87.8%)	185(84.9)
Ever used condom (n=218)	Yes	59(34.9%)	17(34.7%)	76(34.9)
	No	110(65.1%)	32(65.3%)	142(65.1)
Frequency of Condom Use N=76	Always	17(28.8%)	9(52.9%	26(34.2)
	Sometimes	22(37.3%)	2(11.8%)	24(31.6)
	Rarely	20(33.9%)	6(35.3%)	26(34.2)
Condom use at first sex (n=218)	Yes	66(39.1%)	10(20.4%)	76(73.7)%
	No	103(60.9%)	39(79.6%)	20(26.3)
Ever had sexual intercourse (n=579)	Yes	169(51.2%)	49(19.7%)	218(37.7)
	No	161(48.8%)	200(80.3%)	361(62.3)
Ever committed sex with a person of the same sex; (n=579)	Yes	17(5.2%)	7(2.8%)	24(4.1)
	No	313(94.8%)	242(97.1)	194(95.9)
Committed anal sex (n=579)	Yes	33(10.0%)	12(4.8%)	45(7.8)
	No	297(90.0%)	237(95.2%)	534(92.2)
Committed oral sex (n=579)	Yes	41(12.4%)	9(3.6%)	50(8.6)
	No	289(87.6%)	240(96.4%)	529(91.4)
Had risky sexual behavior	Yes	181 (54.8%)	54(21.7%)	235(40.6)
	No	149(45.2%)	195(78.3%)	344(59.4)

Decomposition of gender on risky sexual behavior

Due to Difference in Characteristics (E)

In this study, there was a 33.2% extra risk in sexual behavior among male respondents with a 95% CI (26.4, 39.9) as compared to female respondents. The result shows 32.6% of the observed disparity in risky sexual behavior is attributable to differences in characteristics between boys and girls. The remaining 67.4% of the raw difference in risky sexual behavior is, however, explained by the differences in response behavior to changes in characteristics between the sexes **(Table 4)**.

Due to Difference in Coefficients (C)

Had boys responded in a same way as girls did to communication with mothers on sexual and reproductive health issues, they would have benefited by large (a risk difference of 7.8%) than girls.

Table 4: Decomposition result of risky sexual behavior across gender among undergraduate students

Lifetime sexual behavior	Endowment				Coefficient				
	Coef.	P-value	[95% CI.]	%	Coef.	P-value	[95% CI.]		%
Previous rural residence	0.906	0.253	-0.648	2.460	2.732	-1.971	0.703	-12.090	8.148 -5.944
2nd year	-0.190	0.120	-0.431	0.050	-0.574	4.413	0.742	-21.905	30.731 13.308
Orthodox	-0.098	0.644	-0.512	0.317	-0.295	1.736	0.668	-6.204	9.676 5.235
Protestant	0.031	0.906	-0.481	0.543	0.093	0.223	0.957	-7.878	8.323 0.671
Muslim	-0.789	0.011	-1.399	-0.179	-2.380	-0.560	0.533	-2.320	1.201 -1.687
Other religion	0.836	0.061	-0.040	1.712	2.521	0.087	0.811	-0.628	0.802 0.263
Literate fathers	-0.410	0.706	-2.537	1.717	-1.236	1.474	0.793	-9.548	12.496 4.444
Literate mothers	0.198	0.846	-1.807	2.203	0.598	3.997	0.452	-6.418	14.411 12.052
Farmer fathers	-0.177	0.548	-0.756	0.402	-0.535	2.977	0.606	-8.337	14.290 8.977
Gov employee fathers	0.187	0.511	-0.371	0.746	0.565	2.227	0.167	-0.934	5.389 6.717
Merchant fathers	0.001	0.699	-0.004	0.005	0.003	-1.879	0.129	-4.307	0.549 -5.667
Other fathers	-0.053	0.642	-0.274	0.169	-0.158	-0.107	0.890	-1.620	1.406 -0.322
Communicate to fathers	-0.095	0.009	-0.167	-0.023	-0.287	-7.811	0.003	-12.917	-2.704 -23.554
Communicate to mothers	-1.546	0.027	-2.919	-0.172	-4.660	5.086	0.030	0.486	9.686 15.337
Communicate to friends	4.899	0.000	2.401	7.397	14.773	4.926	0.108	-1.089	10.941 14.855
Ever substance use	4.571	0.000	2.795	6.347	13.784	5.413	0.065	-0.345	11.171 16.323
Class 1 knowledge	-0.381	0.022	-0.707	-0.056	-1.150	-2.205	0.017	-4.024	-0.387 -6.650
Class 2 knowledge	-0.208	0.850	-2.371	1.955	-0.629	2.553	0.512	-5.071	10.177 7.700
Class 3 knowledge	3.121	0.0027	1.173	5.069	9.412	5.268	0.011	1.184	9.352 15.885
Constant	NA	NA	NA	NA	NA	-3.488	0.851	-39.984	33.008 -10.519
Component	10.803	0.000	6.523	15.083	32.577	22.359	0.000	14.083	30.634 67.423
Raw Difference	33.162	0.000	26.445	39.878	100				
Number of observation = 579									

DISCUSSION

This study is, indeed, the first yet to conduct a decomposition of gender disparity in sexual behavior in Ethiopia. From the decomposition analysis, we found a 33.2% extra risk in sexual behavior among males with a 95% CI (26.4, 39.9). The risk gap is explained by the difference in distribution of covariates across gender and the differential effects of those risk factors. From the observed risk gap 32.6% is attributable to differences in characteristics. The remaining 67.4% of the raw difference is, however, explained by the differences in response behavior to changes in characteristics between the sexes. This finding is alarming for policy makers to fill the gap across gender and the pattern of this gap is a good implication to develop effective and gender sensitive interventions.

Evidence from other study revealed Muslim women were more likely to report risky sexual behavior than men[33]. In the current study, being Muslim is associated with gender inequalities in risky sexual behavior. In this case, a 2.4% extra-risk was found among Muslim female students than Muslim male students. That means if

Muslim boys assume the characteristics of Muslim girls, the negative coefficient shows that boys would benefit better than girls. This indicates that religion based interventions would best reduce the observed disparity between Muslim boys and girls in risky sexual behaviors. It is evident that parent-child communication has been proven in such a way that it increased the age at first sexual debut [34-35], heightened sexual abstinence [34-35], promote partner discussion[36], and increase condom use [35-36]. Based on the evidence from other literatures also revealed that in close relationship with parents, adolescents are less likely to have risky sexual behavior [8, 21, 27-30]. However, discussion with parents on reproductive and sexual matter is unfamiliar in Ethiopia [28, 37-38] and it is hindered by culture, embarrassment and other problems like poor communication[37]. In the current study, decomposition of parent-youth communication on sexual and reproductive topics explained the gender inequalities in risky sexual behavior in such a way that it benefits boys by reducing risky sexual behavior than it would in girls. In addition, the way boys and girls responded to communication about sexual and reproductive health matters with their mother results in a significant disparity in sexual behaviors between males and females as evidenced by a risk difference of 7.8%. On the other hand, 15.3% of the risk difference between boys and girls is attributed to paternal communication on sexual and reproductive behavior. This point leads us to seek for strategies that target parents to improve their communication about sexual and reproductive health with their off-springs.

Majority of youth who had pressure from their peer groups opt to engage in risky sexual activities [27, 39]. Peer communication may influence ones behavior in different means; disseminate the information, transfer perceived peer behaviors or norms, or it provide a context in which adolescents could adapt to dominant norms [40]. On the other hand, peers would also respect and support the decision to remain safe from sexual activity[39]. In this study, a significant risk difference was explained by the difference in the distribution of communication with friends between the sexes. About 14.8% of the prevailing risk difference in risky sexual behavior was attributable to difference in the distribution of communication with friends. This implies, shifting the boys' distribution on communication with friends to girls' level, it would provide the largest decrease in the male–female gap in risky sexual behavior. This is another indication for interventions to solve the observed disparities. Peer education on youth sexual and reproductive health may be effective intervention in this case.

Substance use has been characterized by inhibiting effect on one's decision quality and increases the likelihood of engaging in sexual behavior[23]. Drinking alcohol, chewing khat and cigarette smoking are substances frequently reported in Ethiopia and consistently linked with risky sexual practices [8-9, 12, 19-20, 26]. However, how substance use explains sexual behavior across gender is not discussed in these studies. The result from the current study revealed that ever use of at least a single substance attributes to inequality of risky sexual behavior across gender. In this matter, shifting the male distribution on substance use to the same level as girls would be expected to reduce gender disparity in risky sexual behavior by 13.8%. Thus, interventions like awareness raising programs, establishing anti-substance use clubs in the school as well as within the community, including substance use in the curriculum, and policy on substance ban including illicit drugs may be effective strategies to reduce the observed disparities.

Knowledge is an important part in the formation of behavior[41]. Lack of comprehensive knowledge about HIV/AIDS increases the risk of HIV among youth, particularly young women[42]. According to evidence from different studies, lower risk behavior is linked to better respondents' knowledge about HIV/AIDS [43-44]. Another studies, however, revealed despite a good knowledge about HIV/AIDS, young people practice risky sexual behaviors[41,45]. In the current study, we used to assess how knowledge about HIV/AIDS contributed to gender disparity in risky sexual behaviors. In this study, knowledge about HIV/AIDS was found to have significant effect on gender disparity in risky sexual behavior. That is 2.7% of the boy- girl gap in risky sexual behavior was attributed for

difference in distribution of knowledge about HIV/AIDS. The boy-girl disparity in risky sexual behavior can also be explained by the difference in response to knowledge about HIV/AIDS. More specifically, while response to knowledge benefited the girls among the subgroup with poor knowledge (first class from LCA), response to knowledge explained 15.9% of the difference in the prevalence of risky sexual behavior between boys and girls among the subgroup with very good knowledge (third class from LCA). This will necessitates equalizing boys and girls on knowledge about HIV/AIDS to reduce the disparity in risky sexual behavior. Effective and gender sensitive strategies to raise awareness like comprehensive sexuality education and HIV/AIDS may solve these problems.

CONCLUSIONS AND RECOMMENDATIONS

Significant gender disparity in risky sexual behavior was observed. Males were at higher risk than females. Being Muslim, communication with parents, communication with friends, substance use and knowledge about HIV/AIDS explained the gap in risky sexual behavior across gender. Bearing in mind the limitation of the study, these findings have potentially important implications for intervention. Therefore, gender sensitive strategies should be developed to reduce the observed gender disparity in risky sexual behavior.

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MATERNAL AND PERINATAL OUTCOME OF ANTEPARTUM HEMORRHAGE AT THREE TEACHING HOSPITALS IN ADDIS ABABA, ETHIOPIA

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ABSTRACT

BACKGROUND: Antepartum hemorrhage (APH) is an obstetric emergency contributing to a significant amount of perinatal & maternal morbidity and mortality.

OBJECTIVE: The objective was to assess the maternal and perinatal outcome of pregnancies complicated by APH in Ethiopian setup.

METHODOLOGY: This was a facility based cross sectional descriptive at three teaching hospitals, Addis Ababa, Ethiopia. Pregnant women who were diagnosed to have antepartum hemorrhage and delivered in the three hospitals from January to June, 2018 were included. Data was collected using a structured pre-tested questionnaire by interviewing participants and reviewing medical records. Data was analyzed using SPSS 23 statistical software.

RESULT: There were a total of 9,643 deliveries during the study period. The prevalence of APH was 3.7% of all the deliveries. Abruptio placenta was the most frequent cause (n= 221, 2.3%). Cesarean section was the most common route of delivery (n=224, 62.5 %). The perinatal mortality rate was 158/1,000 births. Fifty four (15%) and 52 (14.5%) of the women developed postpartum hemorrhage and anemia, respectively. There was also one maternal death.

CONCLUSION: The perinatal mortality, cesarean section rates, postpartum hemorrhage & anemia in APH is high in the hospitals.

KEY WORDS: Perinatal mortality, cesarean section rates, postpartum hemorrhage, anemia in APH

(The Ethiopian Journal of Reproductive Health; 2020; 12;12-19)

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INTRODUCTION

Antepartum hemorrhage (APH) is defined as any bleeding from the genital tract during pregnancy, after the period of viability until the delivery of the fetus. Antepartum hemorrhage is generally defined as bleeding after 24 weeks of pregnancy until delivery [1,2]. APH is an obstetric emergency associated with high perinatal & maternal morbidity and mortality. It occurs in 2-5% of pregnancies and is an important cause of fetal and maternal death. Thirty percent of maternal deaths are caused by APH of which 50% are associated with avoidable factors [3].

The causes of APH can be divided into three main groups, placenta previa, placental abruption and others. Maternal complications of APH include postpartum hemorrhage (PPH), shock, retained placenta, preterm deliveries, fetal growth restriction, and higher rates of caesarian section, peripartum hysterectomy, coagulation failure, puerperal infections and even death. Fetal complications include premature delivery, low birth weight (LBW), intrauterine fetal death (IUFD), congenital malformations and birth asphyxia[3].

Ethiopia is one of the developing countries with high perinatal and maternal morbidity and mortality. According to EDHS 2016 the neonatal mortality rate was 32 per 1000 live birth and the maternal mortality ratio was 412 per 100,000 live births[4]. Understanding the associations between APH during pregnancy and perinatal and maternal complications is critical for development of strategies and programs to deliver maternal interventions of proven efficacy. In our country there are limited numbers of published researches on perinatal and maternal outcome of APH. This study was on the magnitude of the APH, maternal and perinatal outcome, and associated factors in Ethiopian.

METHODOLOGY

This was a facility based cross sectional descriptive study which was conducted from January 1, 2018 to June 2018 GC in three teaching hospitals, Addis Ababa, Ethiopia. The hospitals were Tikur Anbesa Hospital (TAH), Gandhi Memorial Hospital (GMH) and Zewditu Memorial Hospital (ZMH) and they are affiliated to the Department of Gynecology and Obstetrics, Addis Ababa University (AAU). All mothers with APH and delivered in the three study hospitals during the study period were included in the study.

The sample size was determined using Epi Info statistical software for cross sectional study using the perinatal death rate of 36.9% from a study Jimma University Specialized Hospital, Ethiopia[5] and was found to be 376 and we included all pregnancies complicated by hemorrhage after 28 weeks of gestational age according to the legal definition in our country[6].

Data was collected using a structured pre-tested questionnaire was used by three trained midwives through interviewing the participants, reviewing medical records of mothers and neonates, and using telephone call to interview for maternal and fetal complication on the second and seventh post-delivery days. The independent variables were socio-demographic variables (maternal age, educational status, marital status and family income per month) and obstetric variables (placenta previa, abruptio placenta, APH of unknown origin, uterine rupture, PIH, parity, multifetal pregnancy and previous uterine scar). The dependent variables were mode of delivery, maternal outcome (postpartum hemorrhage, peripartum hysterectomy, anemia, blood transfusion, acute kidney injury (AKI), disseminated intravascular coagulopathy (DIC), hypovolemic shock, ICU admission and maternal death) and perinatal outcome (5^{th} minute APGAR score, preterm birth, LBW, IUFD, neonatal ICU admissions and early neonatal death (ENND)).

The collected data was coded, cleaned and analyzed using SPSS version 23 statistical software. Descriptive statistics was used to present the result and tables were used to assist data presentation. Ethical clearance was obtained from the Institutional Review Board (IRB) of the Department of Obstetrics and Gynecology, School of Medicine, College of Health Sciences of AAU. Permission to conduct the study was also obtained from the heads of the three study hospitals. Participation in the study was completely voluntary and informed consent was acquired from every participant before participation.

RESULTS

There were a total of 9,643 deliveries from January 1 to June 30, 2018 in the three study Hospitals. Out of these deliveries 358 women were diagnosed to have APH giving a prevalence of APH of 3.7% (358/9643).

The majority of the study participant women were in the age range of 20-29 years, married and housewives with proportions of 69% (247/358), 97.3% (348/358) and 60.6% (217/358) respectively. About two third, 68.7% (246/358), had attended formal education. And, 60.6% (217/358) house wives **(Table 1)**.

Table 1: Socio-demographic characteristics of women with APH in teaching hospitals affiliated to AAU, January – June, 2018. (n=358)

Variables		Frequency	Percent
Age			
–	15 – 19 yrs	5	1.4
–	20 _ 24 yrs	88	24.6
–	25 _ 29 yrs	159	44.4
–	30 _ 34 yrs	84	23.5
–	>=35 yrs	22	6.1
Marital status			
–	Married	348	97.3
–	Single	7	1.9
–	Divorced	3	0.8
Educational status			
–	Cannot read and write	25	7
–	Read and write	87	24.3
–	Primary education	104	29.1
–	Secondary education	71	19.8
–	College and above	71	19.8
Occupation			
–	House wife	217	60.6
–	Government employee	84	23.5
–	Private employee	50	14
–	Others	7	1.9
Family income in ETB[a]			
–	0-600	11	3.1
–	601-1650	46	12.8
–	1,651-3,200	121	33.7
–	3,201-5,250	115	32.2
–	5,251-7,800	44	12.2
–	7,801-10,900	9	2.5
–	Over 10,900	12	3.5

(a) Classification according to the Ethiopian employment income tax rate of 2016.

Abruptio placenta was the most frequent diagnosis in 2.3% (221/9643) of women and accounted for 61.7% (221/358) of APH cases. APH of unknown origin was the second most common diagnosis reported in 0.8% (77/9643) of all deliveries and accounts for 21.5% (77/358) of the APH cases. Forty eight women were diagnosed with placenta previa representing 0.5% of all deliveries and 13.4% (48/358) of APH cases. There were 12 women with the diagnosis of uterine rupture which represent 3.4%.

PIH was seen in 16.2% (58/358) of all women with APH. Thirty nine women had previous uterine scar which was present in 10.9% of the cases. PROM was identified in 8.6% (19/358) of cases. **(Table 2)**

Table 2: Causes of APH versus maternal obstetric factors in women with APH at three teaching hospitals affiliated to AAU, January – June, 2018.

Causes of APH	Maternal obstetric factors			
	PIH	Multiple pregnancy	Cesarean scar	PROM
Placenta previa (n=48)	3 (6.25%)	1(2%)9	(18.75%)	0
Abruptio placenta(n=221)	49 (22.2%)	7 (3.2%)	13 (5.9%)	15 (6.8%)
Uterine rupture (n=12)	0	0	9 (75%)	0
APH of UK origin (n=77)	6 (7.8%)	1 (1.3%)	8 (10.4%)	4 (5.2%)
Total (n=358)	58 (16.2%)	9 (2.5%)	39 (10.9%)	19 (8.6%)

The most common clinical type of abruptio placenta was mild abruption accounting for 51.1% (113/221). Clinically severe and moderate types accounted for 25.8% (57/221) and 23.1% (51/221) of abruption cases respectively.

From the 48 women with placenta previa, placenta previa totalis was diagnosed in 34 (70.8%) women which is the most common type, followed by low lying

placenta previa, placenta previa partialis and placenta previa marginalis diagnosed in 7 (14.6%), 4 (8.4%) and 3 (6.2%) patients respectively.

Cesarean section was the most common route accounting for 62.6 % (224/358) of all deliveries with APH. The most common indication for cesarean section was non reassuring fetal heart rate pattern which accounted for 51.8% (185/358). In women with abruptio placenta 71% (156/221) were by cesarean section representing 69.6% (156/224) of the total cesareans done for APH. Forty five cesarean sections were done in women with placenta previa with a rate of 93.8% (45/48) and contribute 20.1% (45/224) of the cesareans deliveries for APH. The cesarean section rate for APH of unknown cause was 16.9% (13/77) and accounts for 5.8% (13/224) of cesareans for APH. **(Table 3)**

Table 3: Causes of APH versus mode of delivery in women with APH at three teaching hospitals affiliated to AAU, January – June, 2018. (n=358)

Cause of APH	SVD	Instrumental Delivery	Cesarean delivery	Others[a]	TOTAL
Placenta previa	2 (4%)	0	45 (93.8%)	1 (2%)	48
Abruptio placenta	60 (27%)	4 (1.9%)	156 (70.6%)	2 (0.9%)	221
Unknown cause	58 (75.3%)	5 (6.5%)	13 (16.8%)	0	77
Uterine rupture	0	0	10 (83.3%)	2 (16.7%)	12
Total	120 (33.5%)	9 (2.5%)	224 (62.6%)	5 (1.4%)	358

(a) Others include breech delivery and laparotomies

There were 367 neonates born to the 358 mothers with APH of which 95.1% (349/367) were singleton. Out of the 367 neonates 12.3% (45/367) were still born while 3.5% (13/367) were Early Neonatal Deaths (ENND). Abruptio placenta and uterine rupture accounted for 77.8% (35/45) and 13.3% (6/45) of the IUFDs respectively. Fifty eight (16.6%) of the neonates were admitted to NICU and the major reason for referral was preterm and low birth weight. From the 349 live births, 13 (3.7%) neonates died in the first week of their life and abruptio placenta was responsible for 11 (84.8%) of ENNDs.

The perinatal mortality (PNM) rate among the participants with APH was 158‰ (158 per 1000) births. The PNM was 208 per 1000 birth for AP, 583 per 1000 birth for uterine rupture, 62.5 per 1000 birth for placenta previa and 26 per 1000 birth for APH of unknown origin. The birth weight was below 2500gm in 25.3% (93/367) of the neonates and 77.4% (72/93) of these neonates were born to women with abruptio placenta. There were 9 LBW neonates in women with placenta previa which was present in 18.8% (9/48) of the cases. Preterm delivery accounts for 18.8% (69/367) of all deliveries. From these 55 (24.9%) were in women with abruptio placenta. Seven were in women with placenta previa representing 14.5% (7/48) in this group. In this study 19.3% (71/367) neonates had low APGAR score at the 5th minute. More than 24.4% (54/221) of neonates born to mothers with AP had 5th minute APGAR of <7. In 10.4% (5/48) of women with placenta previa the 5th minute APGAR score is <7. More than 66.7% of neonates born to mothers with uterine rapture and dehiscence had 5th minute APGAR score of <7. **(Table 3)**

Table 3: Causes of APH versus perinatal outcome in women with APH at three teaching hospitals affiliated to AAU, January – June, 2018.

Causes of APH	VLBW and LBW	5th MINUTE APGAR <7	NICU admission	ENND	IUFD	Preterm	Perinatal death
Placenta previa (n=48)	9 (18.8%)	5 (10.4%)	4 (8.3%)	1 (2%)	2 (4%)	7 (14.6%)	3 (6.25%)
Abruptio placenta(n=221)	72 (32.6%)	54 (24.4%)	38 (17.2%)	11 (5%)	35 (15.8%)	55 (24.9%)	46 (20.8%)
Unknown cause (n=77)	12 (16.7%)	4 (5.2%)	9 (11.7%)	0	2 (2.6%)	6 (7.8%)	2 (2.6%)
Uterine rapture (n=12)	0	8 (66.7%)	2 (16.6%)	1 (8.3%)	6 (50%)	1 (8.3%)	7 (58.3%)
TOTAL (n=358	93 (25.3%)	71 (19.3%)	53 (14.4%)	13 (4%)	45 (16.8%)	69 (18.8%)	58 (15.8%)

Fifty four (15%) of the mothers developed postpartum hemorrhage as diagnosed clinically or by the 10% drop in hematocrit criteria. Most women with uterine rupture, 91.7% (11/12) developed PPH. More than 43% (21/48) of mothers with placenta previa were diagnosed to have PPH while only 8.6% (19/221) of mothers with AP were diagnosed to have PPH. A total of 52 (14.5%) women were diagnosed with anemia in the postpartum period and 91.7% of women with uterine rupture were diagnosed with anemia while 40% women with Placenta previa were diagnosed with anemia postpartum. Fifteen women were transfused with blood and blood products of which eight were for women with uterine rupture. There were 3 women with a diagnosis of DIC, 2 women with AKI, 3 women with peripartum hysterectomies, 10 women with hypovolemic shock and 3 mothers were admitted to ICU. There was one maternal death from the three admitted cases to ICU with possible cause of death being multiple organ failure. **(Table 4)**

Table 4: Causes of APH versus maternal outcome in women with APH at three teaching hospitals affiliated to AAU, January – June, 2018.

Causes of APH	PPH	Anemia	Blood transfusion	AKI	DIC	Hysterectomy	Maternal collapse	admission ICU	Maternal death
Placenta previa (n=48)	21 (43.8%)	20(41.7%)	1 (2.1%)	0	0	0	0	0	0
Abruptio placenta (n=221)	19 (8.6%)	19 (8.6%)	4 (1.8%)	2(0.9%)	2(0.9%)	0	8 (3.6%)	2 (0.9%)	1 (0.45%)
Unknown cause (n=77)	3 (3.9%)	2 (2.6%)	2(2.6%)	0	0	0	1(1.3%)	0	0
Uterine rapture (n=12)	11 (91.7%)	11(91.7%)	8(66.7%)	0	0	3(0.84%)	1(8.3%)	1(8.3%)	0
Total	54 (15%)	52 (14.5%	15 (4.2%)	2 (0.6%)	2 (0.6%)	3 (0.84%)	10 (2.8%)	3 (0.84%)	1 (0.3%)

DISCUSSION

Antepartum hemorrhage accounts for 3.7% of all deliveries in this study which was similar to the study done by Majumder S. et al in India (7), where an incidence of 3.8% was reported. But the incidence was lower compared to the study done by Nega Chufamo et al (5) at JUSH and studies done in other parts of India (8), where an incidence of as high as 7.2 was observed. This could be due to the fact that the JUSH was the only referral hospital in the south west region where high risk mothers are managed. Abruptio placenta was the major cause of APH in the present study diagnosed in 2.24 % of all deliveries during the study period, the second common cause being APH of UK origin with 0.79% and followed by placenta previa which accounts for 0.49%. This finding was in contrast to the study done in JUSH where placenta previa was the second most common cause with an incidence of 1.4% (5). Other studies had

also reported placenta previa as the leading cause of APH[3, 7, 9 and 10]. The age distribution in this study revealed 69% of women were in the age group 20-29 years which is similar to the study done in JUSH where 65% were in the same age group[5]. This is in contrast to the traditional association of Abruptio placenta and Placenta previa with advanced maternal age.

Higher rate of cesarean delivery among APH cases, 62.6% (224/358), was found in this study which is comparable to studies done in JUSH and some developing countries [5, 7, 8]. Even higher rate of cesarean section as high as 90 % has been reported in other studies[3, 11]. The most common indication for cesarean section was non-reassuring fetal heart rate pattern which accounts for 51.8% which was similar to findings from JUSH report[5].

In general, increased perinatal morbidities and mortalities were observed in this study. The perinatal mortality rate was 158 per 1000 births which was lower than some of the local studies where perinatal mortality of 365 to 500 per 1000 was reported[5, 12]. The PNM for AP was 208 per 1000 births while higher perinatal mortality was reported in some of the developing regions (3,8). The main reason for the relatively low perinatal mortality rate could be due to that 97.5% of the clients in the present study were having ANC follow up and are living in the city where access to health facility within a short period of time was possible unlike those studies conducted in JUSH and Hawassa referral hospital, where more than 70 % of the clients were from rural areas[5, 12]. The other reason could be according to EDHS 2016 at the national level there is a decrease in perinatal and neonatal mortality due to different factors and those local researches were done 5 years back which might not reflect the current status.

There were 69 (19.3%) preterm deliveries and from this 55(79.7%) neonates were in women with abruptio placenta and similar findings were reported in studies done in India where 21.3% were delivered prematurely. The finding was lower compared to the study done at JUSH[5], where 50% were delivered prematurely. Ninety three (25.3%) were below 2500gm and from this 72 (77.4%) neonates were born to women with Abruptio placenta similar findings were reported in a study done in India. IUFD, Prematurity and low birth weight were the major fetal and neonatal problem in this study.

Fifty four (15%) of the mothers with APH had developed postpartum hemorrhage in this study which is lower compared to studies done at JUSH and other developing regions where as much as 60 % were diagnosed with PPH which could be because most our cases were having mild to moderate abruption and lesser proportion of placenta previa totalis[3, 5-14]. Compared to the current study higher maternal morbidities and mortalities were reported in studies done in JUSH and other developing regions[3,5,8,10,12 and 13]. This relatively lower maternal morbidity and mortality compared to other local studies [5, 12] could be due to timely intervention, availability of blood and blood products and relatively lesser proportion of patient with major degree placenta previa and more cases of mild and moderate Abruption.

CONCLUSION

The prevalence of antepartum hemorrhage in the present study was 3.7%. Abruptio placenta was the major cause accounting for 61.7% of APH cases. APH in the present study is associated with high maternal and perinatal morbidity and mortality with increased rates of anemia, postpartum hemorrhage, blood and blood products transfusion, caesarean section rates, preterm deliveries, low birth weight, NICU admission, IUFD and early neonatal death. The perinatal and maternal morbidity and mortality in this study, however, were lower compared to most of the studies done in developing countries.

RECOMMENDATION

Further research with larger sample size and different setup should be done to explore the association between perinatal and maternal morbidity and mortality with antepartum hemorrhage.

LIMITATIONS

A major limitation of this study was inability to follow discharged mothers after day seven postpartum. As a result, maternal morbidly and mortality might have been underestimated if additional complications occurred

at home. In addition; due to the nature of the study association between the causes of APH and maternal and perinatal morbidity and mortality were not assessed.

COMPETING INTEREST

The authors declare that there is no competing interest regarding the publication of this paper.

ACKNOWLEDGEMENT

We would like to thank Addis Ababa University for funding the study, the data collectors for their contribution for successful completion of the study and the clients for their willingness to be part of the study.

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PREGNANCY INTENTION AND ASSOCIATED MATERNAL BEHAVIORS DURING PREGNANCY AMONG PREGNANT WOMEN IN GAMO-GOFFA ZONE, SOUTHERN ETHIOPIA

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ABSTRACT

INTRODUCTION: Pregnancy is a happy event for women when it is intended. Instead, an unintended pregnancy leads the mother to unhealthy behaviors, which in turn causes maternal mortality and morbidity. But limited evidence exists on the effects of unintended pregnancy on maternal behaviors during pregnancy in Ethiopia particularly in the study area. Therefore, this study aimed to identify the effect of pregnancy intention on maternal behaviors during pregnancy among pregnant women in Gamo-Goffa Zone, Southern Ethiopia.

METHODS: Community-based cross-sectional study design employed in Gamo-Goffa Zone from March, 13 to April 13, 2017. Using a multi-stage stratified sampling technique 770 pregnant women were selected and enrolled in the study. The logistic regression was performed to identify the independent effect of pregnancy intention on maternal behaviors.

RESULTS: More than one-third (36.2%) study participants experienced an unintended pregnancy. Women with unintended pregnancy were 69% times less likely to receive antenatal care (AOR = 0.31, 95% CI (0.21 – 0.46)); four times more likely to initiation antenatal care late (AOR = 4.40, 95% CI (1.70 – 11.40)) and three times more likely to use the substance (AOR = 3.01, 95% CI (1.81 – 5.02)) during pregnancy.

CONCLUSION: Women with unintended pregnancy are less likely to receive recommended antenatal care and more likely to engage in risky behaviors. Therefore, besides promotion on the utilization of effective contraception to prevent unintended pregnancy, behavioral change communications directed toward increasing utilization of antenatal care and minimization of risky behaviors are recommended to attain healthy behaviors during any type of pregnancy.

KEY WORDS: Unintended pregnancy, Maternal behavior, Antenatal care, Substance use

(The Ethiopian Journal of Reproductive Health; 2020; 12;20-30)

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INTRODUCTION

Intended pregnancy is a pregnancy that happens with the readiness of couples and is desired at the time of conception. In contrast, unintended pregnancies are pregnancies that are reported to have been either unwanted or mistimed. A concept related to unintended pregnancy is unplanned pregnancy in which the woman used a contraceptive method or when she did not desire to become pregnant but did not use a method[1].

Worldwide, nearly 213 million pregnancies occurred annually, out of whom, 85 million (40%) were unintended pregnancy. In Africa from a total of 53.8 million pregnancies, 35% were unintended pregnancy[2]. According to the Guttmacher Institute report in Ethiopia, in 2014 about 4.93 million pregnancies occurred annually, out of whom, 1.9 million (38%) were unintended pregnancy [3]. The Performance, Monitoring, and Accountability (PMA 2020) study report in 2014 also showed that the magnitude of unintended pregnancy is even higher 42%[4].

The repercussions of unintended pregnancy are considerably high and have a great impact on the health of all fecund sexually active women. It has negative effects on maternal outcomes and leads to abortion, which could be unsafe[2]. For instance, from eighty-five million unintended pregnancies in the worldwide, 50% ended in abortion, 13% ended in miscarriage, and 38% resulted in an unplanned birth. In developing countries from 1000 pregnancies, 57 of them were unintended and the majority of these pregnancies end up with unplanned birth and abortion[2].

Unintended pregnancies that lead to induced abortions can have deadly consequences for women living in countries where abortions are generally unsafe[5]. It results in unsafe abortion, that is one of the direct causes of maternal mortality and morbidity[6]. About half of unintended pregnancies in developing countries result in abortion and unsafe abortion is a leading cause of maternal death[1].

Moreover, women with unintended pregnancies have less responsiveness to pregnancy related complications. They have anxiety, low social support and lower scores for self-care behaviors[7]. Unintended pregnancy also has a direct relation to poor utilization of maternal health care services during pregnancy like delayed and low initiation of antenatal care visits[8–10]. Subsequently, these problems increase obstetric complications such as unfavorable pregnancy outcome, maternal morbidity and mortality, premature birth, low birth weight, neonatal death and infant abuse[11].

To tackle this problem, Ethiopia's population policy was developed in 1993 just before the UN's International Conference on Population and Development in 1994, which adopted the principle that every pregnancy should be planned and wanted. The National Population Policy specifically aims to reduce the TFR from 7.7 to 4.0 and to increase contraceptive use from 4.0% to 44.0% between 1990 and 2015[12]. The level of modern contraceptive use in Ethiopia is encouraging news for improving the health of women and their families. However, it is impossible to meet women's fertility or reproductive goals with an existing large number of mistimed or unwanted pregnancies.

In the face of this severe public health problem, there are limited studies that focus on the effect of pregnancy intention on maternal behavior in developing countries, particularly in Ethiopia. The existing literatures in Ethiopia have addressed mainly prevalence and associated factors of unintended pregnancy. So far, there is a study on unintended pregnancies and the use of maternal health services, but other related maternal behaviors like abortion attempt and substance use during pregnancy are not well addressed. Thus, this study aimed to identify whether pregnancy intention influences maternal behavior during pregnancy by including maternal behaviors like abortion attempt and substance use.

METHOD

Study setting, design and participants

The study was conducted in Gamo-Goffa Zone, Southern Ethiopia. This Zone has a total of 346,245 reproductive age group women and an estimated 53,510 pregnant mothers. In the Zone, the contraceptive prevalence rate is 49% and ANC coverage is about 83%. Currently, health care provision within the Zone

is carried out through 61 health centers, 309 health posts, and 3 hospitals. There were 131 different privately owned clinics that also rendered health services to the community[13]. A community based cross-sectional study design was conducted among pregnant women from March 13, 2017, to April 13, 2017.

Sample size determination and sampling technique

The sample size was determined using a single population proportion formula by considering the assumptions of the prevalence of unintended pregnancy p = 35% from a study in Southwestern Ethiopia[8]. Zα/2= Standard variant (1.96) which corresponds to 95% confidence level and acceptable margin of error (precision of measurement) = 5%. By adding 10% non-response rate and design effect of 2, the sample size = 350+ 10% = (350+ 35) x 2 = 770. The sample size was also calculated for second objective and resulted 760 study participants. Therefore, the largest sample size was used (n= 770).

The multi-stage stratified sampling technique was used to identify pregnant women enrolled in the study. At the first stage, Gamo-Goffa Zone was stratified as rural districts (10 in number) and town administrations (2 in number, Arba Minch and Sawula). Then 3 rural districts were selected by simple random sampling from the 10 districts. One town administration was included randomly from urban. At the second stage, kebeles were selected proportionally based on the size of the kebeles per each district. List of pregnant women were identified from an updated family folder of selected kebeles. Then, based on the population, the sample size was allocated for each selected kebeles proportionally. Finally, the required number of pregnant mothers was selected by the simple random sampling method and interviewed in their homes by health extension workers.

Study variables

The outcome variable was maternal health behaviors (ANC use, abortion attempt, substance use). The independent variables were Socio-economic and demographic (Age, Marital status, Education of mother/ husband, Wealth index, Occupation, Residence), Reproductive history (Number of alive children, Parity/ gravidity, Previous Unintended Pregnancy, Family size, Women's autonomy.

Data collection procedure

The data was collected using a structured interviewer administered questionnaire which was developed by reviewing different works of literatures[8, 10, 14] that related to pregnancy intention and associated maternal behaviors during pregnancy among pregnant women. Ten data collectors and three supervisors were recruited and trained for two days. Then, the data collection tools were pre-tested in Gombora Woreda on 5% of the study participants and a necessary modification was made according to the finding. The actual data was collected from the identified pregnant mothers by trained health extension workers.

Data processing and analysis

The data on each coded questionnaire were entered into Epi-data version 3.1 then, the entire data were cleaned and corrected for errors and exported to SPSS version 21 statistical packages for analysis. Descriptive analysis was done to compute frequencies and percentages. Bivariate analysis was performed to select variables for multivariable analysis. Hence the variables with p-value < 0.25 in the bivariate analysis were taken as candidates for multivariable analysis. But, statistical significance was tested at the level of 5% at the multivariable level. Finally, multivariable logistic regression analysis was performed to identify the independent effect of pregnancy intention on the outcomes of interest after controlling other possible confounding variables. The crude and adjusted Odds ratios with their 95% CI were reported.

Data quality control

The questionnaire was developed from different studies related to pregnancy intention and associated maternal behaviors during pregnancy previously. It was translated from English to Amharic and back to English to assure consistency. In order to reduce the social desirability bias; the data were collected by female health extension workers; sensitive questions were asked at the end of the interview and the interview was conducted at an area in which the privacy of the study participant was protected. The collected data was also checked for completeness, accuracy, clarity, and consistency.

Ethical statement

Ethical clearance was obtained from the IRB of Jimma University, Institute of Health. A Support letter was obtained from the department of population and family health. The necessary permission was obtained from the Gamo-Goffa Zone health department and selected Woreda health offices and kebele administrative offices. Verbal, as well as written consents, was taken from the study participants. For illiterate participants, verbal consent was obtained after explaining the purpose of the study while for those who are able to write and read, written consent was obtained. For the juveniles, an assent was obtained from their legal guardians. Participants were assured that their name will not be indicated, data will be kept confidential and anonymous and it will be used only for research purposes.

RESULTS

Socio-demographic characteristics

Out of 770 eligible pregnant women, 748 women were interviewed making a response rate of 97%. The respondents mean age was 27.34 (SD ± 4.4). A majority of study participants were married 739 (98.8%) and Protestants 594 (79.4%) in religion. From the total women interviewed the household wealth index falls in the lowest tertiles 249 (33.3%), in the middle tertiles 250 (33.4%), and in highest/third tertiles 249(33.3%). Of the total respondents, 626 (83.7%) were housewives, 85 (11.4%) were government employed, and the remaining were self-employed and students (**Table 1**).

Table 1: Socio-demographic characteristics of women with APH in teaching hospitals affiliated to AAU, January – June, 2018. (n=358)

Variables	Frequency (n)	Percent (%)
Maternal age		
15-24	182	24.3
15-24	182	24.3
35+	62	8.3
Ethnicity		
Gamo	670	89.6
Gofa	34	4.5
Wolaita	21	2.8
Amhara	11	1.5
Others*	12	1.6
Marital status		
Married	739	98.8
Single/ Divorced/ Widowed	9	1.2
Residence		
Rural	509	68.0
Urban	239	32.0
Educational status		
No formal education	405	54.1
Primary level (1-8)	181	24.2
Secondary and above (9-12) +	162	21.7
Religion		
Protestant	594	79.4
Orthodox	97	13.0
Muslim	42	5.6
Catholic	15	2.0
Occupation		
House wife	626	83.7
Government employee	85	11.4
Others**	37	4.9
Wealth index		
Low	249	33.3
Middle	250	33.4
Upper	249	33.3

* Konso, Oromo, Gurage, ** self-employee, student, daily laborers

Access to health information and health services

From a total of 748 respondents 483 (64.6%) have exposure to mass media such as TV, radio and the rest 265 (35.4%) have no exposure. Concerning to distance to nearest the health facility, 304 (40.6%) of respondents took thirty to sixty minutes, 295 (39.4%) of respondents took less than thirty minutes and 149 (20.1%) of respondents took greater than one hour to walk on foot.

Reproductive health related characteristics

From the total pregnant women interviewed, 151 (20.2%) were primigravida (gravida one) 437 (58.4%) were gravida one to four and 160 (21.4%) were gravida five and above. The median age of the women who got the first pregnancy was at 21 years with ± 2.57. In this study, 474 (63.4%) of women were participating in all household decisions and the rest 36.6% were not participating.

Unintended pregnancy and maternal behaviors during pregnancy

In this study, from the total pregnant women interviewed, 36.2% (95% CI; 32.9-39.63) were unintended pregnancy from which 230 (30.7%) were mistimed pregnancy and 41 (5.5%) were an unwanted pregnancy (**Figure 1**).

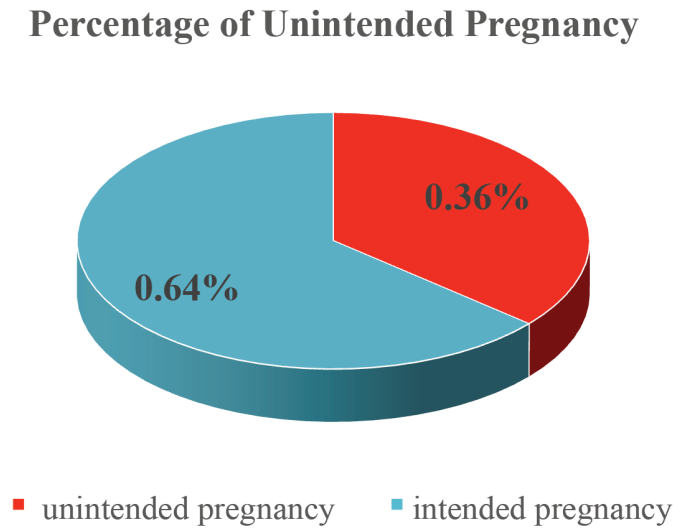

Figure 1 Percentage of unintended pregnancy in Gamo-Goffa Zone, southern Ethiopia, 2017

Factors Associated with Maternal Health Behaviors

Antenatal care utilization and pregnancy intention

Among the women included in the study, 73.1% (95% CI; 70.1- 76.2) received at least one antenatal care visit during this pregnancy while 201 (26.9%) did not receive it at all. Three hundred forty-three (62.7%) of women received ANC from the health center, 119 (21.8%) from hospital, and 85 (15.5%) from health post. Only about 5% (n = 26) had received the WHO recommended 4 or more ANC visits from skilled professionals. For those women who received ANC the median duration of pregnancy at the time of first antenatal care visit was six months.

The multivariable analysis result showed that women with unintended pregnancy was 69% times less likely to receive antenatal care from a health professional (AOR = 0.31, 95% CI; 0.21 – 0.46) as compared to women with intended pregnancy after controlling for all the other variables in the model (**Table 2**).

Table 2: Bivariate and multivariable analyses of pregnancy intention and antenatal care use among pregnant women in Gamo-Goffa Zone, southern Ethiopia, 2017

Variables	ANC used (%)	ANC not used (%)	OR(95% C.I)	AOR(95% C.I)
Age				
15 – 24	75.8	24.2	1	1
25 – 34	73.8	26.2	0.89 (0.60 - 1.33)	0.47 (0.25 – 0.86)
35+	59.7	40.3	0.47 (0.25 – 0.86)	0.47 (0.25 – 0.86)
Educational status				
No Education	69.9	30.1	1	1
Primary (1-8)	69.6	30.4	0.98 (0.67 – 1.44)	1.01(0.66 – 1.55)
Secondary and above	85.2	14.8	2.47 (1.53 – ¬4.01)	0.99 (0.51 – 1.90)
Occupation				
House wife	70.9	29.1	1	1
Government employee	91.7	8.3	4.56 (2.06 – 10.08)	2.33 (1.01 – 5.35)
Other	67.6	32.4	0.85 (0.42 – 1.73)	0.90 (0.42 – 1.94)
Wealth index				
Lower	80.3	19.7	1	1
Middle	69.2	30.8	0.55 (0.36 – 0.83)	0.57 (0.36 – 0.89)
Upper	69.9	30.1	0.56 (0.37 – 0.85)	0.63(0.40 – 1.0)
Pregnancy intention				
Intended	84.7	15.3	1	1
Unintended	52.8	47.2	0.20 (0.14 – 0.28)	0.31 (0.21 –0.46)
Participated in decision				
No	54.5	44.5	1	1
Yes	81	19	2.90 (2.08 – 4.05)	1.62 (1.11 – 2.38
Exposure to mass media				
Have no exposure	64.2	35.8	1	1
Have exposure	78.1	21.9	1.98 (1.42 – 2.76)	1.18(0.79 – 1.76)
Distance from health facility				
Less than 30 minute	226	23.4	1	1
30-60 minute	224	26.6	0.85 (0.59 – 1.23)	1.21(0.79 – 1.84)
Greater than one hour	97	34.9	0.57 (0.37 – 0.87)	0.98(0.58 – 1.66)
Gravidity				
Gravida 1	85.4	14.6	1	1
Gravida 2 – 4	74.4	25.6	0.49 (0.30 – 0.81)	0.74 (0.43 – 1.26)
Gravida 5+	58.1	41.9	0.23 (0.13 – 0.41)	0.40 (0.22 – 0.74)
Family size				
1 – 4	80.5	19.5	1	1
5 – 8	67	33	0.49 (0.35 – 0.70)	0.86(0.55 – 1.35)
9 – 12	68.7	31.3	0.53 (0.23 – 1.17)	1.17(0.46 – 2.99)

Time of antenatal care initiation and pregnancy intention

Even among the users of the ANC, only 80 (14.6%) of women start their first antenatal visit in the first four months. The rest 85.4% (77.2% in the 2nd trimester and 8.2% in the 3rd trimester), delayed ANC initiation. The median gestational age at the first antenatal care visit was six months. Early ANC initiation was highest for intended pregnancies, but lowest for unintended pregnancies.

The multivariable analysis result shows that pregnancy intention is significantly associated with delayed (late) ANC initiation. Women with unintended pregnancy were four times (AOR = 4.40, 95% CI; 1.70 – 11.406) more likely delay initiation of the ANC when compared with intended pregnancy after controlling for all the other variables **(Table 3)**.

Table 3: Bivariate and multivariable analyses of pregnancy intention and late initiation of ANC among pregnant women in Gamo-Goffa Zone, southern Ethiopia, 2017

Variables	ANC Late Initiation	ANC Early Initiation	COR(95% C.I)	AOR(95% C.I)
Age				
15 – 24	77.5%	22.5%	1	
25 – 34	87.6%	12.4%	2.05 (1.239 – 3.40)	1.64(0.86 – 3.10)
35+	91.9%	8.1%	3.28(0.94 – 11.41)	1.75(0.39 – 7.75)
Educational status				
No Education	87.6%	12.4%	1	1
Primary (1-8)	**90.5%**	**9.5%**	**1.34 (0.67 – 2.67)**	**1.21(0.58 – 2.52)**
Secondary and above(9-12)+	76.1%	23.9%	0.44 (0.26 – 0.76)	0.72(0.40 – 1.28)
Pregnancy intention				
Intended	81.4%	18.6%	1	1
Unintended	96.5%	3.5%	6.29 (2.49 – 15.89)	4.40(1.70 – 11.40)**
Exposure to mass media				
Have no exposure	94.1%	5.9%	3.64 (1.83 – 7.27)	1
Have exposure	81.4%	18.6%	1	1
Distance from health facility				
=< 1 hour	90.6%	9.4%	0.36 (0.22 – 0.59)	0.48 (0.28 – 0.80) **
>1 hour	77.9%	22.1%	1	1
Participated in decision				
No	89.6%	10.4%	1	1
Yes	83.6%	16.4%	2.90 (2.08 – 4.05)	1.29(0.67 – 2.46)
Gravidity				
Gravida 1	77.5%	22.5%	1	1
Gravida 2 – 4	85.5%	14.5%	1.71 (1.02 – 2.87)	1.31 (0.76 – 2.26)
Gravida 5+	95.7%	4.3%	6.45 (2.18 – 19.07)	3.62 (1.18 – 11.07)*
Family size				
1-4	80.8%	19.2%	1	1
5-12	89.5%	10.5%	2.02 (1.24 – 3.29)	1.02(0.55 – 1.90)

Substance use and unintended pregnancy

The currently pregnant women used at least one of these substances like drinking alcohol, khat chewing, and smoking cigarette during this pregnancy. Concerning these, from a total of respondents about (n= 71) 9.5% (95% CI; 7.4 – 11.5) currently pregnant women used a substance during this pregnancy. From those substance users more two third used alcohol during pregnancy.

After controlling for socio-demographic factors, substance use was still associated with unintended pregnancy. Thus, women with unintended pregnancy were three times (AOR = 3.01, 95% CI; 1.81 – 5.02) more likely use substance during pregnancy compared with women with intended pregnancy **(Table 4)**.

Table 4: Multivariate association of pregnancy intention and health risky behavior (substance use) during pregnancy in Gamo-Goffa Zone, southern Ethiopia, 2017

Variables	Substance used	Substance not used	COR(95% C.I)	AOR(95% C.I)
Age				
15 – 24	77.5%	94%	1	1
25 – 34	9.3%	90.7%	1.59 (0.81 – 3.15)	1.45 (0.73 – 2.88)
35+	21%	79%	4.12 (1.73 – 9.78)	3.35 (1.39 – 8.10)*
Educational status				
No Education	11.9%	88.1%	1	1
Primary (1-8)	6.6%	93.4%	0.52 (0.27 – 1.02)	0.57(0.29 – 1.13)
Secondary and above(9-12)+	6.8%	93.2%	0.54 (0.27 – 1.07)	0.80(0.39 – 1.64)
Pregnancy intention				
Intended	5.7%	94.3%	1	1
Unintended	16.2%	83.8%	3.23 (1.95 – 5.35)	3.01 (1.81 – 5.02)*
Participated in decision				
No	**12.8%**	**87.3%**	**1**	**1**
Yes	**7.6%**	**92.4%**	**0.56 (0.34 – 0.91)**	**0.89(0.50 – 1.58)**
Exposure to mass media				
Have exposure	8.3%	91.7%	0.68 (0.41 – 1.11)	0.97(0.56 – 1.69)
Have no exposure	11.7%	88.3%	1	1
Gravidity				
Gravida 1	4.6%	95.4%	1	1
Gravida 2 – 4	8.9%	91.1%	2.01 (0.88 – 4.60)	1.32(0.50 – 3.45)
Gravida 5+	15.6%	84.4%	3.81 (1.59 – 9.09)	1.75(0.58 – 5.29)
Family size				
1 – 4	6.9%	6.5%	1	1
5 – 12	13.4%	11.8%	1.92(0.13 – 3.28)	1.01(0.53 – 1.94)

Abortion attempt and unintended pregnancy

The study also shows that there is an association between abortion attempt and pregnancy intention, more than one third (35.4%) of women with unintended pregnancy had attempted to induce pregnancy (abortion) during this pregnancy. This is one of health risks the behavior occurred in pregnant women during pregnancy time.

DISCUSSION

The prevalence of unintended pregnancy in the study area is noticeably higher in light of the goals of ensuring the women reproductive health and rights which is 36.2% among the study population, 30.7% for mistimed and 5.5% for unwanted pregnancy. This finding is in line with the study conducted in southwestern Ethiopia, Ganji Woreda and Duguna Fango Woreda with the prevalence of 35%, 36.5%, 36.6%, and respectively [8, 14, 15].

The prevalence is higher than a study conducted in the Gelemso General Hospital, Hosanna town and Debre Markos with a respective prevalence of 27.1%, 34% and 32.9% [16-18]. But it is lower than PMA 2020 study report of 42% (4) and the Guttmacher Institute report of Ethiopia of 38% [3]. This difference could be due to the difference in socio-demographic characteristics of the study participants, and study setting.

In this study, 73.1% (95% CI; 70.1- 76.2) of women received at least one antenatal care visit during this pregnancy. This result is slightly higher than the findings of the 2016 EDHS report, which is 62%[19]. Additionally, about one in twenty (5%) women had received the WHO recommended 4 or more ANC visit from skilled professionals which is lower than 2016 EDHS report of 32% [19]. Even among the users of the ANC, only 14.6% of women start their first antenatal visit in the first four months. The median gestational age at the first antenatal care visit was six months.

The result shows that pregnancy intention is significantly associated with ANC utilization after controlling for other possible variables. Thus, the odds of receiving antenatal care were 69% lower for women with an unintended pregnancy compared to women with an intended pregnancy (AOR = 0.31, 95% CI; 0.21 – 0.46). Furthermore, having unintended pregnancy increased late initiation of ANC follow-up by about 4.40 times than having intended pregnancy. Similarly, different studies conducted in developing and developed countries showed that women with unintended pregnancy does not use ANC or receive inadequate care [7-10, 20 –23]. This might be due to women less prepared financially and emotionally for the demands of pregnancy and childbearing [24]. It might also due to a delay in identifying the pregnancy.

Our finding shows that more than one third (35.4%) of women with unintended pregnancy had attempted to induce pregnancy (abortion) during this pregnancy, which is in agreement with the findings of other studies in Iran and Sweden [23, 28]. These problems increase obstetric complications such as unfavorable pregnancy outcome, maternal morbidity, and mortality.

The result of this study shows that 9.5% of currently pregnant women used a substance during recent pregnancy. After controlling other possible variables, unintended pregnancy was still more likely to be associated with substance use. Thus, women with unintended pregnancy were three times (AOR = 3.01, 95% CI; 1.81 – 5.02) more likely to use a substance during pregnancy when compared with women with intended pregnancy. This is consistent with the study done in developed countries in which maternal risk behaviors, including alcohol and illicit drug use and cigarette smoking [10-11, 26-28]. The reason might be women with unintended pregnancy might not give attention to pregnancy care and fetus.

CONCLUSION

In conclusion, this study has found a high prevalence of unintended pregnancy and significant association between pregnancy intention and maternal behaviors during pregnancy. Thus, women with unintended pregnancy were less likely to use ANC, more likely to delay initiation of ANC and more likely to use substances.

Therefore, an initiative working on family planning could reduce the magnitude of unintended pregnancy through availing and straitening public health intervention like health education and behavior change communication activities in order to improve the utilization of effective contraception.

Additionally, health professionals' particularly HEWs should provide appropriate informed counseling service by going to the household of the women with unintended pregnancy in order to improve the utilization of maternal health services like the ANC. Furthermore, the mother

with unintended pregnancy should be counseled and informed about the effect of substance use at the time of antenatal care utilization.

The limitations of this study might be the presence of social desirability bias since it is self-report. Temporal relationships of the outcome variable and the predictor variables cannot be established due to cross-sectional nature of the study.

Acknowledgments: We would like to acknowledge all women who were involved as study participants in this study. We would like to extend our gratitude to all health professionals who contributed to this study.

Authors' Contribution: TF conceived and designed the study and developed the data collection instruments. TF, MS, SH, and KT participated in the testing and finalization of the data collection instruments and coordinated study progress. TF, MS, SH, and KT performed the statistical analysis, SH wrote all versions of the manuscript. All authors critically revised and approved the final manuscript.

Competing interests: The authors declare no competing interests exist.

Consent to publish: Not applicable.

Availability of data and materials: The raw data documents are available upon request from the corresponding author.

Funding: The research was self-sponsored and thus there is no funding information to disclose.

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SPOUSAL PSYCHOLOGICAL ABUSE AGAINST PREGNANT WOMEN IN ANTENATAL CARE COHORT: MAGNITUDE AND ASSOCIATED FACTORS IN NORTHWEST, ETHIOPIA

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ABSTRACT

BACKGROUND: Violence against women is a serious public health problem and human rights abuse. Psychological abuse was the most common form of intimate partner violence that has not been noticed by policymakers. The magnitude ranges up to 90% among different populations. Developing countries including Ethiopia are at high risk of psychological abuse of women by their spouses. To the best of our knowledge, this study is the first of its kind to exclusively quantify the magnitude of psychological spousal abuse along with the associated factors in the country. Thus, this study aimed to assess the magnitude and associated factors of spousal psychological abuse against pregnant women.

METHODS: This study was a facility-based cross-sectional study including 409 pregnant mothers at Debre Markos town from March 17, 2018 – April 28, 2018. The study participants were selected using a systematic random sampling technique. A pretested and validated questionnaire was used. Binary logistic regression was employed. The adjusted odds ratio with a 95% confidence interval was used to declare statistically significant variables based on p value < 0.05 in the multivariable logistic regression model.

RESULTS: This study found that 119 (29.1%) of pregnant women have experienced psychological abuse by their spouses during their pregnancy period. Residence (AOR: 2.87, 95%CI: 1.11-7.39), age of partner (AOR: 2.68, 95%CI: 1.25-5.75), unwanted pregnancy (AOR: 3.55, 95%CI: 1.08-11.66), history of abortion (AOR: 2.79, 95%CI: 1.13-6.89), and mother's age (AOR: 0.24, 95%CI: 0.11-0.50), have emerged as predictors for psychological spousal abuse during pregnancy.

CONCLUSIONS AND RECOMMENDATIONS: The magnitude of psychological abuse against pregnant women by their spouses was high in this study. Socio-demographic and pregnancy-related factors were important predictors of psychological violence. Consequently, it demands tremendous efforts to mitigate the problem by designing effective and appropriate measures.

KEY WORDS: Psychological spousal abuse, pregnant women, Antenatal care, Ethiopia

(The Ethiopian Journal of Reproductive Health; 2020; 12;31-40)

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BACKGROUND

Domestic violence against women by their intimate partner was considered a minor social problem until the end of the 20th century[1]. Currently, violence against women has considered a serious human right abuse and the effect is most prominent in developing countries like Ethiopia[2]. Male intimate partners were the most common aggressors of violence against women[3, 4]. The lifetime risk of sexual violence was estimated to be 30% and Africa accounts for the highest magnitude [5]. Violence against women could be physical, sexual, and psychological while psychological abuse was accounted for the highest-burden [3-8]. The magnitude of psychological spousal abuse varies across countries. Evidenced from a systematic review, psychological abuse against women by their spouses ranges up to 91% in the Arab World [9]. Nearly a 3rd (28.1%) of reproductive age women in Brazil had psychological abuse among pregnant women [10], up to 8.6% (CI 7.4-9.8) in Spain[11]. A multi-country study finds that severe psychological abuse against women could range from 10.5 -50% in Egypt, Chile, and India[12], more than half (54.7%) of reproductive women in Turkey[13]. The prevalence of psychological spousal abuse ranges from 24.8-40% among different communities of Iraq[14]. The perpetrator of domestic violence varies from previous husbands to current husbands. In Ethiopia, most of this violence was from their current husband or boyfriend[15]. The lifetime prevalence of domestic violence of women by their intimate partner ranges from 20-78% in Ethiopia with mean psychological violence of 51.7%[16].

Psychological spousal abuse had different consequences. Most of the women with psychological disorders during pregnancy end up with postnatal depression[10]. Marriage related conditions like partner age, duration of the marriage, and marriage by a family decision are significantly associated with intimate partner violence[13]. Another studies in Iraq point out having an alcoholic husband, different cultures, occupation of the wife, and having children are significant determinants of violence against women[14]. Psychological spousal abuse is associated with women and husband education, age of the victim, occupation, economic status, number of children, and husbands' behavior like an alcoholic[17]. In general, different socio-economic, socio-demographic and behavioral characteristics like husband and women education, income, occupation, age, religion, place of residence, chat chewing alcohol consumption, decision making power of women and other marriage and pregnancy-related factors are important predictors of domestic violence including psychological violence[3, 10-14, 16-31].

The objective of this study is, therefore, to determine the magnitude of psychological spousal abuse and its factors among antenatal booked pregnant mothers.

METHODS

Study design and area

A facility-based cross-sectional study was conducted from March 17, 2018 – April 28, 2018 at Debre Markos town, Northwest Ethiopia. The town is located in East Gojjam Zone, Amhara Regional State of Ethiopia, and is far 299 km Northwest of Addis Ababa, the capital of Ethiopia and, about 265 kilometers from Bahir Dar town, the capital of the Amhara regional state. It consists of 7 kebeles (the smallest administrative units in Ethiopia. The town has an estimated total population of 92,470, according to the population projection of Ethiopia for all regions at woreda level from 2014 – 2017. Among these 46,738 are females. It has one referral hospital, three public health centers, seven private clinics, and 14 health posts, seven in rural and seven in urban areas. All four public health institutions and three private clinics in the town are providing ANC services.

Population

Source population

All pregnant women who came to antenatal care service in the public health institutions of Debre Markos town, North-west Ethiopia.

Study population

All pregnant women who came to antenatal care service in the public health institutions of Debre Markos town, Northwest Ethiopia during the study period.

Sample size determination and sampling procedure

The sample size was obtained by using the formula for a single population proportion.

A sample size of 422 pregnant women was obtained by employing the following assumptions: Proportion of women who have experienced psychological spousal abuse during pregnancy was 50%, level of significance 95%, a margin of error 5%, and non-response rate 10%. The sample size was allocated proportionally to the four health facilities in the town based on the number of pregnant women that visited each health facility (Wuseta health centre=212, Hidassie health centre =332, Debre Markos town health centre=412, Debre Markos referral hospital= 334) during the preceding month before data collection. Then, the study participants were selected through a systematic random sampling technique.

Study variables and measurements

Psychological spousal abuse during pregnancy is a response variable, whereas socio-demographic, husband/ partner characteristics, socio-cultural, and family experience of violence and reproductive variables were independent variables included in this study. Spouse was defined as a current spouse, co-habited (live in the same house without formal marriage), current non-marital partners (boyfriends), former partner, or spouse. Psychological violence was considered in this study, if the respondents say "Yes" to one or more acts or threats of acts, such as shouting, controlling, intimidating, humiliating, and threatening the victim.

Data collection tool and procedures

A validated interviewer-administered questionnaire[32] was used to collect data. To ensure the quality of data, the questionnaire was first developed in English, then translated into the local language (Amharic), and finally back into English to check its consistency. Data collectors and supervisors were recruited and trained for two days on ways of data collection. Supervisors and principal investigator were closely monitored the day-to-day data collection process. Finally, data were sorted, checked, entered into the computer, and cleaned for analysis.

Data processing and statistical analysis

The questionnaires were coded, entered, and cleaned by EPI-Info 7.0 statistical software and then exported to SPSS version 20.00 for further analysis. Data were summarized and presented using descriptive statistics. Model fitness was checked with the assumptions of the Hosmer and Lemeshow test. Bi-variable and multivariable logistic regressions were computed to identify the presence and strength of associations. Odds ratios with 95% CI were computed and variables having a p-value less than 0.05 in the multivariable logistic regression models were considered significantly associated with the dependent variable.

RESULTS

Socio-demographic profile of the study participants

A total of 409 pregnant women were involved in this study making a response rate of 96.9 %. The mean age of women was 27. 1 year with a standard deviation of ±5. 6 years. More than half (52.1%) of the respondents were in the age group of 17 to 26 years. The samples were predominantly urban (71.6%) and Orthodox Christian religion followers. Regarding occupational status, 46.0 % were housewives. About 95.6 % of the respondents were married and 31.3% have no formal education **(Table 1)**.

Table 1: Socio-demographic characteristics of the study participants in Debre Markos town, northwest Ethiopia, March to April 2018 (n = 409)

Characteristics		Frequency	Percentage
Age group (in years)	17-23	118	28.9
	24-26	95	23.2
	27-30	106	25.9
	31-46	90	22.0
Religion	Orthodox	339	82.9
	Muslim	59	14.4
	Protestant	8	2.0
	Catholic	3	0.7
Place of residence	Rural	116	28.4
	Urban	**293**	**71.6**
Current marital status	Single	8	2.0
	Married	391	95.6
	Divorced	7	1.7
	Widowed	1	0.2
	Separated	2	0.5
Educational status	No formal education	128	31.3
	Primary education	64	15.6
	Secondary education	103	25.2
	More than secondary	114	27.9
	House wife	188	46.0
Occupational status	House wife	188	46.0
	Farmer	75	18.3
	Student	1	0.2
	Private employee	18	4.4
	Government employee	79	19.3
	Merchant	35	8.6
	Othersa	13	3.2
Monthly income in ETB	**<2500 ETB**	**212**	**51.8**
	≥2500 ETB	**197**	**48.2**

Others[a]_____daily laborer, unemployed

Proportion of spousal psychological abuse among pregnant mothers

The result of this study revealed that 119 (29.1 % [95%CI: 24.7, 33.7]) pregnant women were psychologically abused by their spouse during pregnancy. Among the 119 abused mothers, intimidation 85 (20.8%) were the commonest form of psychological/emotional abuse followed by insulting 62(15.2%) (**Figure 1**).

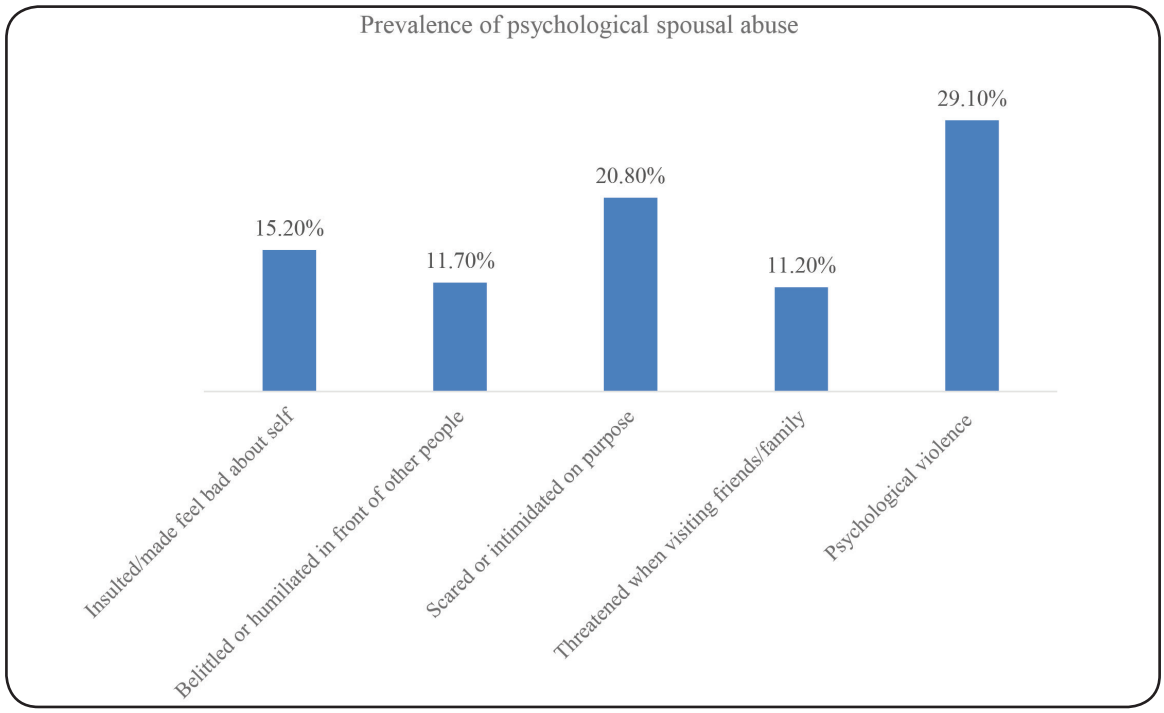

Figure 1: Proportion of psychological spousal abuse among pregnant women in Debre Markos town, North-west, Ethiopia, March to April (n=409)

Factors associated with spousal psychological abuse among pregnant women

Table 2 summarizes the findings of bivariable and multi variable binary logistic regression analysis on the factors associated with psychological spousal abuse among pregnant mothers. In the bi-variable analysis; place of residence, age of mothers, gravidity, parity, age of partner, household monthly income, educational status of the mother, educational status of partner, history of abortion, occupational status of the women, occupation of the partner, had another child, the status of the pregnancy (wanted by women and wanted by partner) were statistically significant with psychological spousal abuse during pregnancy. After controlling the possible confounders, however, the only place of residence, age of partner, mother's age, unwanted pregnancy, and history of abortion were found significantly associated with increased prevalence of psychological spousal abuse during pregnancy.

In this study, rural women were 2.95 times (AOR= 2.95, 95%CI: 1.11-7.86) more likely to have experienced psychological spousal abuse during pregnancy compared to urban women. Age of spouses were also other sociodemographic variables predicting the likelihood of psychological spousal abuse during pregnancy time. Being in the age group of 17-26 years decreases the odds by 76 % to be victims of psychological abuse compared to those women who are in the age group of 27-46 years (AOR: 0.24, 95%CI: 0.11-0.50). Conversely, partners' who belong to the age interval of 20-31 years had the odds of 2.68 to commit psychological abuse than those who are in the age class of 32-60 years (AOR: 2.68, 95%CI: 1.25-5.75). Besides, we found that unwanted pregnancy was an important factor affecting the appearance of psychological abuse.

The odds of psychological spousal abuse among pregnant women who did not desire the current pregnancy was 3.55 (95%CI: 1.08-11.66) times higher compared to those who desire the pregnancy.

Moreover, the history of abortion as part of reproductive related variables has also affected the occurrence of psychological spousal abuse during pregnancy. Mothers who have no previous history of abortion had the odds of 2.79 to be victims of psychological abuse by their spouse during pregnancy compared with those who have abortion history (AOR: 2.79, 95%CI: 1.13-6.89).

We found no evidence that the association between psychological spousal abuse and marital status, age of partner, age of women, educational status of women, educational status of partner, alcohol consumption by the partner, and other reproductive and socio-cultural related variables.

Table 2: Bivariable and multivariable analysis of factors associated with psychological spousal abuse among pregnant women in Debre Markos town, North-west, Ethiopia, March to April (n=409)

Variables		Spousal sychological Violence		COR (95% CI)	AOR (95% CI)
		Yes	No		
Women's age	**17-26 years**	**46**	**167**	**0.46(0.30-0.72)**	**0.24(0.11-0.50)****
	27-46 years	**73**	**123**	**1**	**1**
Age of partner	20-31 years	57	151	0.85(0.55-1.29)	2.68(1.25-5.75)
	32-60 years	62	139	1	1
Monthly income	<2500 ETB	63	134	1.31(0.85-2.01)	0.91(0.53-1.57)
	≥2500ETB	56	156	1	1
Place of residence	Rural	55	61	3.23(2.04-5.01)	2.87(1.11-7.39)*
	Urban	64	229	1	1
Gravidity	Primigravida	47	147	0.64(0.41-0.98	0.76(0.14-4.13
	Multigravida	72	143	1	1
Parity	Nulliparous	49	156	0.60(0.39-0.93)	1.21(0.23-6.46)
	Multiparous	70	134	1	1
Educational status of women	Uneducated	51	77	2.08(1.33-3.24)	0.91(0.45-1.86)
	Educated	68	213	1	1
Educational status of partner	Uneducated	50	73	2.15(1.37-3.38)	1.06(0.54-2.07)
	Educated	69	217	1	1
History of abortion	Yes	8	34	1	1
	No	111	256	1.84(0.83-4.11)	2.79(1.13-6.89)*
Occupation of women	House wife	47	141	1	1
	Farmer	39	36	3.25(1.86-5.69)	2.44(0.98-6.06)
	Private and Gov't employe	22	75	0.88(0.49-1.57)	0.88(0.44-1.77)
	Merchant	8	27	0.89(0.38-2.09)	0.87(0.33-2.26)
Occupational of partner	Farmer	48	59	1	1
	Private employee	20	73	0.34(0.18-0.63)	0.79(0.16-3.98)
	Gov't employee	27	95	0.35(0.19-0.62)	1.19(.28-5.06)
	Merchant	19	47	0.49(0.26-0.96)	1.16(0.26-5.26)
Had another child	Yes	22	41	1.38(0.78-2.43)	1.16(0.59-2.27)
	No	97	249	1	1
The desire for pregnancy by women	Yes	96	253	1	1
	No	23	37	1.64(0.93-2.90)	3.55(1.08-11.66)*
The desire of pregnancy by partner	Yes	98	254	0.66(0.37-1.19)	1.87(0.57-6.15)
	No	21	36	1	1

1=Reference group *p<0.05, **p≤0.001, Hosmer and Lemeshow goodness of fit (p=0.46),

DISCUSSION

Intimate partner violence (IPV) is one of the most common forms of violence against women and includes physical, sexual, and emotional/psychological abuse and controlling behavior by an intimate partner. The overwhelming global burden of IPV is endured by women, and the most common perpetrators of violence against women are male intimate partners or ex-partners [33]. Psychological spousal abuse is the major predictor of posttraumatic stress disorder in abused women [34], but very little is known about it particularly, in Ethiopia. To the best of our knowledge, this study is the first of its kind to exclusively quantify the magnitude of psychological spousal abuse along with the associated factors in the country. As such, we conducted this study to determine the magnitude of psychological spousal abuse among pregnant women and to identify the factors associated with it. Our study found that 29.1 % [95%CI: 24.7, 33.7] pregnant women were psychologically abused by their spouses during pregnancy. This finding supports prior works in psychological spousal abuse which reported 33.0% in southeast Ethiopia, [35], 29.0% in Kisumu district, Kenya (36) and lower findings also reported from Hadiya Zone, Southern Ethiopia, 20.0% [37], Tigray region, Ethiopia, 23 % [38], Western Ethiopia, 16.3% [39] and Rwanda, 17%[40]. This variation among reports might be due to differences in background characteristics of the study participants, timing of data collection, study design, availability, and accessibility of information on sexual and reproductive health issues including gender-based issues, cultures of the respondents, geographical areas. The difference in the prevalence of psychological spousal abuse during pregnancy between this study and a study carried out in Rwanda could be due to the difference in the educational level of study subjects. For instance, participants in Rwandan study were mostly of low socioeconomic status, had not completed primary school whereas, in our cases, most had attained primary school and above. Apart from this, there is cultural difference between Rwandan and Ethiopian women. However, the findings of our study on the magnitude of psychological spousal abuse during pregnancy was lower than a study conducted in Sao Luis, Brazil, 41.6%[41]. This can be possibly explained by that the study in Brazil includes participants who were at the time of child birth and post-partum period, which could probably increase the magnitude of psychological intimate partner violence by providing the chance to identify the abuse during the entire course of pregnancy [42].

Turning to the associated factors, a significant association was observed with women's age. It was showed that being in the age class of 17-26 years decreases the odds by 76 % to be victims of psychological spousal abuse compared to those women who are in the age group of 27-46 years (AOR: 0.24, 95%CI: 0.11-0.50). Similar earlier results were also reported [43, 44]. This may be owing to the probability that younger women may be more likely to be educated about women's rights thereby lessening the likelihood of abuse by their spouse. Moreover, psychological spousal abuse may increase due to spousal disharmony resulted from the burden of large family size and economic crisis which may also be provoked by an increase in the age of women.

Unsurprisingly, the residence was found to be an important predictor in affecting the magnitude of psychological spousal abuse during pregnancy. It revealed that women from rural areas were 2.95 times (AOR= 2.95, 95%CI: 1.11-7.86) more likely to have experienced psychological spousal abuse during pregnancy compared to urban women. This result is congruent with other studies conducted earlier [45, 46]. A plausible explanation is that those women who participated in the study from rural residences may not have accessed different information that deals with gender equality, women's rights, and violence reduction strategies.

Our analysis indicated that partners' age was another determinant factor that positively affects the experience of psychological spousal abuse during pregnancy. Partners' who belong to the age interval of 20-31 years had the odds of 2.68 to commit psychological abuse than those who are in the age class of 32-60 years (AOR: 2.68, 95%CI: 1.25-5.75). Being young in age is one of most consistent factors associated with a man's increased likelihood of committing abuse against his partner[33, 47]. This might be because young partners are highly likely to engage in crime and violent acts which peaks in adolescent[48].

The odds of psychological spousal abuse among pregnant women who did not desire the current pregnancy was 3.55 (95%CI: 1.08-11.66) times higher

compared with those who desire the pregnancy. The risk of psychological spousal abuse is higher if women reporting an unintended pregnancy and have been demonstrated in prior studies (49). This may be due to the fear of taking the responsibility to care for both the mother and the newly coming child [45].

Once more, interestingly, this study yielded that women who have no previous history of abortion had the odds of 2.79 to be victims of psychological abuse by their spouse during pregnancy compared with those who have abortion history (AOR: 2.79, 95%CI: 1.13-6.89). There is no study consistent with this finding as per our review. This could be explained by the assumption that if the woman has a prior history of abortion the husband will have a feeling to support and care for his wife other than abusing her because of the fear in the reoccurrence of pregnancy loss.

Limitations of the study

We did not follow up on the full course of the pregnancy, which may tend to lower the magnitude.

Implications of the study

The evidence from this finding calls upon policymakers and program managers to play a role in reducing the problem and its bad consequences through integrating the screening of violence in reproductive health services, community mobilization, providing survivor services including psychosocial counseling and support from friends and family can help them to move forward.

CONCLUSIONS

The result of this study indicated that psychological spousal abuse during pregnancy is quite common in Ethiopian women. Residence, age of partner, mother's age, unwanted pregnancy, and history of abortion were significantly associated factors with the experience of psychological spousal abuse during pregnancy period. Therefore, based on our findings, we recommend that by taking into account the multitude of negative consequences of psychological violence on birth outcomes, immense efforts have to be made to mitigate the problem through designing effective and appropriate measures like provision of famly planning to prevent unwanted pregnancy.

ABBREVIATIONS

ANC: Antenatal Care; AOR: Adjusted Odds Ratio; CI: Confidence Interval; EPI: Epidemiological Information; IPV: Intimate Partner Violence; OR: Odds Ratio; SPSS: Statistical Package for Social Science; WHO: World Health Organization.

Declarations

ACKNOWLEDGMENTS

We are highly indebted to Debre Markos town health office for permitting to conduct the study and providing the necessary preliminary information while conducting this study. We would also like to extend our appreciation to the study participants, supervisors and data collectors.

Funding

The author(s) received no specific funding for this work.

Availability of data and materials

The dataset analyzed during the current study available from the corresponding author on reasonable request.

Authors' contributions

ZN wrote the proposal, participated in data collection, analyzed the data, drafted the paper and prepared the manuscript, HY, FA, AG, and ZA approved the proposal with few revisions, participated in data analysis and revised subsequent drafts of the paper. All the authors read and approved the final manuscript.

Ethics approval and consent to participate

Ethical clearance and approval were obtained from the Institutional Review Board of the University of Gondar. An official letter of cooperation was written to the Debre Markos town health office. Prior to interviewing, informed verbal consent was obtained from each of the participants after clear and detailed explanation of the purpose, risks, and benefits of the study. During data collection, mothers experiencing psychological violence have received appropriate information, education and counseling. Participation was on a voluntary basis and data were kept anonymous.

Consent for publication

Not applicable

Competing interests

The authors have declared that they have no competing of interests.

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URINARY INCONTINENCE AMONG PREGNANT WOMEN FOLLOWING ANTENATAL CARE IN PUBLIC HOSPITALS OF ADDIS ABABA, ETHIOPIA

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ABSTRACT

INTRODUCTION: Urinary incontinence (UI) is a common but under-reported problem among women. Information on the prevalence and health burden of UI in Ethiopia is unknown. This study aimed to establish the prevalence of urinary incontinence and its determinants among pregnant women in Addis Ababa, Ethiopia.

METHODS: A facility-based cross-sectional study was used and the data was collected from June to July 2016 using the International Consultation on Incontinence Criteria through an exit interview. Three hundred thirty three consenting pregnant women aged 15 to 42 years attending antenatal care (ANC) at tertiary hospitals in Addis Ababa, Ethiopia were interviewed. Data were entered and cleaned using Epi Info and analyzed using SPSS version 20.0 statistical software. Initially, univariate and bivariate analysis were used followed by multivariate logistic regression on socio-demographic, comorbidities, mode of deliveries, and parity.

RESULTS: The prevalence of urinary incontinence was 24.6% (n=82) among the pregnant women. Thirty-eight (11.4%) participants had reported stress urinary incontinence (SUI) and 15 (4.5%) urge urinary incontinence (UUI), while 29(8.7%) had mixed incontinence (MUI) during the preceding month of the interview. Seven women (8%) had moderate to severe symptoms. Of the 82 patients with incontinence, 18(21.9%) consulted a healthcare professional: 9(23.7%) of the women who consulted had SUI, while 3(20%) and 6(20.7%) of them had UUI and MUI, respectively. Higher proportion of women with severity symptoms sought treatment: 83% of the treatment seekers had weekly or daily leaking whereas75% of non-treatment seekers leaked similar frequency. The most common reason for not seeking help was that urinary leakage was considered to be normal and common during pregnancy. Pregnant women who delivered by cesarean section had lower odds of having urinary incontinence (AOR: 0.46; 95% CI: 0.22, 0.98) than those women who delivered vaginally.

CONCLUSIONS: The prevalence of urinary incontinence during pregnancy in our facility based study is as common as reported in other parts of the world. Incorporating information on incontinence symptoms (especially for those delivered vaginal) needs to be considered.

KEY WORDS: Lower urinary tract symptoms, urinary incontinence, pregnancy, ICI-Questionnaire, Ethiopia

(The Ethiopian Journal of Reproductive Health; 2020; 12;41-50)

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INTRODUCTION

Urinary incontinence (UI) is a common but under-reported problem among women globally, with a reported prevalence in pregnancy of 32%-64% among all women[1]. Data from a large number of cross-sectional and cohort studies indicate that UI in women is highly prevalent during pregnancy. More than 50% of all pregnant women experience UI when running, jumping, coughing, or laughing. Stress UI is the most common symptom of UI in association with pregnancy[1]. Wide range of prevalence is reported mainly due to varied definitions of incontinence, study design (i.e., selection bias), the dropout/refusal rate, and the method of data collection[2].

In 2002, the International Continence Society (ICS), in its efforts to clarify and unify the language used in studies of lower urinary tract complaints, updated the nomenclature used with lower urinary tract dysfunction. This has made epidemiological studies easier and facilitated the comparison and pooling of studies carried out in different settings. According to this update, lower urinary tract dysfunctions could be considered a symptom, a sign, a urodynamic finding, or as a condition.[3]

Pregnancy is one of the main risk factors for the development of SUI in young women[4]. The effect of pregnancy on lower urinary symptoms in women has for a long time been of interest to researchers. The anatomical and physiological changes affecting the lower urinary tract in pregnancy as well as the hormonal milieu of pregnancy have been postulated to underlie the pathogenesis of lower urinary symptoms in pregnancy[5, 6]. Elevated levels of estrogen and progesterone are known to make the bladder more squamous. The detrusor muscle undergoes hypertrophy and hypotonic with increased bladder capacity[7]. The bladder also undergoes anatomical changes favorable to lower urinary tract symptoms. Several studies have linked these anatomical changes to pregnancy with lower urinary tract symptoms. In a study of 123 pregnant women, the mean daily urine output and the mean number of voids per day increased with gestational age and declined after delivery, while episodes of urinary incontinence peaked in the third trimester of pregnancy and improved after birth[5, 8-10].

The characterization of UI occurs according to the events that lead to the loss of urine, being classified as stress UI (urine leakage simultaneous with effort, physical exercise, coughing or sneezing), urge UI (involuntary loss of urine accompanied or immediately preceded by a sudden and uncontrollable urge to urinate that is difficult to postpone) or mixed (when there are signs and symptoms of the two types reported above[1, 11-14]. UI negatively affects the quality of life due to feelings of embarrassment, fear of odor, and distress leading women to distance themselves from social and recreational activities.[17]

This study aimed to study the prevalence of urinary symptoms in women who had access to ANC services and identified the level of help-seeking for urinary symptoms in this population. The study identified the characteristics of incontinence in terms of the prevalence of different types of incontinence, factors contributing to urinary incontinence.

METHOD

This is a facility-based cross-sectional descriptive study that was conducted at two teaching hospitals Tikur Anbessa Specialized Hospital and Gandhi Memorial Hospital in Addis Ababa, Ethiopia. The study population was pregnant women who had ANC follow-up at these two hospitals. Pregnant women who were competent to give informed consent and willing to participate were included in the study. The exclusion criterion was pregnant women who were severely sick, in labor or unable to give consent, and known to have mental retardation, spinal cord injuries, or psychiatric patients and subjects previously diagnosed to have obstetric fistulas.

A single population proportion formula was used to calculate the sample size using the prevalence of UI in pregnancy as 27% (P=0.27), level of significance was 5%, Z=confidence level at 95% and absolute precision or margin of error was 5% (α=0.05).

Data were collected from 333 pregnant women from June to July 2016. Face-to-face interviews were conducted using a structured questionnaire, ICIQ-UI Short Form UK,

which was developed by an ICI-Questionnaire Advisory Board. This questionnaire has proven its validity and reliability and has been published as per the standard of the International Consultation on Incontinence, which was taken for this research to address questions related to urinary symptoms. Its English version was translated into Amharic (national language) and back translation to check for consistency[18].

The study participants were interviewed at the exit after completing their clinic visit. The data were collected by four midwives. Training was given to data collectors on the objective of the study, confidentiality of information, and techniques of the interview. The principal investigator supervised the data collection activity. Questionnaires were pre-tested before the start of the actual study.

Data entry and cleaning using statistical software for epidemiology EPI-Info version 3.5.4 was made and exported to SPSS statistics version 20 for analysis. Univariate and bivariate analyses such as proportions, percentages, ratios, frequency distributions, appropriate, descriptive statistics were used to describe the study findings. Summary tables were used to describe the data to assist data presentation. Results were presented as odds ratio (OR), adjusted OR (aOR), 95% CI, and probability value and are shown in the effect plots. Statistical significance was set at P<.05.

Ethical clearance was obtained from the Research and Publication Committee of the Department of Gynecology and Obstetrics of the College of Health Sciences, Addis Ababa University. Permission was obtained from the hospital medical director and department of gynecology and obstetrics. Participation in the study was completely voluntary and informed consent was acquired from every woman before participation. The study did not involve vulnerable populations.

RESULTS

A total of 333 eligible pregnant women participated in the present study. The age range of participants was 15-42 years. The mean age of respondents was 28.2(+4.3SD). The majority, 294(88.3%), were from Addis Ababa and 39(11.7%) from outside the city.

Three hundred nine (92.8%) women were married, and two-thirds of the participants 208(62.5%) were orthodox Christians. The majority 153(45.9%) of the participants were from the Amhara ethnic group. Two hundred twenty (66%) mothers attended at least high school and the rest attended elementary school or less. Regarding the occupational status of the mothers, 163(48.9%) were housewives and 138(44.4%) were employed.

In this study, a total of sixty-five (19.5%) pregnant women were found to have currently had a medical illness, of which 31(32.3%) had hypertension, 10(15.4%) were diabetics, 9(13.9%) were cardiac patients. Two cases of asthma and two cases of epilepsy were found.

Of the three hundred thirty-three pregnant women, 327(98.2%) were third-trimester pregnancies; the mean GA was 35.5WKS (4.1SD) and the ranges were between 27 and 42 weeks of GA.

Among all the respondents, 152(45.6%) were nulliparous, 101(30.3%) were Para one, 77(23.1%) were Para two, and above, only three cases of Para five were found (Table 1).

Of the total interviewed, 82(24.6%) reported urinary incontinence. Thirty-eight (11.4%) reported stress urinary incontinence, 15(4.5%) reported urge incontinence and 29(8.7%) reported mixed incontinence during the preceding month (of whom 8% had moderate or severe symptoms). The percentage was higher for those with UI living outside the city 33.3% when compared to 23.5% who lived in. There were a total of 65 cases out of 333 interviewees had a medical illness. Of these, there were 22 cases reported having UI, which was 33.8% of women with illness but contributed only 6.6% to the total. Of the 333 women, 152 were nulliparous and 29(19.1%) had UI, 181 were multiparous and 53(29.3%) had UI. 120 of participants had a previous vaginal delivery; of these, 41(34.2%) had UI, 61 cases reported having an only cesarean delivery and of those, 12(19.7%) had UI (Table 1).

Of the 82 women with UI, only 18(21.9%) sought professional help. Of these, 9(23.7%) women with SUI, 3(20%) with UUI, and 6(20.7%) with MUI had sought help for urinary symptoms. The most common reasons for seeking help were that they feared that the problem

would worsen and that they accepted the problem as a medical illness.

The prevalence of help-seeking remained low. Approximately one-third or less of the women in the different symptom groups had sought help. Besides, many patients with relatively severe symptoms still do not seek help for urinary incontinence. An overall of about 70% of those with moderate or severe urinary incontinence and nearly two-thirds (64%) of those with daily episodes of urinary incontinence do not seek help. We also found that 52.4%(43 cases) of pregnant women in this study thought that leakage of urine was part of the normal pregnancy process, and as a result, did not seek medical help.

Table 1: Distribution of pregnant women by factors associated with urinary incontinence in Tikur Anbessa & Gandhi hospitals in Addis Ababa, ETHIOPIA, 2016.

Characteristics (N333)	(n)	Yes	Yes %	No	No %	Total %
Age						
15-24	63	10	15.9	53	84.1	18.9
25-34	238	65	27.3	173	72.7	71.5
35-44	32	7	21.9	25	78.1	9.6
Total	333	82	24.6	251	75.4	100.0
Address						
Addis Ababa	294	69	23.5	225	76.5	88.3
Out of Addis Ababa	39	13	33.3	26	66.7	11.7
Total	333	82	24.6	251	75.4	100.0
Education level						
Tertiary education	79	20	25.3	59	74.7	23.7
High school	141	36	25.5	105	74.5	42.3
Primary education	83	23	27.7	60	72.3	24.9
Able to read and write	14	1	7.1	13	92.9	4.2
Unable to read and write	16	2	12.5	14	87.5	4.8
Total	333	82	24.6	251	75.4	100.0
Marital Status						
Married	309	77	24.9	232	75.1	92.8
Others	24	5	20.8	19	79.2	7.2
Total	333	82	24.6	251	75.4	100.0
Medical illness						
Yes	65	22	33.8	43	66.2	19.5
No	268	60	22.4	208	77.6	80.5
Total	333	82	24.6	251	75.4	100.0
Parity of Women						
Nullparus	152	29	19.1	123	80.9	45.6
Multiparus	181	53	29.3	128	70.7	54.4
Total	333	82	24.6	251	75.4	100.0
Mode of Delivery						
Ever had vaginal delivery	120	41	34.2	79	65.8	36.0
CS only	61	12	19.7	49	80.3	18.3
No delivery	152	29	19.1	277	182.2	45.6
Total	333	82	24.6	251	75.4	100.0

Figure 1 shows the prevalence of urinary incontinence among pregnant women out of 333 respondents, 82(24.6%) reported urinary incontinence, of which 38(11.4%) had SUI, 29(8.7%) had MUI, 15, and (4.5%) had UUI.

Analyzing the associated factors for UI, multiparous women were found to have 1.76(95% CI:1.05-2.94) with higher odds of having urinary incontinence than those nulliparous. Regarding the mode of delivery, the pregnant women who had vaginal delivery had a 2.12: 95%CI(1.02;4.42) odds of urinary incontinence than those who delivered with cesarean section.**(Table2)**

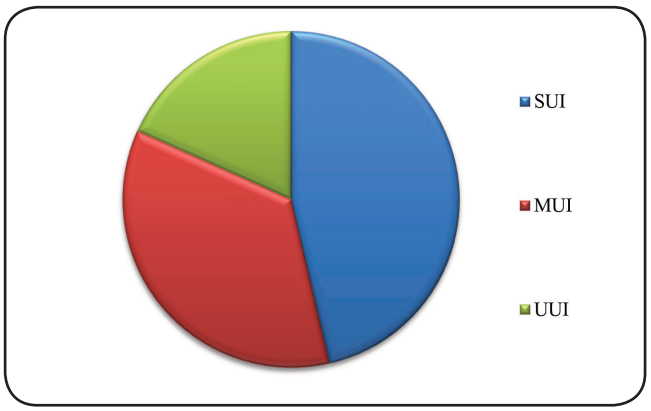

Figure 1: Prevalence (%) of types of UI among pregnant women (n=333)

Table 2. Binary regressions with factors associated with urinary incontinence among pregnant women in Tikur Anbessa & Gandhi hospitals in Addis Ababa, ETHIOPIA, 2016

Urinary incontinence Characteristics (n=333)	Yes N (%)	No N (%)	COR(95%CI)
Age			
15-24	10(15.9)	53 (84.1)	0.67(0.23, 1.98)
25-34	65(27.3)	173(72.7)	1.34(0.55, 3.25)
35-44	7(21.9)	25(78.1)	1.00
Address			
Addis Ababa	69(23.5)	225(76.5)	0.61(0.30, 1.26)
Out of Addis Ababa	13(33.3)	26(66.7)	1.00
Education level			
Tertiary education	20(25.3	59(74.7)	2.37(0.50, 11.36)
High School	36(25.5)	105(74.5)	2.40(0.52, 11.08)
Primary education	23(27.7)	60(72.3)	2.68(0.57, 12.74)
Able to read and write	1(7.1)	13(92.9)	0.54(0.43, 6.67)
Unable to read and write	2(12.5)	14(87.5)	1.00
Marital Status			
Married	77(24.9)	232(75.1)	1.00
Others	5(20.8)	19(79.2)	0.79(0.27, 2.20)
Medical illness			
Yes	22(33.8)	43(66.2)	1.00.00
No	60(22.4)	208(77.6)	0.56(0.31, 1.02)
Parity of Women			
Nulliparus	29(19.1)	123(80.9)	1.00
Multiparus	53(29.4)	128(70.6)	0.032 P. value 1.76(1.05, 2.94)*
Mode of Delivery			
Ever had vaginal delivery	41(34.2)	79(65.8)	0.045 P. value 2.12 (1.02, 4.42)*
CS only	12(19.7)	49(80.3)	1.00

* Statistical significance at a significance level of 0.05.

To adjust for possible confounders, those variables with a cutoff value of p<0.5 in binary logistic regression (parity, mode of delivery, marital status, and address) were further analyzed in multivariate logistic regressions. Women having vaginal delivery were more likely to have urinary incontinence than those who delivered with cesarean section AOR:0.46:95% CI(0.22,0.98). **(Table3)**

Table3: Multivariable logistic regression analysis of factors associated with urinary incontinence among pregnant women in Tikur Anbessa & Gandhi hospitals in Addis Ababa, ETHIOPIA, 2016 (n=333)

Urinary incontinence Characteristics (n=333)	Yes N (%)	No N (%)	COR(95%CI)	AOR (95%CI)
Marital Status				
Married	77(24.9)	232(75.1)	1.00	
Others	5(20.8)	19(79.2)	0.79(0.27, 2.20)	0.00(00,-)
Medical illness				
Yes	22(33.8)	43(66.2)	1.00	1.00
No	60(22.4)	208(77.6)	0.56(0.31, 1.02)	0.49 (0.22, 1.10)
Parity of Women				
Nullparus	29(19.1)	123(80.9)	0.57(0.34, 0.95)*	0.00(0.00, -)
Multiparus	53(29.3)	128(70.7)	1.00	
Mode of Delivery				
Ever had vaginal delivery	41 (34.2)	79(65.8)	1.00	1.00
CS only	12(19.7)	49(80.3)	0.47(0.23, 0.99)	0.46(0.22, 0.98) **

** Statistically significant at a significance level of 0.05

Of the 82 women with UI, only 18(21.9%) sought professional help. The most common reasons for seeking help were that they did not want the problem to worsen and consider the problem as a medical illness

DISCUSSIONS

This study showed a prevalence of only a quarter (24.6%) with urinary incontinence during pregnancy with access to ANC care services. The majority of patients had stress symptoms either alone (11.4%) or in combination with urge symptoms (8.7%). This result is higher than that of a study done at the University of Gondar Hospital, North West Ethiopia, which showed a prevalence of 11.4% UI among pregnant women, following antenatal care,[19] and is comparable to the study conducted by Zaria, Nigeria, which showed the prevalence rate of all types of urinary incontinence during pregnancy of 21.1%, with stress UI being responsible for more than half of the cases of incontinence reported[20]. This is similar to studies done in India, 21.8%[21], and in Ladysmith, KwaZulu-Natal, South Africa, 35.4%.[11]

A study on the prevalence of urinary incontinence in pregnant women among a multi-ethnic population resident in Norway showed a similar finding of prevalence rates of UI at 28 weeks of gestation was 26% for women of African origin, 36% for women of Middle Eastern origin, 40% for women of East Asian origin, 43% for women of South Asian origin and 45% for women of European/North American origin.[22]

The study finding is lower in studies that were carried out in North America, where the prevalence was reported to be 52%.[23] In Europe, the prevalence of UI ranged from 14.1 to 68.8% and increased with increasing age.[23] The wide range of reports maybe because the prevalence of UI in pregnancy depends on risk factors: maternal age ≥35 years and initial body mass index, a family history of UI and parity, and race. Black women are at less risk of having a UI than Hispanic and white women[24]. A study that compared the prevalence of urinary incontinence by type of race found out that prevalence of incontinence

was highest among Hispanic women, followed by white, black, and Asian-American women (36%, 30%, 25%, and 19%, respectively, p>0.001).[25]

The definition of incontinence varies between studies. Those using definitions of any incontinence reported a prevalence to be 25% or more, whereas those using more severe definitions reported lower prevalence.[26] However, it was expected that the prevalence rate in this population would be higher than that in a more general community sample, as the study sample focuses on pregnant women accessing tertiary care, some of whom are likely to have additional comorbidities by being attendees in tertiary care. /The distribution of types of symptoms also varies across studies, but it is a fairly consistent finding that SUI is the most common type of symptom, followed by MUI. The percentage of urinary incontinence by type found in this study was 46.3% for SUI, 35.4% for MUI, and 18.3% for UUI. This is similar to the Gondar study which showed The proportion of stress UI was 58%, mixed UI 24.5%, and urgency UI 12.5%.[19]

The questionnaire used in this study had eight items identifying SUI compared with one item to measure UUI. Therefore, there is more opportunity to identify women with SUI, which may have exaggerated the differential in these proportions to a certain extent.

In this study, a significant association was found between having previous vaginal delivery were two-fold more likely to have UI than women with previous cesarean section delivery. Moreover, those multiparas were more likely to have a UI compared to the nulliparous population. This is not a new finding compared with previous studies.[27-29]

Although they were not significant in the present study, it was observed an increased prevalence of UI in those with medical illnesses. We also observed that current UI prevalence increases with age, less education, location, medical illness, diabetes, and hypertensive women; this is similar to studies conducted in other settings.[27-29]

Many patients with relatively severe symptoms still do not seek help for urinary incontinence. Overall, about 70% of those with moderate or severe urinary incontinence and nearly two-thirds (64%) of those with daily episodes of urinary incontinence do not seek help. Factors that might explain this difference may include the degree to which health care professionals screen for different types of urinary incontinence and the range and type of treatment options available to urinary incontinence sufferers, awareness of which may prompt consulting a health care professional.

This is similar to the French study, which found that a large majority of women with UI(60.3%) had never reported their symptoms to a physician[30].

In another study done in four European countries to see help-seeking behavior, about a quarter of women with urinary incontinence (Spain(24%), the UK(25%), France(33%) and Germany (40%)), consulted a doctor about it.[31]

Comparable to the study done in KwaZulu-Natal in South Africa, that reported help-seeking behavior for around 25.7% of incontinent women. The most common reason for seeking help was that the problem was getting worse.[11]

This study also showed factors determining patient treatment-seeking behavior. Treatment seeking was related to the type of urinary incontinence. While 40% of those with moderate or severe UUI seek help (based on self-reported severity), only 12.5% of those with moderate to severe SUI do so.

This finding is in agreement with the French study that found overall, a negative impact of UI using the highest mean ICIQ-SF score was reported for women with mixed UI whereas, urge UI and stress UI seem to have equivalent effects, and only mixed UI has a larger impact on the quality of life.[30]

This demonstrates that although the present sample was accessing ANC care services, they were no more likely to consult about their symptoms than a general population sample. It can be assumed, therefore, that there are high levels of unmet needs in women with UI.

CONCLUSION

The prevalence of urinary Incontinence was 24.6%. The majority of 11.4% reported stress urinary incontinence only, 4.5% reported urge incontinence only and 8.7% reported mixed incontinence during the preceding

month. Eight percent had moderate or severe symptoms. Women with previous vaginal delivery were two-fold more likely to have UI than those with previous cesarean section delivery. Multiparous women were found to have 1.76 at higher odds of having urinary incontinence than that nulliparous.

Hence, the protective effect of CS in women after birth also persists and should, therefore, contribute to maintaining continence and postponing the onset of UI.

There was poor treatment-seeking behavior; only 21.9% of pregnant women with UI sought help. About 70% of those with moderate or severe urinary incontinence and nearly two-thirds (64%) of those with daily episodes of urinary incontinence do not seek help.

Although this occurrence is low when compared to other settings, patient treatment-seeking behavior is so low that it is worthwhile to invest in creating awareness about its occurrence and enhancing the competency of providers to recognize these symptoms, counsel, and offer treatments.

LIMITATIONS AND STRENGTHS OF THE STUDY

The reliance on self-report of UI rather than objective assessments could be some of the limitations of this study, which might have led to under-reporting of UI.

ACKNOWLEDGMENT

We would like to extend our acknowledgment to the data collectors, supervisors, and study participants. Our special thanks go to all staff in selected hospitals, especially GMH OPD nurses and medical directors.

FUNDING

None

COMPETING INTEREST

All authors declare that they have no competing interests.

AUTHORS AND THEIR CONTRIBUTIONS

GK designed and implemented the study. This included seeking IRB approval, collecting data, performing data analysis, and cleaning data. EK reviewed the reference articles and wrote the final manuscript.

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EFFECT OF COVID-19 PANDEMIC ON SAFE ABORTION AND CONTRACEPTIVE SERVICES AND MITIGATION MEASURES: A CASE STUDY FROM A TERTIARY FACILITY IN ETHIOPIA

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ABSTRACT

BACKGROUND: To protect the gains made in sexual and reproductive health in Ethiopia over the past several decades, care for childbearing women and newborn infants needs to continue during the pandemic. The provision of safe abortion and contraceptive services remains critical. When staff and services are under extreme stress there is a real risk of increasing avoidable harm. This case study aims to determine the effect of COVID-19 on contraception and safe abortion care services at a tertiary facility in Ethiopia.

METHOD AND MATERIALS: Data on safe abortion and contraception services were collected from service delivery units from March through May 2020. For comparison, and due to seasonal variation in caseload throughout the year, data were pulled from March through May 2019.

RESULTS: Deliveries and immediate postpartum family planning have decreased by 27.6% and 66.7% respectively during the pandemic compared to the same months last year. Overall, the number of clients presenting for family planning was reduced by 27%. Safe abortion services and comprehensive abortion care were reduced by 16.4% and 20.31% respectively. Likewise, family planning service utilization among safe abortion and post-abortion clients were reduced by 40.6%, and 39.7% respectively.

CONCLUSION AND RECOMMENDATIONS: The COVID-19 pandemic is impairing safe abortion and contraception services. Both contraception and abortion services have decreased following the COVID-19 pandemic compared to the same months of last year. These underscore that the Ethiopia Ministry of Health (FoH) and their partners (donors and non-government organizations) must take swift action, including prioritizing abortion care and contraceptive services during the pandemic. Additionally, health care providers should be reoriented, resources and staff must be maintained to ensure continuation of the service amid COVID-19 pandemic. Innovative methods, such as telehealth (voice or video calls), self-care interventions, and utilization of health extension workers, need to be maximized to maintain and increase access to these essential health services.

PLAIN ENGLISH SUMMARY: This a comparative case study conducted at a tertiary facility in Ethiopia to determine the effect of COVID-19 on safe abortion and contraception service. We collected data on safe abortion and contraception services from service delivery units from March through May 2020 and compared it with data from March through May 2019. There is a reduction in deliveries, safe abortion care, and all methods of contraception during three months of the COVID-19 pandemic compared to the same months of the last year. Therefore, government and partner organizations must prioritize contraception and safe abortion services. Besides, strategies to maintain and increase access to these essential health services such as self-care interventions, and utilization of health extension workers, need to be maximized.

KEYWORDS: COVID-19, sexual and reproductive health, contraception, safe abortion, case study

(The Ethiopian Journal of Reproductive Health; 2020; 12;51-57)

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INTRODUCTION

Ethiopia has made tremendous progress in sexual and reproductive health (SRH) in the past two decades, especially in reducing maternal mortality and morbidity. Ethiopia's dedication to reducing maternal mortality is exemplary. The 2016 EDHS (Ethiopian Demographic Health Survey) showed that the pregnancy related maternal mortality ratio of Ethiopia was 412 per 100,000 live births, while 2000, 2005 and 2011 EDHS reported maternal mortality ratio was 871/100,000, 673/100,000 and 676/ 100,000 live births respectively [1-4]. To increase access, all maternity services including antenatal care, labor and delivery, postnatal care, family planning, and post-abortion care were provided free of charge at public hospitals and health centers. In Ethiopia, primary health care facilities provide all types of family planning methods and first-trimester abortion services whereas second-trimester abortion services are provided at secondary and tertiary health care facilities. The tremendous healthcare burden caused by the COVID-19 outbreak is jeopardizing routine service delivery and undermining other health priorities. United Nations Population Fund (UNFPA) recently stated that Ethiopia's midwives grapple with the COVID-19 while ensuring safe delivery [5]. Health workers said to Voice of America that COVID-19 travel restrictions in Ethiopia are forcing pregnant women to give birth at home [6]. The aim of this case study is therefore to determine the effect of COVID-19 on contraception and safe abortion care services at a tertiary facility in Ethiopia.

METHOD

This is a comparative case study of safe abortion and contraception services amid the COVID-19 pandemic at Saint Paul's Hospital Millennium Medical College (SPHMMC) in Addis Ababa, Ethiopia. SPHMMC is a tertiary teaching and referral hospital. Family planning and abortion care are among the service delivery areas which the hospital continued to provide during COVID-19 pandemic. These services are provided at a dedicated unit called the MICHU clinic. Both abortion care and family planning care are provided in this unit. The first case of COVID-19 was reported in Ethiopia on March 13, 2020. Due to seasonal variation in caseload throughout the year, a comparison of three months (March-May 2020) was made with the same period in the preceding year (March-May 2019). The family planning unit registry was used to collect all the necessary information on abortion and family planning service provision. Both interval and post-abortion family planning were assessed. For data regarding delivery and postpartum family planning the data registry of the labor and delivery unit was used. Comparisons are reported as percentage differences.

Operational definitions

Safe abortion care (SAC): abortion care provided during an induced abortion.

Post abortion care (PAC): abortion care provided during a spontaneous abortion.

Interval family planning: family planning service not related to abortion and delivery.

Post-abortion family planning: family planning services provided during an abortion, both safe abortion and comprehensive abortion care.

Immediate postpartum family planning: family planning services provided at the time of delivery or before discharge from the hospital.

RESULTS

Three months data (March-May) from 2019 and 2020 were collected and compared. Safe abortion and post-abortion care services during three months of the pandemic were reduced by 16.4% and 20.31% respectively (**Table 1**).

Table 1: Safe and post-abortion care service.

Year/month	Safe abortion care (SAC) (N)	Post abortion (N) care (PAC)
Mar-May 201	323	507
Mar-May 2020	270	404
% reduction	16.40	20.31

Clients visiting MICHU clinic for interval family planning were reduced by 27% during the three months

of the pandemic. Family planning service utilization among safe abortion and post-abortion clients were reduced by 40.6%, and 39.7% **(Table 2)**.

Table 2: Interval and post-abortion family planning uptake

Year/month	FP provision at MICHU clinic (N)	FP among SAC	FP among PAC
Mar-May 2019	368	318 (98.4%)	456 (89.8%)
Mar-May 2020	268	189 (70%)	275 (68%)
% reduction	27.17	40.56	39.69

Deliveries and immediate postpartum family planning during three months of the COVID-19 pandemic has decreased by 27.6% and 66.7% respectively compared to the same period last year **(Table 2)**

Table 2: Family planning uptake among postpartum women

Year/Month	Number of deliveries	Immediate postpartum family planning provided
Mar-May 2019	2720	609 (22.4%)
Mar-May 2020	1970	203 (10.3%)
% reduction	27.6	66.7

There is a reduction in all methods of contraception during three months of the COVID-19 pandemic. The greatest reductions are observed for tubal ligation, IUCD, and implants, at 85.7%, 63.4%, and 40.3%, respectively.

Table 3: Distribution of family planning by method

Method type	Year/month Mar-May 2019	Mar-May 2020	% reduction
Injectables	125	90	28
COCs	62	54	12.9
IUCDs	134	49	63.4
Implants	1065	635	40.3
BTL	7	1	85.7
Others	4	1	75

DISCUSSION

There is a reduction in deliveries, safe abortion care, and all methods of contraception during three months of the COVID-19 pandemic. Number of deliveries, safe abortion, post abortion family planning and postpartum family planning reduced by 27.6%, 16.4%, 40.5% and 66.7% respectively. However, the reduction of permanent and long-term contraception methods is significantly greater than the reduction in short term contraceptive methods. Though deliveries and overall safe abortion care numbers are both decreased, there is a much more considerable reduction of postpartum and post-abortion family planning, indicating that even clients in the health facility are potentially getting suboptimal services. Postpartum and post-abortion family planning are strongly considered essential during the pandemic, especially as one can use the opportunity to provide care while the patient is already in a health facility[7-9]. At SPHMMC postpartum and post abortion family planning were highly encouraged both before and during COVID-19 pandemic. However, the mismatch in services might be because of a lack of clear information among providers that these services are essential to continue during the pandemic, diversion of equipment, and decreased staff involved in the provision of the services. Though this case study is from one center, it indirectly verifies the early estimation by Marie Stopes International (MSI) that nearly 9.5 million people across MSI service country will miss out on case if service reduction continues for three months[10].

If such disruptions in care continued unmanaged on background of already strained health care systems might result in non-pandemic-related maternal and neonatal morbidity and mortality, increased adolescent pregnancy, and other reproductive health crises as we've previously seen with other public health emergencies. Guttmacher institute published a projection of the impact of the pandemics on sexual and reproductive health (SRH) services using 2019 data on SRH services from 137 low-and middle-income countries from which Ethiopia is one[11]. According to the projection, a 10% service reduction will result in nearly 48,558,000 additional women with an unmet need for modern contraceptives and 15,401,000 additional unintended pregnancies.

The same magnitude (10%) reduction in service will also result in an estimated 1,745,000 additional women experiencing major obstetric complications resulting in 28,000 additional maternal deaths. Similarly, it will result in 2,591,000 additional newborns experiencing major complications resulting in 168,000 additional newborn deaths. Furthermore, it will result in 3,325,000 additional unsafe abortions resulting in 1,000 additional maternal deaths from unsafe abortion.

Evidence from the past Ebola virus outbreak in 2013–2016 in Western Africa showed the negative, indirect effects that such crises can have on SRH. According to an analysis of data from Sierra Leone's Health Management Information System (HMIS), decreases in maternal and newborn care due to disrupted services and fear of seeking treatment during the outbreak contributed to an estimated 3,600 maternal deaths, neonatal deaths, and stillbirth, a quantity that approaches the number of deaths directly caused by the Ebola virus in the country [12]. Evidence also shows that after the Ebola epidemic, the number of antenatal care visits and facility deliveries in Guinea had not recovered to prior levels even after six months[13]. This implies that the pandemic had sustained effects on the country's already inadequate level of care.

Several interventions have been proposed to mitigate the impact of the current pandemic on SRH services. Resources and staff must be maintained for sexual and reproductive health services. It is imperative to reorient health care providers about the essential nature of SRH services, with a special focus on postpartum and post-abortion family planning. It is also critical that innovative methods, such as telehealth (voice or video calls) be utilized to maintain these essential services for low-risk mothers to decrease the spread of COVID-19. Telemedicine and self-care early medication abortion and family planning methods should also be encouraged to increase access to care amid the pandemic[14].

Self-care early abortion and contraceptive service include remote evaluation and prescription of misoprostol with or without mifepristone, combined oral contraceptive pills, progesterone-only pills, barriers methods, and emergency contraceptive methods. Self-care family planning service includes telehealth, making contraceptives available without a prescription; decentralizing the distribution of contraceptives, and delivery of services at people's homes when possible[15]. Utilization of Health Extension Workers (HEWs) and the Women Development Army (WDA), which are already well developed in Ethiopia, can play a significant role in reaching the rural and underserved communities during the pandemic. Though self-care service protocols are very important in increasing access to services and reducing the risk of virus transmission, it should be implemented within provider and client understanding and setting context. Furthermore, public sectors, private-sector actors, and their partners should strengthen national and regional supply chains to make sexual and reproductive health medications and supplies more accessible to providers and patients during the pandemics.

CONCLUSIONS

The COVID-19 pandemic is already having adverse effects on safe abortion and contraception services. Both family planning and abortion services have dropped since the initiation of the COVID-19 pandemic. The lessons from the past Ebola outbreak and the overwhelmingly burdened healthcare system related to the COVID-19 pandemic imply that there is probable maternal morbidity and mortality that will result from the indirect impact of the pandemic in the absence of focused responses from the government to protect the gains made in sexual and reproductive health in Ethiopia over the past several decades.

This underscores that the Ministry of Health Ethiopia (FoH) and their development partners (donors and non-government organizations) should take swift action. Specifically, they should reorient health care providers about the essential and priority nature of abortion care and contraceptive services to continue during the pandemic. Additionally, resources and staff must be maintained to ensure continuation of the service. Furthermore, there is a need to adopt innovative methods, such as telehealth (voice or video calls), self-care, and utilization of health extension workers to maintain and increase access to these essential health services.

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ABBREVIATIONS

BTL-Bilateral Tubal Ligation
CAC-Comprehensive Abortion Care
COC- Combined Oral Contraception
ESOG-Ethiopian Society of Obstetrics and Gynecology
FMOH-Federal Ministry of Health Ethiopia
HEW-Health Extension Workers
HMIS- Health Management Information System
IUCD- Intrauterine device
SAC- Safe Abortion Care
SPHMMC- Saint Paul's Hospital Millennium Medical College
SRH- Sexual and Reproductive Health
WDA-Women Development Army

DECLARATIONS

Ethics approval and consent to participate
Formal ethical clearance and permission to participate is not applicable for this case study.
Consent for publication
Permission to conduct the study and publish was taken from Saint Paul's Hospital Millennium Medical College (SPHMMC) ethical review team.
Availability of data and materials
All data used in this case study were included in the manuscript.
Competing interests
The authors declare no conflict of interest in this review.
Funding
Authors did not get any funding support from any organization
Authors' contributions
All authors have read and approved the manuscript
Conceptualization: LBT, THT, FAA, MD, BA, BN, SP
Data curation: LBT, THT, FAA, MD, BA, BN, SP
Formal analysis: LBT, THT, FAA, MD, BA, BN, SP
Funding acquisition: NA.
Investigation: LBT, THT, FAA, MD, BA, BN, SP
Methodology: LBT, THT, FAA, MD, BA, BN, SP
Project administration: LBT, THT, FAA, MD, BA, BN, SP
Resources: LBT, THT, FAA, MD, BA, BN, SP
Software: LBT, THT, FAA, MD, BA, BN, SP
Supervision: LBT, THT, FAA, MD, BA, BN, SP
Validation: LBT, THT, FAA, MD, BA, BN, SP

ACKNOWLEDGMENT

We would like to thank SPHMMC staff working at the MICHU clinic for their cooperation to get the data.

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INSTRUCTION TO AUTHORS

1. Type of Articles

The Ethiopian Journal of Reproductive Health (EJRH) publishes original articles, review articles, short reports, program briefs, and commentaries on reproductive health issues in Ethiopia, and the African region. EJRH aims at creating a forum for the reproductive health community to disseminate best practices, and relevant information on reproductive health.

Original Articles: Articles reporting on original research using quantitative and/or qualitative studies could be submitted to EJRH.

Review Articles: Review articles on all aspects of reproductive health issues could be considered for publication in the EJRH.

Commentaries: Commentaries on any aspects of reproductive health in Ethiopia or the African region will be considered for publication in the EJRH.

Program Briefs: A one or two pages of description of a program run by governmental or non-governmental organizations could be submitted for publication. These briefs should give short summaries about the objectives, strategies for implementation, and expected outputs of programs that are executed by different organizations.

Short Reports: Preliminary research findings or interesting case studies could be presented in a summarized form to the journal.

2. Uniform Requirements

In order to fulfill uniform requirements for the journal, the following instructions have to be followed by authors: The manuscript should be a total of 3000 to 4000 words. Manuscript layout: Manuscripts should be written in English and typed double-spaced leaving generous margins. Pages should be consecutively numbered. The body of the manuscript should be organized under appropriate headings and sub-headings such as introduction, methods, results, discussion, acknowledgements, and references.

Title page: The title page should have title of the article; name of each author and institutional affiliation, and address of the corresponding author.

Abstracts: It should not be more than 250 words. It should summarize the background, objective, methods, major findings and conclusions.

Tables and Figures: All tables and figures should be submitted on separate sheets of paper and be clearly labeled in the order of their citation in the text. A reader should be able to read only the tables and easily understand all information without reading the text.
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ISSN: 2520-0275 (Print)
ISSN: 2520-0283 (Online)