Magnitude of Adverse Reproductive Health Outcomes and its Correlates with Gender-Based Violence among Married Women in Northwest Ethiopia.

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Abstract

Unwanted pregnancy, abortion and still birth are major sexual and reproductive health problems worldwide. This study was done to assess the magnitude of adverse reproductive health outcomes and its correlates with gender-based violence. A community based cross-sectional study was conducted on 832 married women in Debretabor town, Northwest Ethiopia, from January to June 2015. Data were collected using a standardized, interviewer administered questionnaire and analyzed by using logistic regression. Among 832 respondents, 311(37.4%) of women had experience of at least one type of adverse reproductive health outcomes in their life time, such as unwanted pregnancy (22.2%), abortion (16.8%) and still birth (5.8%). Women who experienced gender-based violence (AOR=1.28; 95%CI:1.08-1.98), Psychological violence (AOR=1.38:95%CI;1.05-2.29), Physical violence (AOR=2.48; 95%CI:1.60-3.85), Sexual violence (AOR=1.31:95%CI:1.01-1.99) were factors associated with an increased risk of adverse reproductive health outcomes. Adverse reproductive health outcome was prevalent and gender-based violence increased its risk. Improve women empowerment and awareness was recommended.

Introduction

In developing countries there are interlinked problems of unwanted pregnancy, still birth, abortion, HIV/AIDS epidemic and poverty, women and girls are found to be more vulnerable to gender-based violence. It has a greater impact on girls and women, as they are most often the survivors and suffer greater physical damage than men when victimized whether occurring in public or private life (1, 2).

Adverse reproductive health outcomes are profoundly associated with experience of violence against women. It has been linked to different health outcomes like STIs, HIV/AIDS, infertility, pelvic inflammatory disease, unsafe abortion, unwanted pregnancy and still birth. Violence during pregnancy not only affects the women but also the growing fetus and has been associated with miscarriage, still birth, premature labor and birth, fetal injury and low birth weight which is major cause of infant mortality (3)

Sexual, physical and psychological violence may contribute directly and indirectly to unwanted pregnancy, women who suffered from sexual violence during their youth may more often have

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unwanted or unintended pregnancies. It also impairs women's ability to use or negotiate to use contraceptives with a partner. Women who are coping with ongoing violence or rape may more often choose to terminate a pregnancy (4).

A study conducted in Vietnam showed that the prevalence of abortion (33.4%) (10), in India 18.3% of women have terminated a pregnancy, in Nigeria shows that abortion was prevalent among traders (32.4%) and public servants (29.4%) and in Ganji, West Ethiopia the prevalence of unintended pregnancy was 36.5% (5-7).

Data from different countries suggest that gender-based violence significantly increased the risk of adverse reproductive health outcomes among women. According to a study conducted in Colombia, 31.1% of women experienced physical abuse and 53.7% of them had unintended pregnancy. Similarly in Bogotá, 42.1% and 53.9% reported experiencing physical abuse and unintended pregnancy respectively, and physical violence has been associated with miscarriage and stillbirth in population (8, 9).

In a study conducted in Vietnam, experiences of GBV was associated with induced abortion (OR=1.6) and repeat abortion (OR=2.2). Physical violence was significantly associated with induced abortion, and repeated abortion. Abused women were more likely than non-abused women to report not using contraceptives and having an unintended pregnancy, and these factors were in turn associated with increased risk of induced abortion (10).

A study conducted in India, which women who experienced violence were more likely than those who did not experience violence to have experienced a higher number of pregnancies (AOR=1.2), ever experienced pregnancy loss (AOR=1.4), ever experienced forced termination of pregnancy (AOR = 2.4), experienced multiple forced termination of pregnancies (AOR = 2.2) (9) and another study in India showed that among women who had experienced any type of partner violence was associated with abortion (AOR=1.6), it suggested that prevention of intimate partner violence would reduce the high incidence of terminated pregnancies, thus improving maternal health in India (5).

A study conducted in Kenya, South Africa and Vietnam has demonstrated that experience of GBV was significantly associated with risk of adverse reproductive health outcomes; particularly high level of male control in a woman's current relationship is associated with risk of adverse reproductive health outcome (10, 12, 13).

In a study conducted in West Ethiopia, ever physically violated women by intimate partner were more likely to experience unintended pregnancy (OR =1.8) (7).A study conducted in Ethiopia found that among those who reported being raped 17% of them became pregnant after the rape which led to induced abortion (14).

Previous reports from Ethiopia revealed that adverse reproductive health outcomes such as unwanted pregnancy, abortion and still birth are the major causes of public health problem. However, efforts to reduce the incidence of adverse reproductive health outcomes were not successful. Therefore this study aims to assess the prevalence of adverse reproductive health outcomes and its association with gender-based violence among married women in Northwest Ethiopia.

Methodology

Study setting

A study was conducted in Debre Tabor town, which is a capital city of South Gondar Administrative Zone, Amhara regional state, Northwest Ethiopia. The town is found 99kms away from Bahir Dar City and 667 Kms away from Addis Ababa (capital of Ethiopia). According to the central statistical agency (2010), the population of Debre Tabor town is about 78,703 (Male=37,682,Female=41,021).The town has 4 kebeles , one governmental University, four colleges, one general hospital, four health centers, six health posts, ten private clinics and six pharmacy shops. The population is predominantly ‘’Amhara’ in ethnicity and Orthodox Christian.

Study design and sampling

A community based cross sectional quantitative study conducted from January to June 2015. All married women found in Debre Tabor town during data collection period were recruited as a source population for the study. The study populations were a randomly sampled married women residing in town and those who are residence for at least six months preceding the survey. A multistage random sampling technique was used to select households from community. In this study area there are four ‘’*Kebele*[3]’’. Initially two “*Kebeles*” were selected by using simple random sampling and the sample size was proportionally allocated for these *Kebeles*. Then, study participants in the households were selected within each selected *Kebeles* using the systematic random sampling technique in every 5^{th} household. Finally, one eligible respondent was selected from each household using simple random sampling. In the presence of more than one eligible respondent in the household one of them were selected by a lottery method and in the absence of eligible respondent in the given household no substitution was made. The sample size was calculated using a single population proportion formula. Since there was no previous study describing on the prevalence of adverse reproductive health outcome (unwanted pregnancy, abortion and /or still birth) among married women in study area, to get a maximum sample size we assumed 50% prevalence of adverse reproductive health outcome with 95% confidence interval, 5% degree of precision and design effect is 2. 10% was added for non response and the final calculated sample was 845. The sample size was proportional allocated to the size of the households in the two selected *kebeles*.

[3] Lowest administrative unit in the district

Measurements

Data were collected using anonymous closed ended structured questionnaire. It was adopted from WHO questionnaire developed for a multi-country study on women's health and gender-based violence and Ethiopian Demographic Health Survey (EDHS) questionnaire prepared to assessed women's health (15, 16) elsewhere to address the objectives of the study. To keep further validity and make the findings comparable measurement, it was prepared in English version and then translated into Amharic language. Ten percent of questionnaires were pre tested to check for consistency, coherence and amended accordingly.

The questionnaire contained different questions to assess the socio-demographic characteristics (age, educational status, employment status, and family income), experiences of gender-based violence in life time and in the last 12 months (psychological violence, physical violence, sexual violence) and experience of adverse reproductive health outcome of the women in their life time (unwanted pregnancy, abortion and still birth). Unintended pregnancies are pregnancies that are mistimed, unplanned or unwanted at the time of conception. Unintended pregnancy mainly results from engaging in vaginal sexual activity without the use of contraception or due to incorrect use of a contraceptive method, but may also arise from the failure of the contraception method when used correctly to prevent pregnancy. Abortion is the termination or initiation of termination of pregnancy before reaching viability (before 20weeks or <500grams according to WHO or before 28 weeks of gestation or less than 1kg fetal weight in Ethiopia and UK) (17). Stillbirth: is defined as the death of the fetus in uterus before birth at or after 28 weeks gestation (18). To get the outcome of adverse reproductive health outcome, if they ever had at least one type unwanted pregnancy, abortion and still birth in their lifetime consider as adverse reproductive health outcome and factors of lifetime and 12 months experience of gender-based violence (psychological, physical, and/or sexual violence) among married women was enquired.

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Six female nurses who can speak the local language (Amharic) collected the information by going from house to house. Two supervisors were also recruited based on their previous field experience with household surveys. Two days intensive training was given to the data enumerators on how to collect data, when and how to make an interview and about ethical issues emphasizing on the importance of safety of participants and data quality.

Analysis

Regular supervision of data collection was made by investigators and supervisors. The questionnaires were checked for completeness and consistency then data were edited, coded, entered to Epi-Info version 6 and exported to SPSS version 20 for analysis. Descriptive analyses such as frequencies, percentages, tables, figures were used to display the results. Binary logistic regression analysis was employed to measure dichotomous variables then all variables entered to multiple logistic regressions were performed to identify the most significant predictor of adverse reproductive health outcomes and to control for confounders with Enter method and simultaneously Hosmer-Lemeshow goodness of-fit test was checked. Adjusted Odds Ratio

(AOR) and confidence interval with 95% confidence limits and significance level ($P < 0.05$) was used to determine level of significance.

Ethical consideration

Ethical clearance was obtained first from getting approval from the department of Obstetrics and Gynaecology, University of Ibadan and Pan African University Institute of Life and Earth Sciences (PAULESI). The request letter for data collection was submitted to South Gondar Zone Health Department (SGZHD); in turn they sent the letter to Debre Tabor Health Sciences College to get ethical clearance and approval for data collection. The importance of the study was explained to each respondent. Written consent as obtained and assurance was given about the confidentiality of the responses taking in to account the guidelines on ethical and safety recommendations for research on reproductive health issue and domestic violence against women (22).

Results

Socio-demographic characteristics

Out of 845 study participants counseled, 832 participated in the study giving response rate 98.5%. Among respondents 301(36.2%) were between age group 25-34 years and 98 (11.8%) are 55 years and above with the mean age of 37.64years (SD±12.75). Among all participants 570(68.5%) had previous resided in urban area. Majority, 695(83.5%) of the participants were Christians. Regarding the ethnic profile of study, majority 788 (94.7%) of them were Amhara. Concerning the educational status 438(52.6%) of them had not attended formal education, 246(29.6%) had attended primary education, 119(14.3%) had attended secondary education and 29(3.5%) had attended higher education and above. Three hundred seventy seven (33.3%) were employed. Majority, 215 (25.8%) earned less than 560 Birr ($27) family income per month and 203(24.4%) earned greater than1701 Birr ($83) family income per month with the mean income was 1233.88 Birr (SD±948.97 Birr) and the mode was 600 Birr ($29). Among the participants, 650 (78.1%) women were in monogamous union or relationship and the mean age at a time of first marriage was 18.4± 3.52 years (Table 1).

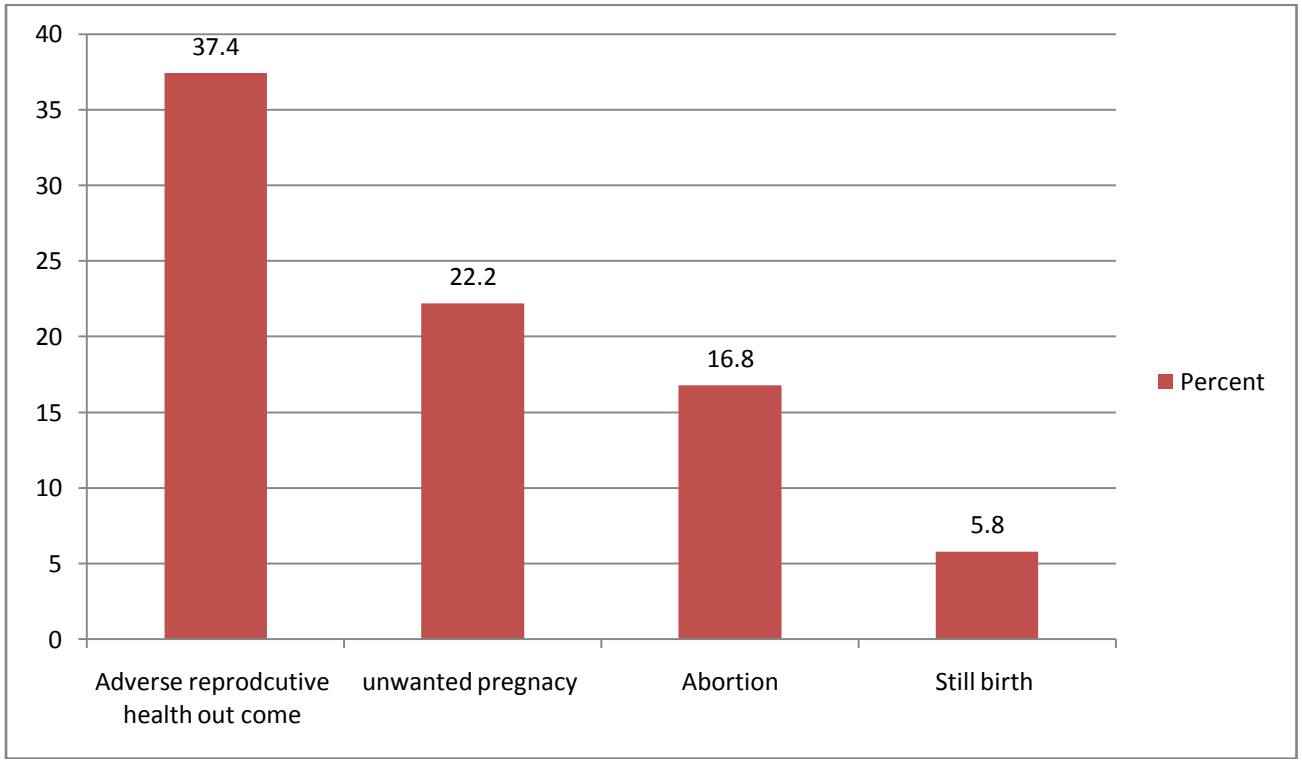
Table 1:-Socio-demographic characteristics of participants, Debre Tabor town, 2015 (n=832**)**

Characteristics	Number	Percent (%)
Age (years)		
≤24	100	12.0
25-34	301	36.2
35-44	199	23.9
45-54	134	16.1
≥55	98	11.8
	Mean(SD) =37.64 (±12.75)	
Previous place of residence		
Rural	262	31.5
Urban	570	68.5
Religion		
Christians	695	83.5
Muslims	137	16.5
Ethnicity		
Amhara	788	94.7
Oromo	15	1.8
Tigrie	29	3.5
Educational status		
No formal education	438	52.6
Primary education	246	29.6
Secondary education	119	14.3
Higher education	29	3.5
Employment status		
Un employed	555	66.7
Employed	277	33.3
Family income per month		
≤560 Birr($27)	215	25.8
561-900($27.3-$44)	207	24.9
901-1700($44-$83)	207	24.9
≥1701($83)	203	24.4
Mode=600 Birr($29), Mean (SD)=1233.88 Birr(±948.97 Birr) ($60 + $46)		
Types of marriage		
Monogamy	650	78.1
Polygamy	182	21.9
Age at first time of marriage (years)		
≤14	99	11.9
15-17	222	26.7
≥18	511	61.4
	Mean(SD) =(18.37± 3.52 years)	

At the time of data collection the exchange rate of 1 USD is 20.54 Eth.Birr

Magnitude of Adverse Reproductive Health (ARH) outcomes

As Figure 1 shows the pattern of adverse reproductive health outcomes among married women, 311(37.4%)95%CI (33.8%-40.6%) women had experienced at least one type of adverse reproductive health outcomes in their life time, such as 185(22.2%) 95%CI(19.4%-25.3) had experienced unwanted or unintended pregnancy,140(16.8%) 95%CI(14.4%-19.5%) had experienced abortion and 48(5.8%) 95%CI(4.2%-7.3%) had experienced still birth in their lifetime.



Types of Adverse Reproductive Health outcomes

Figure 1:-Prevalence of adverse reproductive health outcomes among married women, Debre Tabor town, 2015 (n=832)

Association between experience of gender-based violence and risk of adverse reproductive health outcomes

Women who experienced psychological violence in life time were 1.4 times (AOR=1.38; 95%CI; 1.05-2.29) more likely to face some kind of adverse reproductive health outcome than compared to those who did not experience psychological violence in life time. Women who experienced o physical violence in life time were about 2.5 times (AOR= 2.48; 95%CI; 1.60-3.85) more likely to experience some form of adverse reproductive health outcome than compared to those who did not experience any type of physical violence in life time. Women who experienced sexual violence in life time were about 1.3 times (AOR=1.31; 95%CI; 1.01-

1.99) more likely to experience some form of adverse reproductive health outcome compared to those who did not experience any type of sexual violence. Generally women who experienced at least one type of GBV in their life time 1.3 times (AOR=1.28; 95%CI; 1.08-1.98) more likely to experience some form of adverse reproductive health outcomes compared to those who did not experience any type of gender based violence in life (Table 2).

Association between experience of gender-based violence and risk of unwanted pregnancy

Women who experienced psychological violence in life were 2 times (AOR= 1.94; 95%CI; 1.07-3.50) more likely to face unwanted/unintended pregnancy as compared to those who did not experience psychological violence in life time. Similarly, those women who were exposed to physical violence were 2 times (AOR=1.88; 95%CI; 1.13-3.12) more likely to experience unwanted/unintended pregnancy compared to those who did not experience any type of physical violence in life time. Women who experienced to sexual violence were 2 times (AOR=1.84; 95%CI; 1.17-2.28) more likely to experience unwanted/unintended pregnancy compared to those who did not experience any type of sexual violence in life time (Table 3).

Association between experience of gender-based violence and risk of abortion

Women who experienced physical violence in life time were about 1.2 times (AOR=1.19; 95%CI; 1.12-2.83) more likely to experience abortion than compared to those who did not experience any type of physical violence in life time. Women who experienced sexual violence in life time were about 1.8 times (AOR=1.80; 95%CI; 1.11-2.93) more likely to experience abortion than compared to those who did not experience any type of sexual violence. Generally, women who experienced at least one type of gender-based violence in their life time 1.7 times (AOR= 1.65, 95%CI: 1.23-3.57) more likely to experience abortion than compared to those who did not experience any type of gender-based violence. (Table4).

Association between types of gender-based violence and still birth

Women who have experienced physical violence in life time were two times (AOR= 2.10; 95%CI; 1.86-5.11) more likely to face still birth than compared to those who did not experience physical violence in life time. Generally women who were exposed at least one type of gender-based violence in their life time four times (AOR= 4.09, 95%CI: 1.67-17.07) more likely to experience still birth than compared to those who did not experience any type of gender-based violence (Table 5).

Table 2:- Binary logistic regression output of factors associated between experience of GBV and risk of at least one type of adverse reproductive health outcome among married women ,Debre Tabor town,2015(n=832)

Types of violence	**Adverse reproductive Health (ARH) outcome**		**COR (95%CI)**	**AOR (95%CI)**
	Yes Count(%)	**No Count(%)**		
GBV in life time				
Yes	254(81.7)	366(70.2)	**1.89(1.34-2.67) ****	**1.28(1.08-1.98) ***
No	57(18.3)	155(29.8)	1	1
GBV in the last time				
Yes	121(38.9)	227(43.6)	0.83(0.62-1.10)	0.84(0.48-1.50)
No	190(61.1)	294(56.4)	1	1
Psychological violence in life time				
Yes	215(69.1)	303(58.2)	**1.61(1.20-2.17)****	**1.38(1.05-2.29) ****
No	96(30.9)	218 (41.8)	1	1
Psychological violence in the last t 12 months				
Yes	101(32.5)	195(37.4)	0.80(0.60-1.08)	0.75(0.43-1.32)
No	210(67.5)	326(62.6)	1	1
Physical violence in life time				
Yes	211(67.8)	256(49.1)	**2.18(1.63-2.93) ****	**2.48(1.60-3.85) ****
No	100(32.2)	265(50.9)	1	1
Physical violence in the last 12 months				
Yes	82(26.4)	150(28.8)	0.89(0.65-1.21)	0.64(0.41-1.01)
No	229(73.6)	371(71.2)	1	1
Sexual violence in life time				
Yes	101(32.5)	154(29.6)	**1.15(1.08-1.55) ***	**1.31(1.02-1.99) ****
No	210(67.5)	367(70.4)	1	1
Sexual violence in the last 12 months				
Yes	38(12.2)	91(17.5)	**0.66(0.44-0.99) ***	0.64(0.36-1.14)
No	273(87.8)	430(82.5)	1	**1**

1=Reference * P <0.05 ** P<0.01

Table 3:-Binary logistic regression output of factors associated between experience of GBV and unwanted pregnancy among married women, Debre Tabor town, 2015 (n=832)

Types of violence	**Unwanted pregnancy**		**COR (95%CI)**	**AOR (95%CI)**
	Yes	**No**		
	Count (%)	Count(%)		
GBV in the life time				
Yes	149(80.5)	471(72.8)	**1.55(1.03-2.31) ***	0.66(0.32-1.35)
No	36(19.5)	176(27.2)	1	**1**
GBV in the last 12 months				
Yes	72(38.9)	276(42.7)	0.86(0.61-1.20)	0.83(0.45-1.56)
No	113(61.1)	371(57.3)	1	**1**
Psychological violence in life time				
Yes	131(70.8)	387(59.8)	**1.63(1.14-2.32) ****	**1.94(1.07-3.50) ***
No	54(29.2)	260(40.2)	1	1
Psychological violence in the last 12 months				
Yes	61(33.0)	235(36.3)	0.86(0.61-1.22)	0.75(0.39-1.42)
No	124(67.0)	412(63.7)	1	1
Physical violence in life time				
Yes	124(67.0)	343(53.0)	**1.80(1.28-2.54) ****	**1.88(1.13-3.12) ****
No	61(33.0)	304(47.0)	**1**	1
Physical violence in the last 12 months				
Yes	49(26.5)	183(28.3)	0.91(0.63-1.32)	0.81(0.50-1.36)
No	136(73.5)	464(71.7)	1	1
Sexual violence in life time				
Yes	67(36.2)	188(29.1)	**1.39 (1.08-1.96)***	**1.84(1.17-2.88) ****
No	118(63.8)	459(70.9)	1	**1**
Sexual violence in the last 12 months				
Yes	23(12.4)	106(16.4)	0.73(0.45-1.18)	0.59(0.31-1.13)
No	162(87.6)	541(83.6)	1	**1**

1=Reference *** P <0.05** **** P<0.01**

Table 4: Binary logistic regression output of factors associated between experience of GBV and abortion among married women, Debre Tabor town, 2015(n=832)

Types of violence	**Abortion**		**COR (95%CI)**	**AOR (95%CI)**
	Yes	**No**		
	Count (%)	Count (%)		
GBV in life time				
Yes	118(84.3)	502(72.5)	**2.03(1.25-3.30) ****	**1.65(1.23-3.57) ****
No	22(15.7)	190(27.5)	1	1
GBV in the last 12 months				
Yes	53(37.9)	295(42.6)	0.82(0.56-1.19)	0.88(0.45-1.73)
No	87(62.1)	397(57.4)	1	1
Psychological violence in life time				
Yes	97(69.3)	421(60.8)	**1.45(1.01-2.15) ***	1.39(0.76-2.54)
No	43(30.7)	271(39.2)	1	1
Psychological violence in the last 12 months				
Yes	41(29.3)	255(36.8)	0.71(0.48-1.05)	0.55(0.27-1.09)
No	99(70.7)	437(63.2)	1	1
Physical violence in life time				
Yes	91(65.0)	376(54.3)	**1.56(1.07-2.28)***	**1.19(1.12-2.83) ****
No	49(35.0)	316(45.7)	1	1
Physical violence in the last 12 months				
Yes	35(25.0)	197(28.5)	0.84(0.55-1.27)	0.84(0.48-1.48)
No	105(75.0)	495(71.5)	1	
Sexual violence in life time				
Yes	56(40.0)	199(28.8)	**1.65(1.13-2.41)****	**1.80(1.11-2.93) ***
No	84(60.0)	493(71.2)	1	1
Sexual violence in the last 12 months				
Yes	22(15.7)	107(15.5)	1.02(0.62-1.68)	0.78(0.40-1.55)
No	118(84.3)	585(84.5)	1	1

1=Reference *** P <0.05** **** P<0.01**

Table 5: Binary logistic regression output of factors associated between experience of GBV and still birth among married women, Debre Tabor town, 2015 (n=832)

Types of violence	**Still birth**		**COR (95%CI)**	**AOR (95%CI)**
	Yes	**No**		
	Count (%)	Count (%)		
GBV in life time				
Yes	44(91.7)	576(73.5)	**3.97(1.41-11.20) ****	**4.09(1.67-17.07)****
No	4(8.3)	208(26.5)	1	1
GBV in the last 12 months				
Yes	21(43.8)	327(41.7)	1.09(0.60-1.96)	1.07(0.38-3.03)
No	27(56.2)	457(58.3)	1	1
Psychological violence in life time				
Yes	36(75.0)	482(61.5)	1.88(0.96-3.67)	0.72(0.28-1.81)
No	12(25.0)	302(38.5)	1	1
Psychological violence in the last 12 months				
Yes	18(37.5)	278(35.5)	1.09(0.60-1.99)	1.04(0.35-3.11)
No	30(62.5)	506(64.5)	1	1
Physical violence in life time				
Yes	37(77.1)	430(54.8)	**2.77(1.39-5.51) ****	**2.10(1.86-5.11) ****
No	11(22.9)	354(45.2)	1	1
Physical violence in the last 12 months				
Yes	14(29.2)	218(27.8)	1.07(0.56-2.03)	0.65(0.28-1.49)
No	34(70.8)	566(72.2)	1	1
Sexual violence in life time				
Yes	12(25.0)	243(31.0)	0.74(0.38-1.45)	0.65(0.29-1.47)
No	36(75.0)	541(69.0)	1	1
Sexual violence in the last 12 months				
Yes	4(8.3)	125(15.9)	0.48(0.17-1.36)	0.54(0.15-1.99)
No	44(91.7)	659(84.1)	1	1

1=Reference *** P <0.05** **** P<0.01**

Discussion

In this study, 37.4% women had experienced at least one type of adverse reproductive health outcome in their life time, such as unwanted/unintended pregnancy (22.2%), abortion (16.8%) and still birth (5.8%) in their lifetime. It is consistent with a study done in North Ethiopia, which the prevalence of induced abortion (19%) in their life time (19), Vietnam which shows that the prevalence of abortion in their lifetime (33.4%) (10), in India 18.3% of women have terminated a pregnancy during their lifetime (5). A study done in Nigeria shows that abortion was prevalent among traders (32.4%) and public servants (29.4%) most of whom were married (6).

Gender-based violence was significantly associated with increased risk of adverse reproductive out comes among married women in their life time. Women who were exposed to at least one type of gender based violence in their life time were more likely to have an increased the risk of at least one type of adverse reproductive health outcome (unwanted/unintended pregnancy, abortion, and /or still birth) by 28%. Particularly it increased the risk of abortion by two folds and still birth by four folds. This finding is consistent with a study conducted in India, which women who experienced gender-based violence experienced increased risks of multiple forced termination of pregnancies (AOR=2.2) (11). The association between gender-based violence with adverse reproductive health outcome may be because women who are physically and sexually violated have limited usage of contraception which leads to unwanted pregnancies and usually these unwanted pregnancies end up in abortion. Violence during pregnancy also results in the loss of the pregnancy in the form of miscarriage or still birth, especially if physical blow is delivered to the pregnancy such that it traumatized the baby in utero.

This was supported by a study done in Vietnam in which gender-based violence was associated with induced abortion (OR=1.6) and repeat abortion (OR=2.2). This association is supported by a systematic review and meta-analysis conducted on the associations between gender-based violence and unwanted pregnancy, abortion and still birth (20). Similarly this finding is consistent with a study conducted in Kenya that women who reported to having experienced gender-based violence were significantly more likely to report pregnancy termination. These findings may be suggesting that the experience of violence by women during pregnancy may jeopardize the pregnancy (13). A plausible explanation could be that the physical or psychological consequences of gender-based violence result in maternal psychological distress leading to poor pregnancy outcomes.

Psychological violence was significantly associated with increased risk of adverse reproductive comes in women. 38% of participants experienced psychological violence leading to increased risks of adverse reproductive outcomes in their life. Particularly, it increased the risk of unwanted pregnancy by two folds. This finding is consistent with a study in India among women who had experienced any type of partner violence was (AOR=1.6) associated with abortion (5).

These results suggest that prevention of psychological violence would reduce the high incidence of terminated pregnancies, thus improving maternal health.

Physical violence was significantly associated with increased risk of adverse reproductive comes in women. Participants who experiences physical violence were three times more likely to have increased risk of adverse reproductive outcomes in their life. Particularly, it increased the risk of unwanted pregnancy by two folds, abortion by 19%, still birth by two folds. It was similar to finding from a study from Bangladeshi and Colombia among ever married women who experienced physical violence was associated with adverse reproductive health outcomes and in Australia, physical violence has been associated with miscarriage/stillbirth in other populations (8, 9).

Sexual violence was significantly associated with increased the risk of adverse reproductive health come in women. Participants who experiences sexual violence were more likely to have increased the risk of adverse reproductive outcome by 31% in their life. Particularly it increased the risk of unwanted pregnancy and abortion by two folds independently. It is similar to the finding from a study conducted among high school students from Addis Ababa and Debark town in North West Ethiopia (14, 21)

As to the limitation of this study, the cross-sectional nature could cause difficulty of determining the direction of the association between study variables. The associations could only be discussed in terms of plausibility. This study had not included homeless and street married women, this marginalized group may have different characteristics of adverse reproductive health outcome experience. As to the strengths of this study, it has got community-based nature and the respondents have been selected by random sampling technique with relatively large sample size. Again, the team already adopted standard and validated instrument of WHO multi-country study on women's health including special training of interviewers designed to maximize disclosure of violence across different social and cultural groups. In addition, the team used interviewers and supervisors who have past experiences of data collection from their respective community.

Conclusion and recommendation

Adverse reproductive health outcomes (unwanted pregnancy, abortion and still birth) still major public health problems among married women in Northwest Ethiopia. More than one third of married women experienced at least one type of adverse reproductive health outcomes such as unwanted pregnancy, abortion and still birth in their life time. Broad lifetime and current experience of gender-based violence was significantly associated with risk of adverse reproductive health outcomes.

We recommend for strengthened initiatives using a multi-faceted approach to address adverse reproductive health outcome and gender-based violence. An ongoing and future initiative to

address individual, community and societal level structural factors to create an enabling environment is important to improved reproductive and sexual health for married women**.** It is better to involve programs about gender-based violence to enhance gender equality and understand its adverse reproductive health outcomes for the community. Health care providers should assess women coming for reproductive health issue to possibly point out their experience of gender-based violence so as to better management the core cause and it becomes issues of legitimate scientific research interests.

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Authors' contributions

All three authors were responsible for the design and conduct of the study. The statistical analysis, interpretation of the findings and drafting of the manuscript were done by the three authors. The authors read and approved the final content of the manuscript.

Competing interests

The authors declare that they have no competing interests.

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