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Pregnancy outcomes of gender based violence among pregnant women admitted to labor and delivery units in three teaching hospitals: A cross sectional study

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List of abbreviations

ANC	Ante Natal Care
AAU	Addis Ababa University
EDHS	Ethiopian Demographic and Health Survey
FMoH	Federal Ministry of Health
GA	Gestation Age
GBV	Gender Based Violence
IPV	Intimate Partner Violence
IUFD	Intrauterine Fetal Death
IUGR	Intrauterine Growth Restriction
LBW	Low Birth Weight
MDG	Millennium Development Goal
NGO	Non Governmental Organization
PROM	Premature Rupture Of Membrane
SGA	Small for Gestational Age
SoM	School of Medicine
WHO	World Health Organization

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Abstract

Background: Information about gender-based violence against women from low-income countries is scarce and may be under reported. The Prevalence of violence among pregnant women in developing countries ranges from 4% to 29%. The literature on gender based violence and pregnancy outcomes is not conclusive. So that this study will hopefully help to contribute its own profit for the concerned bodies and gives clue to understand the determinants of violence and it birth outcome and it will also be taken as a baseline for further studies.

Objective: the main objective of this research was to identify pregnancy outcomes of gender based violence during Pregnancy among pregnant women who came for labor and delivery services in three teaching hospitals.

Methods: A cross sectional facility based study was conducted among pregnant mothers that delivered at three teaching hospitals: Gandi memorial, Zewuditu memorial and Tikur Anbesa hospitals, to assess the pregnancy outcomes of gender based violence in the study population. The sample size was determined using a formula for estimating a single population proportion and 412 pregnant mothers were interviewed. Data collection was performed by trained medical interns and residents. Strengths of the associations and their statistical significance was measured using Odds Ratio (OR) and 95% CI .Ethical clearance was obtained from ethical committee of the department of Gynecology and obstetrics department, and written consent was taken from the mothers.

Results- The prevalence of sexual and /or physical violence during index pregnancy and one year prior index pregnancy was found to be 38.3% and 31.8% respectively. The overlap of both types of violence was 8.3%. Among major independent factors, only Khat chewing habit by pregnant women was associated with risk of Gender based violence during the index pregnancy AOR 2.901(95%CI: 1.302-6.463, P-0.009). Unwanted pregnancy was reported in higher frequency among respondents who experienced violence during index pregnancy when compared to who didn't (p=0.003).

Conclusion and recommendation- Still domestic violence is a major health problem in our setup and further studies are needed to adopt a more comprehensive approach to identify determinants and pregnancy outcomes of domestic violence during pregnancy.

1. Introduction

Globally Millions of girls and women suffer from violence and its consequences because of their biological sex and their unequal status in society. Violence against women (often called gender-based violence) is a serious violation of women's human rights. Yet little attention has been paid to the serious health consequences of abuse and the health needs of abused women and girls. Women who have experienced physical, sexual, or psychological violence suffer a range of health problems, often in silence. (1)

The united nations declaration on elimination of violence against women (1993) defines violence against women as " any act of gender based violence that results in , or is likely to result in physical, sexual or psychological harm or suffering of women, including threats of such acts, coercion or arbitrary deprivation of liberty whether occurring in private or public life". (1, 2)

The Multi-country Study on Women's Health and Domestic Violence against Women, conducted by the World Health Organization, observed that between 1% (Japan) and 28% (Peru) of interviewed women experienced physical violence during a current or previous pregnancy, and in over 90% of the events, the violence was perpetrated by the child's biological father (3,10).

Domestic violence against women has been associated with physical lesions, psychological consequences, reproductive health risks, chronic diseases and death. The web of pathways explaining the relationship between domestic violence and resulting physical and/or mental health outcomes is undoubtedly complex as it involves social, economic cultural and political factors. Although epidemiological studies are limited in their ability to fully disentangle this complex web, they are likely to provide findings that are useful to policy makers and practitioners. (10)

Domestic violence may affect pregnancy outcomes, either directly or indirectly, leading to adverse health effects for the infant during pregnancy, birth and the postnatal period. Possible direct mechanisms include abdominal trauma, which may lead to fetal stress, hemorrhage and even death. Other types of physical aggression may impair the health of pregnant women and their infants in different ways. Indirect mechanisms mediated by psychological stress may lead to late enrolment in prenatal care, chronic pain (especially pelvic), arterial hypertension, inadequate nutrition, anxiety and depression. Unhealthy lifestyles such as alcohol consumption and use of illicit drugs during pregnancy may also be a consequence of domestic violence. Low socio-economic status, young maternal age and low level of education may increase maternal and neonatal morbidity and mortality, and these effects may be strongly potentiated by domestic violence. Indeed, pregnancy is experienced in different ways by different women; however, it does represent a period of vulnerability and extreme susceptibility to the potential negative effects of any type of violence. (1, 5, 10)

1. 1 Background information

In 1993 the Pan American Health Organization identified domestic violence as a high priority concern in their resolution and in 1996 the World Health Organization (WHO) declared domestic violence a public health priority. Domestic violence during pregnancy is a focused attack that puts not just one but two lives at risk, the pregnant woman and the unborn fetus. This can lead to far reaching physical and psychological consequences. It has also been found that physical violence against pregnant women increases the risk of low birth infant, preterm delivery and neonatal death. (11, 12)

Violence during pregnancy occurs more frequently than some routinely screened obstetric complications such as pre-eclampsia and gestational diabetes. Information about gender-based violence against women from low-income countries is scarce and may be under reported. The Prevalence of violence among pregnant women in developing countries ranges from 4% to 29% (11, 12)

The problem of domestic violence in developing countries started surfacing in the last decade. Violence in Africa is also very common as it is part of the world and not spare from this endemic problem. However, lack of data from these countries still curtails a full understanding of the issues, and the magnitude and potential impacts it has on the life of women affected by domestic violence. A research done in South Africa the overall prevalence of domestic abuse amongst pregnant women was 41%. Another study in Nigeria showed the prevalence of domestic violence to be 43.5% during the 12 months before the pregnancy, 28.3% during the pregnancy (11, 13, 14, 15)

In Ethiopia, women constitute about 50 percent of the total population. Most Ethiopians have little or no education and women are generally less educated than men. According to EDHS 2011 only 38% of females are educated when compared to males in which 67% of them are educated. However, hospital based studies from Ethiopia on pregnancy outcomes of gender based violence are few irrespective of different lifestyles, customs and culture of the people (17).

According to a handful of available population based studies from the northern and southern part of the Ethiopia, the prevalence of intimate partner violence against women varies from 50 to 71% during lifetime and 30-54% for past 12 months. Another a population-based survey carried out in 1996, revealed that out of 673 randomly selected married women living in Meskan and Mareko district, the life time and three-month prevalence of physical violence was 45 and 10 percent, respectively (16) . Results from the feasibility study in Butajira conducted in January 2000 using qualitative methods also indicated that domestic violence is common in the study areas. Husbands usually are the perpetrators of physical violence against married women. (8, 13, 16, 17)

Literatures support a direct causal relationship between battering of pregnant women and adverse birth outcomes through a variety of biologic mechanisms (e.g., abdominal trauma resulting in abruptio placenta). However, the indirect implications of abuse may lead to one or more of the following risks: (1) elevated physical and psychological stress levels, (2) isolation and inadequate access to prenatal care, (3) behavioral risks, such as cigarette smoking, alcohol use, and illicit drug use, and (4) inadequate maternal nutrition. (6) Women who experience violence during pregnancy are significantly more likely to have conditions such as sexually transmitted infections; bleeding; depression and anxiety; inadequate prenatal care; smoking, alcohol, or drug consumption; unintended pregnancy; and poor weight gain. Most of these conditions are also associated with intrauterine growth restriction and low birth weight (LBW).(7) Extensive data describe abuse as a risk factor leading to diminished fetal growth and the early onset of labor, resulting in either low birth weight or prematurity or both of these. The confounding effects of poverty have made assessment and intervention even more difficult. (6, 7)

1.2 Statement of the problem

Domestic violence during pregnancy has been noted to be an important health risk to both the mother and the fetus. Prevalence estimates vary according to the population investigated and method of screening and inherent methodological problems. Pregnancy provides a unique opportunity to screen for domestic violence and this opportunity should be used because only a small minority of abused women (2.8-5 %.) will disclose the information voluntarily. (20) Violence against women is a serious health and development concern, as well as a violation of women's human rights. Reducing violence against women is therefore a key strategy for the achievement of the Millennium Development Goals. (44)

1.3 Significance of the study

Domestic violence during pregnancy is common and it has adverse health consequences for women and potentially for her fetus; however, very few studies have examined such abuse in developing countries, including in Ethiopia. The county's evidence based documents on violence against pregnant women are less in amount despite its importance in fighting violence and its out comes by the policy planners, decision makers and nongovernmental organizations. Considering the importance of this matter, this study will contribute to give insight to investigate the effects of domestic violence during pregnancy and its pregnancy outcomes. So that it will help to contribute its own profit for the concerned bodies and gives clue to understand effect of violence on adverse pregnancy outcomes and it will also be taken as a baseline for further studies.

2. Literature review

Abuse and violence against women constitute an important global public health problem and women of reproductive age are at the heart of the issue.(4) A 2005 multi-country study by the World Health Organization (WHO), with data from 10 countries and 15 sites, found that “the proportion of ever-partnered women who had ever experienced physical or sexual violence, or both, by an intimate partner in their lifetime, ranged from 15% to 71%.” In four countries–Bangladesh, Ethiopia, Peru, and Tanzania—at least half of women interviewed had ever experienced physical or sexual violence. A multi-country Demographic and Health Surveys (DHS) report on domestic violence found that more than 40 percent of women in Bolivia, Cameroon, Columbia, Kenya, Peru, and Zambia had ever experienced violence by a spouse or partner (3, 38)

The pregnancy period is sensitive to environmental exposures that may affect both the health of the newborn and of the mother. The reported prevalence of violence against women varies greatly between studies. Part of this heterogeneity may be due to differences in the definition and measurement of abuse, characteristics of the study populations and potential causal pathways.(4,7) Earlier studies estimated that 4 to 15 percent of pregnant women have experienced violence, and the 2005 WHO multi-country study found that an astonishing one out of every four women in rural Peru had experienced GBV while pregnant(3, 38)

Age, race, low socioeconomic status, including unemployment, low educational attainment, low personal and household income, poverty, and marital disruption are all significantly associated with increased risk of violence .A report done by WHO the risk factors vary, some characteristics seem to increase the likelihood of violence. The potential risk factors can be categorized into individuals or personal attributes, community inequalities and societal gender traditional norms. (3) While abuse occurs in all socioeconomic settings, poverty and stress associated with intimate partner violence. Within relationships, male control of wealth and decision-making and relationship instability are strongly associated with abuse. It was once thought that women with many children were at increased risk of abuse. Research now indicates, however, that domestic abuse increases women's risk of having many children by limiting their ability to control the timing of sex and the use of contraception. (2, 3, 24)

The effect of domestic violence on pregnancy outcome and child survival has been documented in several studies. Violence against pregnancy is not uncommon in the developed world too, as studies in the United States have shown high prevalence of violence during current pregnancy, as high as 24% in a study performed in Texas. Moreover, these studies also indicate that battered women have reported spontaneous abortions and stillbirths following such incidents. Women who are battered during pregnancy run twice the risk of miscarriage and four times the risk of having a LBW baby compared to women who are not beaten. (16)

The incidence of domestic violence in the study done in pregnant women of North Indian Women was 28.4%. The violence was more when the husband was educated up to Class 10 level or lowers, was habituated to alcohol or to chewing tobacco or to smoking cigarettes. The incidence of domestic violence was drastically high in women who were socially unsupported. The level of education and employment of the woman had no effect on the incidence of the abuse. The perpetrator of the abuse was the intimate partner (husband) in 48.2%, the husband's mother in 61.3%, and the husband's sister in 22.6%. Most often the abuse was by more than one person. (20)

In a cross-sectional study of 502 women attending the sixth week postnatal clinic in a tertiary hospital in urban Nigeria, the prevalence of domestic violence was 43.5% during the 12 months before the pregnancy, 28.3% during the pregnancy, and 4% in the puerperium. Psychological violence was the commonest form of violence experienced. All forms of violence were least common in the puerperium. Experience of violence in the 12months before pregnancy (P<0.0001, OR 274.34 [95% CI, 66.4–1133.8]), HIV seropositivity (P=0.02, OR 2.81 [95% CI, 1.2–6.5]), and regular alcohol intake (P<0.0001, OR 11.60 [95% CI, 3.8–35.1]) significantly increased the likelihood of experiencing domestic violence. (12)

Another studies conducted in Brazil have shown that the prevalence of violence against women perpetrated by the intimate partner during pregnancy varies between 7.0% and 34%. According to a study by Moraes and Reichenheim, conducted in 2000 in the city of Rio de Janeiro, approximately 16% of the women using public health services reported physical abuse during pregnancy. (37)

A hospital-based case-control study conducted at the University Hospital of León, Nicaragua, from July to October 1996 showed, twenty-two percent of the mothers of LBW infants had experienced physical abuse during pregnancy by their intimate partners compared with 5% of controls. Low birth weight was associated with physical partner abuse even after adjustment for age, parity, smoking, and socioeconomic status (OR 3.9; 95% confidence interval 1.7, 9.3). Given a causal interpretation of the association, about 16% of the LBW in the infant population could be attributed to physical abuse by a partner in pregnancy. (7)

A cross sectional analysis from a cohort study of 1,379 pregnant women attending pre natal care in public primary care units from June 2004 to July 2006 in one of the poorest (southwest) regions of Campinas, Sao Paulo, Brazil revealed that Psychological violence and physical or sexual violence were reported by 19.1% (n=263) and 6.5% (n=89) of the pregnant women, respectively. Psychological violence was significantly associated with obstetric problems [OR 1.95; 95% CI 1.39–2.73], premature rupture of membranes (OR 1.64, 95% CI 1.01–2.68), urinary tract infection (OR 1.71, 95% CI 1.19–2.42), headache (OR 1.75, 95% CI 1.25–2.40) and sexual risk behaviors (OR 2.28, 95% CI 1.18 4.41). Physical or sexual violence was significantly associated with obstetric problems (OR 1.72, 95%CI 1.08– 2.75), premature rupture of membranes (OR 2.11, 95% CI 1.14–3.88), urinary tract infection (OR 2.05, 95% CI 1.26–3.34), vaginal bleeding (OR 1.95, 95% CI 1.10–3.43) and lack of sexual desire (OR 3.67, 95% CI 2.23–6.09). (10)

A case-control study conducted at the Materno Perinatal Institute of Lima and the Dos de Mayo Hospital in Lima, Peru, from May 2004 through October 2005 showed the prevalence of IPV was 43.1% among cases and 24.3% among controls. Compared with those reporting never exposure to IPV during pregnancy, women reporting any exposure had a 2.4-fold increased risk of preeclampsia (OR = 2.4; 95% CI: 1.7–3.3). The association was strengthened slightly after adjusting for maternal age, parity and pre-pregnancy adiposity (OR = 2.7; 95% CI: 1.9–3.9). Emotional abuse in the absence of physical violence was associated with a 3.2-fold (95% CI: 2.1–4.9) increased risk of preeclampsia. Emotional and physical abuse during pregnancy was associated with a 1.9-fold increased risk of preeclampsia (95% CI: 1.1–3.5). (17)

Surveys in USA indicate that 10 to 58 percent of women have experienced physical abuse by an intimate partner in their lifetimes. Study done in South Carolina revealed that prevalence of physical violence during pregnancy was 11% among them 27.2 % reported antenatal hospitalization. After adjustment for confounding maternal conditions leading to hospitalization found to be associated with physical violence were kidney infection, premature labor and trauma due to falls or blow to the abdomen. Study done on pregnant women in Guatemala public hospital revealed that intimate partner violence was significantly associated with miscarriage. In contrary, a study undertaken in Mississippi to evaluate the impact of physical abuse on pregnancy outcomes during a period of 12 months from January-December 1998 in a low risk non urban clinic population in which 28 abused women were matched with 56 control subjects showed that the frequencies of preterm birth, mode of delivery, Apgar scores <7 at 5 minutes, umbilical artery pH <7.10 at birth, and unhappy or ambivalent feelings about the pregnancy were not statistically different between the 2 groups. Admission to the neonatal intensive care unit was more common among infants of the abused women (n = 4 [14.2%] vs. n = 2[3.6%]), despite heavier birth weights in the abused group (3501 ± 581 g vs. 3200 ± 549 g; *P* = .023), but this trend did not reach significance. (6)

A population-based survey conducted by Statistics Canada between October 23, 2006, and January 31, 2007 including 6,703 women eligible to investigate what dimensions of violence against pregnant women were associated with preterm birth, small for gestational age and postpartum depression in a nationally representative sample of Canadian women. The survey revealed that no statistically significant associations were found for preterm birth or small for gestational age, after adjustment. Most dimensions of violence were associated with postpartum depression, particularly the combination of threats and physical violence starting before and continuing during pregnancy (Adjusted Odds Ratio = 4.1, 95% confidence interval: 1.9, 8.9) and perpetrated by the partner (4.3: 2.1, 8.7). (4)

Although there are many indications that women in Ethiopia suffer disproportionate disadvantages in life as compared to men, there are only few studies to provide strong evidence to this effect. Some facts from a handful researches conducted in Ethiopia are given below.

A quantitative research done on Sexual Violence among Female Street Adolescents in Addis Ababa, April 2000, revealed that the prevalence of rape among female street adolescents in the last 3 months was 15.6%, attempted rape 20.4% and unwelcome kiss 16.4%. Rape was significantly associated with living alone, unwanted pregnancy, abortion, STDs, and psychological, problems were reported as consequences of rape. (8)

An institutional study done in Mekele town in 2007 revealed the problem of the females is very high even in teaching environments. Among the respondents, the overall prevalence of GBV in lifetime and current year was found to be 62.1% and 40.2% respectively. (39)

A study done in 2005 on gender based violence and risk of HIV infection among women attending VCT services at HIV sentinel surveillance sites in Addis Ababa showed that the prevalence of lifetime intimate partner physical and sexual violence to be 54.6% and 41% respectively and 21.8% of women reported experiencing forced sex or rape at their first sex. And HIV positivity was associated with intimate partner violence after adjustment of other socio demographic factors. (40)

Another study conducted in Mareko and Meskan district in 2003 shows women's health and life events in rural Ethiopia is a full of crisis. The results explain that 59% of women suffered from sexual violence, and 49% from physical violence by a partner at some point in their lives. During the twelve months prior to the survey, 44% of women reported sexual violence and 29% suffered partner violence. About 77% have got violence during pregnancy. Major lifetime mental health problems include depressive episode, Somatoform disorder and recurrent depressive episodes diagnosed in 6%, 3% and 2% of the women, respectively. (16, 41)

The other study done on domestic violence around Gondar in Northwest Ethiopia in 2004 shows that the percentage of women who ever experienced physical, sexual, and/or psychological abuse was 50.8 percent . The prevalence of physical violence was found to be 32.2%, while that of forced sex and physical intimidation amounted to 19.2% and 35.7%, respectively. Exposure to parental domestic violence as a girl was the strongest risk factor for being victim of violence later in life while alcohol consumption was the major attribute of violent partners. Answering to partners was the most important triggering factor for violence. (42)

3. Objective

3.1 General objective

- To determine the prevalence and determinants of gender based violence and its birth outcome among pregnant women who came for labor and delivery services in three teaching hospitals.

3.2 Specific objectives:

- To describe immediate maternal outcomes of GBV during pregnancy
- To describe immediate perinatal outcomes of GBV during pregnancy
- To determine the prevalence of gender based violence among pregnant mothers
- To identify risk factors for GBV
- To describe the types of GBV during pregnancy

4. Methods and materials

4.1 Study setting

The study was carried out in the labor and delivery units of the three teaching hospitals: *Ghandi Memorial, Tikur Anbessa and Zewiditu memorial hospitals* which are found in Addis Ababa town. These hospitals serve as central referral teaching hospitals and all obstetric emergencies including high risk pregnancies are referred to these hospitals from whole Addis Ababa and its vicinity.There are about 65 beds in TAH obstetrics and gynecology wards, about 6 beds in labor ward for stabilization and laboring mothers, 12 beds in the postnatal ward for mothers with uncomplicated vaginal deliveries. The average monthly delivery rate ranges from 250-300. GMH has a total of 79 beds in postnatal, obstetrics and gynecology wards. About 7 beds in labor ward for stabilization and laboring mother. The average monthly delivery rate ranges from 500-550. ZMH has a total of 46 beds in obstetrics, gynecology and postnatal wards. The average monthly delivery rate ranges from 210-280.

4.2 Study period

The study was conducted in the three teaching hospitals starting from June to July 2014

4.3 Study design

A facility based Cross sectional study was conducted among pregnant mothers that delivered at three teaching hospitals to assess the immediate pregnancy outcomes of gender based violence in the study population

4.4 Source population and study population

- **Source population** -All pregnant mothers who came to the three government teaching hospitals for labor and delivery services during the study period**.**
- **study population** – all pregnant mothers who came for labor and delivery services in the three teaching hospitals during the study time fulfilling the following inclusion criteria

4.5 Inclusion and exclusion criteria

4.5.1 Inclusion criteria:

- All pregnant mothers who were admitted to the three teaching hospitals for labor and delivery service during the data collection period
- Well communicable for interview

4.5.2 Exclusion Criteria:

- Critically ill pregnant mothers
- unwilling to give consent
- multiple pregnancy

4.6 Sample size

The sample size was determined using a formula for estimating a single population proportion:-

$$n = \frac{(Z^{1} - \alpha/2)\ 2\ p\ (1-p)}{d^2}$$

The estimated sample size being n, degree of precision of 5% (d=0.05) and confidence interval of 95%, (Z1- α/2) 2 =1.96 were assumed. From a previous community based cross sectional study done in Butajira 49 % of physical violence (P = 0.49) was reported among women who ever had been married. (16)

$$n = \frac{(1.96)^2 \times 0.49\ (1 - 0.49)}{(0.05)^2}$$

Based on the above calculation, the sample size required was 384. Considering a 10% non-response rate, the total sample size required was 422.

4.7 Sampling procedures

In the three teaching hospitals, eligible women fulfilling the inclusion criteria was assessed for experiencing violence during the index pregnancy as well as in the previous 12 months before the current pregnancy. The sample size in the hospitals was allocated according to data gathered from previous year's delivery records.

4.8 Data Collection procedure

4.8.1 Questionnaire

A standard structured questionnaire was adopted from the WHO Multi-country study on women's health and domestic violence with some modification and adjustment was used to make the questions as easy as possible. The components of the questionnaire compromise socio demographic characteristics, history of experience of different forms of sexual and physical violence in different circumstance. A systematic chronological ordering of different sensitive questions like gender based violence, adverse pregnancy outcomes and substance use was given attention to maximize good response rate.

4.8.1 Data collection and field administration

The data was collected by interns and residents who were assigned in each hospital's maternity and labor wards during the working and duty hours during the study period. The data collectors received on data collection tool as a group for 2 hours before data collection and tool was piloted and pre-tested before the actual data collection.

4.9 Operational definition

Violence: is defined as, "The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, mal-development or deprivation."

Gender Based Violence: defined as a form of violence that targets individuals or groups of individuals on the basis of their gender that results in or is likely to result in Physical or Sexual Violence or suffering to women.

Physical Violence: is any form of violent act which can result in physical harm including mild form (slapping, and punching) or sever form (kicking/drugging, beating/hitting with any object, burning/chocking, and threatening using a knife or a gun etc) against women.

Sexual Violence: is defined as acts that are done on a woman by intentional use of physical force or power, intimidation or threatening to have sex or to engage in acts of sex without the consent of woman. It includes Completed rape, attempted rape and sexual harassment.

Intimate partner violence- defined as a form of violence that targets individuals or groups of individuals on the basis of their gender that results in or is likely to result in Physical or Sexual Violence or suffering to women by an intimate partner (a husband, boyfriend or lover, or ex-husband, ex-boyfriend or ex-lover.)

Critically ill pregnant mothers-includes pregnant women who are unconscious and/or have deranged vital signs requiring resuscitation

Low birth weight: is birth weight less than 2500gm

Preterm birth: is delivery before 37 weeks gestation

IUFD: is deaths occurring in utero in which the fetus weighs 1000 gm or more and/ or deaths occurring at 28 weeks of gestation or greater (Ethiopia).

Frequent Chewer: People who chew khat at least two times per week.

Occasional chewer: Those who khat chews less than once per week.

Frequent drunker: People who drank alcohol at least two times per week.

Occasional drunker: Those who drank alcohol less than once per week

4.10 Variables of the study

4.10.1 Dependent variables:

- Presence of adverse pregnancy outcomes including any of the following: preterm labor, Premature rupture of membrane (PROM), preeclampsia, antepartum hemorrhage (APH), low birth weight (LBW) , still birth, Apgar score, NICU referral

4.10.2 Independent variables:

- Socio demographic characteristic –age, marital status, Ethnicity, religion and educational status, household income, etc.
- History of alcohol consumption, chat chewing
- Gender based violence (physical, sexual violence)

4.11 Data processing and analysis

The data was entered, cleaned and edited using SPSS windows version-21 statistical software. Frequencies and sorting of each variable were used to check for missed variables, outliers and errors. Errors found during data cleaning were corrected based on the hard copy. Strengths of the associations and their statistical significance were measured using Odds Ratio (OR) and 95% CI. Presence of significant association between gender based violence and independent variables was checked using bivariate analysis. Independent variables that have been associated with the dependent variables were included in the model for multivariate analysis using logistic regression. Impact of gender based violence on pregnancy outcome was assessed using chi square.

4.12 Ethical consideration

The maximum effort was used to overcome ethical concerns of the participants due to the sensitivity of the issue under study by careful designing and structuring the questionnaire. The proposal was approved by the Ethical Review Committee of department of obstetrics and gynecology research. Permission was requested from each selected hospitals to access the clients included in the study. All study participants were informed about the purpose of the study and the right to refuse responding the questionnaire at any stage when they want to do so and their informed consent was obtained orally prior the interview. Names and identifying numbers were excluded from

the questionnaire in order to assure confidentiality of information and autonomous right to fulfill their response was considered.

5. Results

5.1 Socio-demographic characteristics

In the study, of the total 422 study participants 412 responded making the response rate of 97.63%. The mean age of the participants was 27.07 years ± 4.678 with age range being 18 to 43years.Majority (86.8%) of them are in the age range of 21 to 35 years. Most of the participants were orthodox (67.7%), Amhara by ethnicity (41.7%) and married (95.9%) at the time of interview. High number of the participants had formal education (84%) and 53.9% of them were unemployed. On the other hand 91.8% of the participant's partner had formal education and 97.1% of them were employed. Accordingly, participants mean age at first marriage was 22.2 years (SD ± 4.346) and participant's partner mean age at first marriage was 28.27years (SD ± 5.286). Among the currently married mothers the mean years of living together with partner was found to be 4.93years (SD ± 4.12). Majority of the participants (79.8%) reported monthly income above 1000ETB. Table 1

Table 1: Socio-demographic characteristics of pregnant women admitted to labor and delivery units of three teaching hospitals, June to July 2014

Characteristics	Total (n=412) N (%)
Age in years (27.07 years ± 4.678)	
15-19	16(3.9)
20-24	109(26.5)
25-29	176(42.7)
30-34	71(17.2)
>=35	40(9.7)
Religion	
Orthodox	279(67.7)
Muslim	85(20.6)
Protestant	45(10.9)
Catholic	3(0.7)
Ethnicity	
Amhara	172(41.7)
Oromo	96(23.3)
Tigre	32(7.8)
Gurage	93(22.3)
Others	19(4.6)
Marital status	
Currently married	395(95.9)
Currently unmarried	17(4.1)
Respondent's educational status	
Illiterate	49(11.9)
Read and write	17(4.1)
Primary	127(30.8)
Secondary	128(31.1)
Diploma and above	91(22.1)
Respondent's Occupational status	
Unemployed	14(3.4)
Housewife	208(50.5)
Government employee	47(11.4)
Non government employee	91(22.1)
Merchant	52(12.6)
Age at first marriage of the respondent in years	
<18	64(15.5)
18-25	251(60.9)

>25	97(23.5)
Monthly income (ETB/ month)	
<500	16(3.9)
500-1000	67(16.3)
1000-3000	179(43.4)
3000-5000	92(22.3)
>5000	58(14.1)
Partner's educational status	
Illiterate	18(4.4)
Read and write	16(3.9)
Primary	101(24.5)
Secondary	133(32.3)
Diploma and above	144(35)
Partner's occupational status	
Unemployed	12(2.9)
Government employee	101(24.5)
Non government employee	155(37.6)
Merchant	144(35)

5.2 Behavioral characteristics of the participants

Over one third of (37.1%) of the respondents reported that their partners consumed alcohol of whom 40.6% were frequent consumers which is defined as drinking at least two times a week and >2 drinks per day and 18.9% of the respondent's partners were also stated to be khat chewers. On the other hand among the respondents who gave history of ever drinking alcohol (26.9%), majority of them (80.7%) were occasional consumers and 9% of the respondents were khat chewers. Among mothers who gave history of ever drinking alcohol and/or chewing khat, 4.6% of them had history of unwanted sex or arrest in prison and 5.5% of them reported history of fighting with other people as the result of consumption. The larger proportion of women interviewed (85.4%) discuss their feelings/worries and another 73% discuss things that happened during the day with their partners. More than half of the respondents (51.7%) reported that their partner expects permission and 9.2% of the partners were suspicious that their respondents are unfaithful. Table 2

Table 2: Behavioral characteristics of pregnant women admitted to labor and delivery units of three teaching hospitals, June to July 2014

Characteristics	Total (n=412) N (%)
Respondents alcohol drinking habit	
Occasional consumer	88(21.4)
Frequent consumer	21(5.1)
Not consumer	303(73.5)
Respondents khat chewing	
Occasional chewer	16(3.9)
Frequent chewer	21(5.1)
Not chewer	375(91)
Partner drinking alcohol habit	
Occasional consumer	91(22.1)
Frequent consumer	62(15)
Not consumer	259(62.9)
Partner khat chewing habit	
Occasional chewer	43(10.4)
Frequent chewer	35(8.5)
Not chewer	334(81.1)
Partner keeps you from seeing friends	
Yes	42(10.2)
No	370(89.8)
Partner tries to restrict contact with your family	
Yes	37(9)
No	375(91)
Partner insist on knowing where you are at all time	
Yes	108(26.2)
No	304(73.8)
Partner ignores or treats you indifferently	
Yes	38(9.2)
No	374(90.8)
Partner often suspicious that you are unfaithful	
Yes	38(9.2)
No	374(90.8)
Partner expects you to ask permission	
Yes	213(51.7)
No	199(48.3)

5.3 Prevalence and different forms of violence during the current and within one year prior to the current pregnancy

The occurrences and patterns, timing and frequencies of two different forms of gender based violence against pregnant women i.e. physical and sexual violence were assessed. Physical violence was assessed by asking "have you ever been slapped or somebody throw something at you that could hurt you?, pushed you or shoved you?, kicked you in the abdomen, dragged you or beat you?, hit you with his fist or with something else that could hurt**?,** chocked you or burnt you on purpose**?**, threatened to use or actually used a gun, knife or other weapon during the current pregnancy or over the past one year prior to the current pregnancy?" Sexual violence was assessed by asking **"**have you ever been physically forced to have sex when you did not want to?, have you ever had sex you did not want because you were afraid of what somebody might do?, have you ever been forced to do something sexual that you found degrading during the current pregnancy or over the past one year prior to the current pregnancy?

About thirty eight percent of the respondents experienced one or both forms of violence during the current pregnancy. Among these 24.3% reported sexual violence and 22.3% reported physical violence during the current pregnancy. Among pregnant mothers who experienced physical violence 12.6% reported being slapped, 9.5% being pushed and 2.4% reported being kicked in the abdomen during current pregnancy by their partner/spouse. Similarly among those who sustained sexual violence, 21.1% reported unwanted sex, 7.3% were physically forced to have sex and only 1% were forced to do something sexual which is degrading by their partner/spouse.

Any kind of violence (sexual or physical violence) within one year prior to the index pregnancy was reported by 31.8% of the respondents of which 21.1% reported sexual violence and 19.9% reported physical violence. Overall, 8.3 % and 9.2% of the respondents reported having suffered both forms of violence during the index pregnancy and within one year prior to the index pregnancy respectively. Table 3

Table 3: prevalence of sexual and /or physical violence among pregnant women admitted to labor and delivery units of three teaching hospitals, June to July 2014

Types of violence	current pregnancy n (%)	one year prior to the index pregnancy n (%)
Sexual violence	100(24.3)	87(21.1)
Physical violence	92(22.3)	82(19.9)
Sexual and physical violence (overlapping)	34(8.3)	38(9.2)
Sexual and /or physical violence	158(38.3)	131(31.8)

5.4 Reproductive characteristics and pregnancy outcomes of the participants

Almost half of the respondents interviewed (49.3%) were parous (have one or more previous delivery) and 25.2% have history of one or more abortion. Gestational age at the time of delivery was term in majority of the cases (79.1%) and almost all of the respondents (99.3%) had at least one ANC visit during the current pregnancy. Among pregnant mothers who had ANC follow up majority of them (61.2%) started follow up in the second trimester. Higher number of the participants (78.4%) and (94.7%) reported that the current pregnancy was planned and wanted respectively.

Above one third (33.7%) of the respondents had at least one form of obstetric complication and of the obstetric complication PROM and its complication accounts for20.6% followed by pregnancy induced hypertension (10.7%) and ante partum hemorrhage(2.4%). The prevalence of HIV infection among the participants was found to be 6.1%.More than three quarters (78.2%) of the respondents were admitted to labor ward after the onset of labor and about 81.6% were accompanied by their partner at the time of admission. The mode of delivery was by SVD for the majority of women (54.6%) followed by cesarean section (35.7%) and instrumental delivery (8%). More than eighty five percent of the participants gave birth to neonates weighing above 2500 gram and first and fifth minute apgar scores were at least 7 in 80.1% and 91.7% of cases respectively. Neonatal intensive care unit referral rate was found to be 28.6% and about 4.1% of births were still born. Table 4

Table 4 Reproductive characteristics and pregnancy outcomes of pregnant women admitted to labor and delivery units of three teaching hospitals, June to July 2014

Reproductive Characteristics And pregnancy outcome	n (%)
Parity	
1	201(48.8)
2-4	203(49.3)
>=5	8(1.9)
Abortion	
Yes	104(25.2)
No	308(74.8)
Gestational age	
Preterm	39(9.5%)
Term	326(79.1)
Post term	47(11.4)
ANC initiation GA	
1st trimester	138(33.7)
2nd trimester	252(61.2)
3rd trimester	19(4.6)
HIV status	
Positive	25(6.1)
Negative	374(90.8)
Unknown	13(3.2)
Pregnancy planned	
Yes	323(78.4)
No	89(21.6)
Pregnancy wanted	
Yes	390(94.7)
No	22(5.3)
Obstetric complications	139(33.7)
PROM and its complications	85(20.6)
PIH	44(10.7)
APH	10(2.4)
Mode of delivery	
SVD	225(54.6)
C/S	147(35.7)
Instrumental	33(8)
ABD	7(1.7)
Admission to ward	
In labor	322(78.2)
Before onset of labor	90(21.8)
Birth weight	
Less than 2500gm	58(14.1)
>=2500gm	354(85.9)

1st minute apgar score	
<7	65(16.5)
>=7	330(83.5)
5th minute apgar score	
<7	17(4.3)
>=7	378(95.7)
NICU referral	
Yes	113(28.6)
No	282(71.4)
Birth outcome	
Still birth	17(4.1)
Alive neonate	395(95.9)

5.5 Determinants of sexual and/or physical violence during the current pregnancy among the participants

Upon multivariate analysis only maternal khat chewing habit had independent association with reported both types of violence during the index pregnancy. Pregnant women with habit of chewing khat, when compared to those women with no habit of khat chewing, were three times more likely to report both forms of violence during the index pregnancy with AOR 2.901 (95% CI: 1.302-6.463, P value 0.009).On the other hand, partner status of chewing khat as well as partner and maternal alcohol consumption were not associated with the reported risk of experiencing violence during current pregnancy upon multivariate analysis. Similarly, other variables, (whether the index pregnancy was planned/wanted or not, partner's/mother's occupational status, educational status, early marriage and other socioeconomic characteristics), were not associated with the risk of experiencing violence during the index pregnancy. Table 5

Table 5: Determinants of sexual and/or physical violence during the current pregnancy among pregnant women admitted to labor and delivery units of three teaching hospitals, June to July 2014

variable	Both forms of Violence during current pregnancy (%)		p-value	Crude Odds ratio: COR(95% CI)	Adjusted Odds ratio: AOR(95% CI)	p-value
	Yes (n=158)	**No (n=254)**				
Index pregnancy planned			0.03			0.785
Yes	115(27.9)	208(50.5)		0.59 (0.37-0.95)	0.92 (0.51-1.66)	
No	43(10.4)	46(11.2)		1	1	
Index pregnancy wanted			0.005			0.365
Yes	143(34.7)	247(60)		0.27 (0.11-0.68)	0.57 (0.17-1.92)	
No	15(3.6)	7(1.7)		1	1	
Mother chews			0.003			0.009
khat	23(5.6)	14(3.4)		2.92 (1.46-.86)	2.90 (1.30-6.46)	
Yes	135(32.8)	240(58.3)		1	1	
No						
Partner having another partner currently			0.004			0.45
Yes	4 (1)	1(0.2)		2.48 (0.25-24.65)	1.51 (0.13-18.3)	
Probably	5 (1.2)	3(0.7)		1.03 (0.21-5.058)	0.91 (0.13-6.3)	
Never	128(31.1)	237(57.5)		.33 (0.162-0.69)	0.54 (0.23-1.3)	
I don't know	21(5.1)	13(3.2)		1		

Partner having another partner before			0.009			0.258
Yes	53(12.9)	64(15.5)		0.8 (0.41-1.54)	1.04(0.49-2.22)	
May be	6(1.5)	0		1.55 (.000-)	1.37(.000-)	
Never	73(17.7)	165(40)		0.43 (0.23-0.786)	0.64 (0.31-1.33)	
I don't know	26(6.3)	25(6.1)		1	1	
Partner chew khat			0.02			0.497
Yes	39(9.5)	39(9.5)		1.81 (1.1 -2.97)	1.22 (0.69 -2.18)	
No	119(28.9)	215(52.2)		1	1	
Educational level of mother			0.07			0.553
Illiterate	27(6.6)	22(5.3)		2.38 (1.17-4.83)	1.89 (0.74-4.79)	
Read and write	9(2.2)	8(1.9)		2.18 (0.77-6.2)	0.84 (0.22-3.13)	
Elementary	44(10.7)	83(20.1)		1.03 (0.58-1.81)	1.02 (0.57-2.04)	
High school	47(11.4)	81(19.7)		1.12 (0.64-1.97)	1.02 (0.54-1.91)	
Diploma and above	31(7.5)	60(14.6)		1	1	
Educational level of partner			0.044			0.193
Illiterate	9(2.2)	9(2.2)		0.7 (0.30-1.612)	0.96 (0.28-3.28)	
Read and write	10(2.4)	6(1.5)		0.64 (0.26-1.58)	1.42 (0.4-4.98)	
Elementary	41(10)	60(14.6)		0.54 (0.18-1.614)	0.75 (0.36-1.58)	
High school	39(9.5)	94(22.8)		0.64 (0.26-1.55)	0.53 (0.29-0.98)	
Diploma and above	39(9.5)	94(22.8)		1	1	
Occupational status of partner			0.016			0.616
Unemployed	8(1.9)	4(1)		4.74 (1.36-16.52)	2.11 (0.52-8.62)	
Self employed	62(15)	82(19.9)		1.79 (1.11-2.89)	1.32 (0.76-2.29)	
Government empl	42(10.2)	59(14.3)		1.69 (0.99-2.85)	1.25 (0.69-2.28)	
NGO employed	46(11.2)	109(26.5)		1	1	

5.6 Relation of violence during the current pregnancy and before the pregnancy

Table 6 presents the relationship between different forms of violence before and during the current pregnancy. There is a statistically significant association between exposure of both types of violence during previous one year and current pregnancy in which 27.2% of respondents who experienced both types of violence during the current pregnancy also gave history of similar violence before one year when compared to 11.2% of respondents with no previous history (p=o.ooo). About 15.8% of respondents who sustained physical violence during current pregnancy also experienced similar type of violence in the previous one year when compared to 6.6% with no previous history(p=0.000). Similarly, a great majority (73.6%) of respondents who sustained sexual violence during the current pregnancy also reported similar violence during the previous one year when compared to 11.1% of respondents with no history of sexual violence.(p=0.000). Furthermore, experiencing sexual violence during current pregnancy also increases the risk of experiencing physical violence during the current pregnancy and vice versa (p=0.001). Table 6

Table 6: Relation of violence during the current pregnancy and before the pregnancy among pregnant women admitted to labor and delivery units of three teaching hospitals, June to July 2014

	Both types of violence during current pregnancy, n (%)		**p-value**
	Yes (n=158)	**no (254)**	
Both types of violence within 1 year before current pregnancy			**.000**
Yes	**112(27.2)**	**19(4.6)**	
No	**46(11.2)**	**235(57)**	
Physical violence within 1 year before current pregnancy	**Physical violence during current pregnancy n(%)**		**.000**
	Yes(n=92)	**no(n=320)**	

Yes No	65(15.8) 27(6.6)	17(n=4.1) 303(73.5)	
Sexual violence during current pregnancy	**Physical violence during current pregnancy n(%)**		**0.001**
	Yes(n=92)	**no (n=303)**	
Yes **No**	**34(8.3)** **58(14.1)**	**66(26.4)** **256(61.7)**	
Sexual violence within 1 year prior to current pregnancy	**Sexual violence during current pregnancy n(%)**		**.000**
	Yes (n=100)	**no(n=312)**	
Yes **No**	**64(73.6)** **36(11.1)**	**23(26.4)** **289(88.9)**	
Physical violence during current pregnancy	**Sexual violence during current pregnancy n(%)**		**0.001**
	Yes(n=100)	**no(n=312)**	
Yes **No**	**34(37)** **66(20.6)**	**58(63)** **254(79.4)**	

5.7 Impact of violence and on birth outcomes

There was no statistically significant difference in still birth rate, birth weight, apgar scores (both at 1st and 5th minute), mode of delivery, and NICU referral among the respondents. Similarly there was no statistically significant difference in obstetric complications, gestational age, ANC follow up status, HIV status, unplanned pregnancy and in rate of partner accompanying mothers among the participants. However, unwanted pregnancy is reported in higher frequency, 3.6%, among respondents who experienced violence during current pregnancy compared to who didn't, 1.7 %(p=0.003). Table 7

Table 7: Impact of violence during the current pregnancy among pregnant women admitted to labor and delivery units of three teaching hospitals, June to July 2014

Outcome	Both forms of violence during current pregnancy n(%)		P value
	Yes (n=158)	No(n=254)	
Birth outcome			0.206
Still birth	9(2.2)	8(1.9)	
Alive	149(36.2)	246(59.7)	
First minute APGAR score			0.487
<7	27(6.8)	38(9.6)	
>=7	122(30.9)	208(52.7)	
Fifth minute APGAR score			0.833
<7	6(1.5)	11(2.8)	
>=7	143(36.2)	235(59.5)	
Mode of delivery			0.192
SVD	88(21.4)	137(33.3)	
Cesarean section	52(12.6)	95(23.1)	
Instrumental	17(4.1)	16(3.9)	
Assisted breech delivery	1(0.2)	6(1.5)	
Birth weight			0.274
<2500gm	26(6.3)	32(7.8)	
>=2500gm	132(32)	222(53.9)	
Neonatal ICU referral			0.886
Yes	42(10.6)	71(18)	
No	107(27.1)	175(44.3)	
Is pregnancy planned			0.29
Yes	115(27.9)	208(50.5)	
No	43(10.4)	46(11.2)	

Is pregnancy wanted			0.003
Yes	143(34.7)	247(60)	
No	15(3.6)	7(1.7)	
Partner accompany during admission			0.314
Yes	125(30.3)	211(51.2)	
No	33(8)	43(10.4)	
Gestational age			0.201
Preterm	19(4.6)	20(4.9)	
Term	118(28.6)	208(50.5)	
Post term	21(5.1)	26(6.3)	
Obstetric complications			0.314
Yes	58(41.7)	81(58.3)	
No	100(36.6)	173(63.4)	
HIV status			0.591
Positive	12(48)	13(52)	
Negative	141(37.7)	233(62.3)	
unknown	5(38.5)	8(61.5)	

6. Discussion

The objective of this study was to investigate the extent, patterns, determinants of domestic violence and its impact on obstetric outcome. Most data on the prevalence of domestic violence among pregnant women come from population based surveys and its effect on pregnancy outcomes was not studied in Ethiopia.

This study documented a high prevalence of domestic violence (38.3%) during index pregnancy among pregnant mothers. This is consistent with other studies, although the observed prevalence between countries and regions ranges widely from 15 to 71% according to WHO multi country study on domestic violence. However, it is lower than the prevalence reported by a study done in Butajira, where the prevalence of domestic violence was found to be 54%. Prevalence of sexual violence (24.3%) and physical violence (22.3%) in this study were also much lower than the result found from Butajira study where the prevalence of sexual and physical violence were 44% and 29% this difference may be partly explained by difference in the study area where the latter was community based study. Comparing the above results with results from WHO multi country study on domestic violence done in ten countries and 15 sites, prevalence of physical and sexual violence in Ethiopia was 29% and 44.4% respectively, which was significantly higher than our finding in this study. In similar study the prevalence of overlapping physical and sexual violence was found to be 54%, which is significantly higher than our finding, 8.3%. T his can be due to the fact that the WHO multi country study was done in rural parts where socioeconomic status and awareness of women expected to be lower than that of Addis Ababa and its vicinity. (3, 15, 41)

Similar study from Butajira, Ethiopia revealed a 77% of physical violence during pregnancy which is much higher than our result (22.3%) and the difference could be due to difference in study design as well as due to difference in sociocultural and behavioral characteristics. (15)

The proportion of women who had been forced into a humiliating sexual acts like practice of sexual acts out of norms were found to be 1% in this study which is less than the study done in western part of Ethiopia where 7% of the participants experienced humiliating sexual acts. This difference can be partly explained by the difference in study design and sample size. (16)

In our study, thirty eight percent of the respondents admitted experiencing one or both forms of domestic violence which is much higher than the study done in a tertiary hospital in Nigeria (28.3%) and North Indian Women (28.4%). Another study done in Brazil reported the prevalence of physical violence and sexual violence to be 16% and 19.1% respectively which are much lower than our study. (10, 12)

Domestic violence was more prevalent for women with unplanned or unwanted pregnancy according to a study done in Brazil and India. However this effect was revealed in our study only in bivariate analysis where 10.4% of women with unplanned pregnancy and 3.6% of women with unwanted pregnancy reported one or both forms of violence. Multivariate analysis didn't show statistically significant association between unplanned/unwanted pregnancy and risk of domestic violence (10, 20)

A high consumption of alcohol and other drugs during pregnancy were associated with domestic violence during pregnancy according to another study done in Brazil. This study also showed that khat chewing habit by participant to be an independent factor for domestic violence though alcohol consumption habit by both partner and women didn't show any association. According to this study 5.6% of pregnant women who chew khat had sustained at least one form of violence when compared to 3.4% with no history of violence. Furthermore this study showed association between violence and partner occupation as well as having another partner before/currently only in bivariate analysis similar to a study done in Tanzania but the association was lost when adjusted for other variables (21,37)

Any woman is at risk of domestic violence during pregnancy, regardless of ethnic origin, religion and age. However, aspects of a woman's socio-cultural back ground can be used against her in abusive and undermining way. There didn't appear to be any relationship to duration of marriage, age at first marriage, age, parity, educational achievement, or employment of the participants in this study which is also consistent with a study done in central Mediterranean pregnant population (19).

As to the impact of violence on pregnancy outcome, this study revealed that there was no statistically significant association between obstetric complications and physical or sexual violence during pregnancy which is consistent with a study done in Canada. But, a cohort study from Brazil among pregnant mothers showed that physical or sexual violence was significantly associated with obstetric complications, premature rupture of membrane and vaginal bleeding. This difference could be explained by the fact that the latter study included larger number of sample size and the study design used was different (4, 10)

Another study in Peru also reported that physical violence was associated with 1.9fold increased risk of pre eclampsia, but this study didn't show any degree of association between violence and adverse pregnancy outcome. This could also be explained by the difference in study design and larger sample size in that study. Although evidence from individual studies has been contradictory, a meta-analysis of 14 published studies from North America and Europe showed a weak but significant association between abuse during pregnancy and low birth weight. In contrary, this research didn't show any difference in birth weight. Variations between samples and potential causal pathways could account for some of the differences. (17, 29)

According to a study undertaken in Mississippi to evaluate the impact of physical abuse on pregnancy outcomes the frequencies of preterm birth, mode of delivery, and Apgar scores <7 at fifth minutes were not statistically different .This study is consistent with our study but, similar study also showed that admission to the neonatal intensive care unit was more common among infants of the abused women. There was no difference in neonatal intensive care unit referral in our study and this could be due to difference in study design (6)

7. Conclusions and Recommendation

- This study shows that sexual and/ sexual violence during pregnancy is a major public health problem and it seems to be more prevalent in our set up when compared to other countries
- Maternal khat chewing habit was found to be independent risk factors for sexual and/physical violence
- Despite the high prevalence of violence during pregnancy, this study didn't show statistically significant association between violence and obstetric complications
- Studies with better study design (case control or cohort studies) and larger sample size are needed to adopt a more comprehensive approach to identify determinants and pregnancy outcomes of domestic violence during pregnancy.

8. Limitations

- Prevalence figures are liable to under or over reporting and the issue is surrounded by taboo and stigma
- Since the study is institutional based, representative study groups may not be found
- The prevalence and effect of psychological violence was not studied in this study
- Cross sectional study design limits the extent to which we can establish causality, and distinguish risk factors from consequences of violence during pregnancy

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Annex 1: Consent form

Hello, my name is ....… We are conducting a study on pregnancy outcomes of gender based violence. This will help us in the future to assess the pregnancy outcomes of gender based violence. As part of this, I would like to ask you some questions about your current pregnancy. There is no risk if you agree to participate in the interview. All the information that you give to me will be kept strictly confidential; your name will not be used and you will not be identified in any way. Your current and future care at this facility will not be affected in any way. This interview will take approximately 25 min to complete. Your participation is absolutely voluntary and there is no penalty for refusing to take part. You are free to ask any questions; you may refuse to take part in the interview; you may refuse to answer any question in the interview; and you may stop the interview at any point.

Do you have any questions for me at this time about this survey?

Yes_____ No___

Do you agree to participate in this interview? Yes_____ No_

If no, thank the participant and close the interview.

Annex 2: Questionnaire

Section I. Socio demographic characteristics of the mother& her partner

S/N	Questions		Alternative choices and responses
1.1	How old are you?		-----years
1.2	What is your religion?		1. orthodox----- 4. Protestant------- 2. muslim-------- 5.other(specify) 3.catholic---------
1.3	What is the highest educational level you completed?		1.illiterate----------- 5.college diploma---- 2.read and write----- 6.degree & above----- 3.elementary--------- 4.high school--------
1.4	What ethnic group you belong to?		1.Amhara --------- 3.Tigre --------- 4.gurage----- 2.Oromo---------- 5.other (specify)
1.5	What is your current marital status?		1.Married---------- 3.single----------- 2.divorced-------- 4.widowed------------
1.6	What is your current occupation?		1.unemployed------- 6.merchant---- 2.student------------- 7.daily laborer--- 3.housewife--------- 8.other(specify)---- 4.governmet employee— 5.private employee------
1.7	How many years have you lived with your partner in marriage?		--------------years
	1.7.1	age at 1st marriage of the mother	--------------years
	1.7.2	age at 1st marriage of the partner	-------------years
1.8	How old is your partner?		--------------years
1.9	What is his religion?		1.orthodox----------- 4.protestant---------- 2.muslim----------- 5.other(specify)------ 3.catholic-----------
1.10	What is his educational status?		1.illiterate---------- 4.high school----- 2.read and write----- 5.college diploma--- 3.elementary--------- 6.degree & above----
1.11	What is your partners ethnicity?		1.Amhara ------- 3.Tigre----- 4.gurage--- 2.Oromo---------- 5. Other(specify)-----
1.12	What is his current type of job?		1.unemployed------ 6.student---- 2.merchant----- 7.other(specify)--- 3.daily laborer--- 4.government employee— 5.private employee----
1.13	Income (birr/month)		1.<500 4.3000-5000 2.500-1000 5.>5000 3.1000-3000
Section II. Exposure status of substance abuse of their partner			
2.0	Did he chew khat in his lifetime?		1. yes------ 2.no-----------
2.1	If yes to Q NO.2.0		1.once/week 3.4-6days/week---- 2.2-3days/week---- 4. 2-4 days/month------- 5. Once a month/less---
2.2	Did he drunk in his lifetime?		1. yes---- 2. No------------
2.3	If yes to Q NO. 2.2		1. 2-3days/week---- 3. 2-4 days/month---- 2. 4-6days/week---- 4.once a month/less---

2.4	What do you suggest about his relation before you marry him? Did he have another partner?	1.yes---------------------------- 4.i don't know----------- 2.probably he may have---- 3.never --------------
2.5	How many possible partners he have?	1. one---- 3. 4-6----- 5. I don't know--- 2. 2-3---- 4. ≥7-----
2.6	Do you suspect that you partner currently may have relation with other female?	1.yes---------------------- 3.never------ 2. probably he may have--------- 4.i don't know-----
2.7	If yes to Q NO. 2.6 How many other partner he may have?	1. one---------- 3. 4-6------- 5. I don't know------ 2. 2-3---------- 4. ≥7-------
Section III. Her exposure status of substance abuse		
3.0	Have you ever chew khat in your lifetime?	1. yes---------------- 2. no------------------
3.1	If yes to Q. NO. 3.0, how frequent?	1. 2-3 days/week------------ 4. Once a month------ 2. 4-6days/ week------------- 5. Refused------------ 3. 2-4 days/ month-----------
3.2	Have you ever drink alcohol in your lifetime?	1. yes ----------------- 2. no------------------
3.3	If yes to Q NO. 3.2, how frequent?	1. 2-3days/ week------------- 4.once a month---------- 2. 4-6days/ week------------- 5. Refused------------ 3. 2-4 days/ month----------

		problems	yes	no
3.4	If yes to Q. NO, 3.0 and 3.2, have you ever faced problem because of chewing khat or drinking alcohol?	a. fighting with other people	1	2
		b. have unwanted sexual intercourse	1	2
		c. sexual intercourse with casual partner	1	2
		d. arrested in prison	1	2

Section IV Exposure status of violence				
When two people marry or live together, they usually share both good and bad moments. I would like to ask you some questions about your current relationship with your husband and how he has been treating you during the current pregnancy. I would again like to assure you that your answers will be kept secret, and that you do not have to answer any questions that you do not want to do so.				
4.0	Do you and your husband/ partner discuss the following topics?		yes	no
		a. things that have happened to him during the day?	1	2
		b. things that happen to you during the day?	1	2
		c. your worries or feelings?	1	2
		d. his worries or feelings?	1	2
4.1	Thinking about your husband/ or	Points	yes	no

	partner would you say it is generally true that he has the following behaviors?	1. tries to keep you from seeing your friends?	1	2							
		2. tries to restrict contact with your family?	1	2							
		3. insist on knowing where are at all time?	1	2							
		4. ignores you or treats you indifferently?	1	2							
		5. gets angry if you speak with another man?	1	2							
		7. often suspicious that you are unfaithful?	1	2							
		8. expects you to ask his permission?	1	2							
The next questions are about things that happen to many women and that your current partner or any other person may have done to you. I want you to tell me if your husband/ partner or any other person has ever done the following things to you.		A/ if yes continue with B. If NO skip to next item		B/ has this happened during the current pregnancy?		C/ how often this happened during the current pregnancy?			D/ how often does this happen before the current pregnancy?		
4.2	**Physical violence**	YES	NO	YES	NO	once	few	man y	once	few	many
	a/ slapped you or throw something at you that could hurt you?	1	2	1	2	1	2	3	1	2	3
	b/pushed you or shoved you?	1	2	1	2	1	2	3	1	2	3
	c/ kicked you in the abdomen, dragged you or beat you?	1	2	1	2	1	2	3	1	2	3
	d/ hit you with his fist or with something else that could hurt	1	2	1	2	1	2	3	1	2	3
	e/ chocked you or burnt you on purpose	1	2	1	2	1	2	3	1	2	3
	f/ threatened to use or actually used a gun, knife or other weapon	1	2	1	2	1	2	3	1	2	3
4.3	**Sexual violence**										
	a/ physically forced you to have sex when you did not want to?	1	2	1	2	1	2	3	1	2	3
	b/ did you ever have sex you did not want because you were afraid of what he might do?	1	2	1	2	1	2	3	1	2	3
	c/ did he ever force you to do something sexual that you found degrading?	1	2	1	2	1	2	3	1	2	3
4.4	What are the possible reasons of violence on you with your partner? (Mark all that apply)	1.without justification----------------- 2. When he drunk------------------------ 3.when faced scarcity of money------- 4.when faced problem on his work---- 5.when there is no food at home------- 6.when I refused to have sex------------ 12.no quarrel at all----				7.jeleously----------------------- 8. disobeyed to his order------ 9.argue with him----- 10.overcooking the food---- 11.when not caring for baby---					

	V. CURRENT PREGNANCY INFORMATION	
5.0	Gravid__________ parity_________ abortion____	
5.1	Gestational age (from reliable LMP/ early milestones) ___________	
5.2	ANC follow up	**Yes____ No_____**
5.3	If yes to Q No 5.2 when did you start	**1.1st TM--- 2.2nd TM---- 3. 3rd TM----**
5.4	If no to Q No 5.2 reasons	**1.**
5.5	Obstetric complications encountered	1.PROM____ 4.Preterm labor____ 2.PIH_______ 5.other (specify)___ 3.APH______
5.6	Mode of delivery	1.SVD____________ 5.laparatomy__ 2.C/S_____________6.destructive__ 3.instrumental______ 4.assisted breech____
5.7	Known maternal chronic medical/surgical illnesses	1.cardiac--- 4.pulmonary— 2.renal ------ 5.HIV status--- 3. metabolic (specify)---- 6. Other(specify)
5.8	Is the pregnancy wanted?	1.yes------- 2.no -----------
5.9	Is the pregnancy planned?	1. yes-------- 2.no-----------
5.10	Prior admission to a hospital during the current pregnancy?	1. yes----------- 2.no-----------
5.11	If yes to Q No. 5.10 reason for admission	
5.12	Admission to labor/maternity ward status	1.in labor---- 2.before onset of labor---
5.13	If answer to Q No5.12 is (1) time interval between onset of labor and admission	---------------hours
5.14	Did your partner accompany you during admission to ward?	1.yes---------- 2.no---------------
5.15	HIV status	1. Positive--------2. Negative-------
5.16	VDRL/ RPR	1.reactive--------2.non reactive
	VI. Neonatal outcome	
6.0	Sex	1. Male___ 2. Female _____
6.1	Birth weight	1. <2500gm____ 2.≥2500gm____
6.2	Apgar scores	1. 1st min.____ 2.5th min.______
6.3	Stillbirth	1.antepartum death________ 2.intrapartum death________
6.4	NICU referral	1. yes________ 2.No______