Abstract

Background: Despite the high prevalence of depression and its known associated factors antenatal depression remains a low priority in research and health care practice in most of developing countries like Ethiopia.

Objectives: The study aimed at determining the prevalence of depression and its associated factors among pregnant women following antenatal care in Shashemene town health facilities.

Methods: Institution based cross-sectional study was conducted from September 1- 30, 2013, among 660 pregnant women following antenatal care. Systematic random sampling technique was used to recruit, from six public and private health facilities in Shashemene town, based on proportional allocation to their size. The data were collected using a pre-tested structured questionnaire/ using Edinburgh Postnatal Depression Scale (EPDS), the analysis were made using SPSS version 20. The chi-square test and Binary and Multivariate logistic regression was used to identify the predictors.

Results: The prevalence of antenatal depression in this study was 25.6 % (95%CI: 22.0, 28.8). Those unmarried (single, widowed and divorced) pregnant women were 3 times more likely to have depression than their counter parts[AOR 95% CI: 3.15(1.34, 7.38)] and also those pregnant women who hadn't negative obstetric history (miscarriage) less likely to have depressive symptom [AOR 95%CI: 0.77(0.35, 0.97)].The odds of mothers having a total household monthly income of above 1000 Eth. birr are less likely to experience depressive symptoms than those earning below 500 Eth. birr [AOR 95%CI: 0.20(0.10, 0.38)] .

Marital status and history of a previous miscarriage were associated with increased odds of antenatal depression: while other factors like family monthly income, intent of pregnancy, conflict with husband and lack of support from husband and family member during pregnancy, and history of any form of intimate partner violence are associated with antenatal depression.

Conclusion:

This study showed the prevalence of depression was common among antenatal following pregnant women. There are also factors contributing for this occurrence like marital status, previous history of miscarriage and low family income. Thus, any public health intervention designed to promote mental health should take in to account about socio economic status, prevention of unwanted pregnancy and also the role of male involvement.

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Acronyms

ANC	Antenatal Care
AOR	Adjusted Odds Ratio
CI	Confidence Interval
CMD	Common Mental disorders
CSA	Central Statistics Authority
DHS	Demographic and Health Survey
FANC	Focused Antenatal Care
FGD	Focus Group Discussion
HI	Health Institution
IEC	Information, Education and Communication
HW	Health Worker
LAMI	Low and Middle Income
MMR	Maternal Mortality Ratio
MCS	Maternity care services
MCHS	Maternal and child health services
FMOH	Federal Ministry of Health
OR	Odds Ratio
PID	Pelvic Inflammatory Disease
PNC	Postnatal Care
SSA	Sub-Saharan Africa
SD	Standard Deviation
SPSS	Statistical Package for Social Sciences
SNNPR	South Nations Nationalities and Peoples Region
TBA	Traditional Birth Attendance
UNICEF	United Nations Children Fund

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Chapter One

1. Introduction

1.1 Background

Depression is a common mental disorder, characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness, and poor concentration. Maternal depression is a condition that describes a range of physical and emotional changes that many mothers can have during pregnancy or after giving birth. Antenatal depression, also known as prenatal Depression, is a form of clinical depression that can affect a woman during pregnancy [1]. Evidence suggests that women experiencing prenatal depression may have an underlying vulnerability to changing hormone levels which trigger the onset of symptoms [2].

Estimates of prevalence of depression in pregnancy vary widely through women's life and countries economic status. A lifetime prevalence rate of antenatal depression is higher and common for women of childbearing age [3, 4].A wide variation of the prevalence is frequently reported between the developed and developing countries of the world. One systematic review reported depression rates in low- and middle income countries is estimated at a range of 15%–28% in Africa and Asia [5], In community- and clinic-based populations, rates of 39% have been reported from two African urban sites (Cape Town6 and Tanzania7) and 47% from an African rural site (KwaZulu-Natal). Similar rates have been reported from Bangladesh (33%) and Pakistan (48%) [6].Similarly the prevalence in Ethiopia is 19.6% [7]. Reports originating from developed countries showed Prevalence rates are more frequently ranging 10% to 15% (4% in Hong Kong4 and 8% in Finland5),with a broad variation oscillating from 5% to 30%. Few studies found prevalence rates in developed countries to be above 20% [6].

Depression during pregnancy is particularly significant not just because of its prevalence but also the consequences it poses to the health of the mother, and the potential negative effects on the developing fetus,[8] as the immediate and longer-term consequences of perinatal depression are far-reaching, affecting not only the mother but her infant, and their relationships. Depression in pregnancy may diminish one's capacity for self-care, including inadequate nutrition, drug or alcohol abuse and poor antenatal clinic attendance, all of which may compromise a woman's physical and mental health and

may reduce optimal fetal monitoring or restrict the growth and development of the fetus [9-12].A growing body of literature suggests that untreated depression is associated with a variety of adverse prenatal outcomes including Intra Uterine Growth Retardation, and when depression is associated with weight loss, fetal growth may be negatively affected low birth weight, preterm birth, and poor growth in the first year of life [13,14]. These studies show that infants of depressed mothers are between two and three times more likely to be of low birth weight [13, 14].

There are considerable literatures on risk factors for antenatal depression, with an extensive list of variables significantly associated with depression during pregnancy in developing and developed countries. Among the risk factors elucidated by these studies in developing countries, most were associated with poverty such as low income, unemployment, financial hardships and poor educational backgrounds [6]. Other reported factors associated with gestational depression were being single or divorced, having violence and psychiatry histories, substance misuse, stressful events and lack of social support, and negative obstetric histories like miscarriage, still birth unplanned or unwanted pregnancy, premenstrual dysphoric disorder, younger age. Women experiencing these risk factors should be watched carefully by providers and screened regularly during pregnancy and postpartum [15 - 18].

However, despite its high prevalence, deleterious consequences and its known associations with correlates of poverty, it remains a low priority in the research and health care practices of most low and middle income countries [20, 21] like Ethiopia.

1.2 Statement of the problem

Though not well documented and reported, studies are suggesting that the prevalence of antenatal depression in Ethiopia is high with strong predictors. A community based survey conducted in Demographic surveillance site(DSS) Gilgel Gibe has found that 19.6% prevalence with a number of risk factors [7].Studies are showing that the most frequent risk factor for depression in general population and during pregnancy substance abuse [19].The prevalence and associated factors of antenatal depression is not well researched in Ethiopia particularly in Shashemene, there are evidences suggesting that the problem is increasing from time to time. Unfortunately there is also a possibility to anticipate those pregnant women at risk for depression, and consequently to reduce the impact of antenatal depression on the mother, her baby, and her family [29, 30]. Determining the prevalence and determinants of depression in pregnancy can help us to target women at increased risk for screening and prevention.

1.3 Significance of the study

A finding from the study will refine and add an extension on the existing theoretical framework that is framed to study and analyze the associated risk factors of maternal depression. And also give a suggestion for the area specific and cost effective intervention on the routine assessment and care, a recommendation from the finding of this study will intensify the efforts in the process of early detection, prevention and treatment of maternal depression and also give a due emphasis on empowerment

capacity of health professionals in screening of the depressed mood of mothers by integrating a quick and simple depression scale tool in the routine Antenatal and postnatal care services in order to reduce the consequence of the problem for mothers, child and the family; Furthermore the study provides a potential clue for the subsequent researches in this area.

Chapter Two

2. Literature review

Maternal Depression

Depression affects 340 million people worldwide and is predicted to be the second largest cause of disease burden by 2020 [24]. However, despite its high prevalence and its known associations with social correlates of poverty [25], research on depression remains a low priority in most Low and middle income countries [26].

Attribute this paucity in research to three widely believed misperceptions about depression. Firstly, despite evidence to the contrary, they argue that many people understand depression as a western diagnosis which lacks clinical relevance in other contexts [26]. Considerable data have shown, however, that depression is both highly prevalent in Low and middle income countries, and associated with poverty and disability [27]. Research shows that economically deprived populations have the greatest need for mental health care, yet the least access to it [28]. The second misperception is that depression is not believed to be a direct cause of mortality, causing it to be overlooked in favor of illnesses which are perceived to be more life threatening [26]. This argument is unfounded because suicide is in fact a leading cause of maternal deaths [29]. Thirdly, depression is believed to be difficult to treat effectively with the limited resources available in Low and middle income countries, so health authorities focus their attention on other areas instead [26]. These misperceptions about depression and the resulting paucity in research are problematic because they mask the severity of what is a leading cause of disability worldwide [24].

Research suggests that treatment for depression within low, income contexts is possible, even though more evidence is needed to establish the scalability of interventions [25], economically deprived women suffering from depression in Chile have been found to respond well to a multi component intervention including psycho educational group work, monitoring of progress and pharmacotherapy for patients with severe depression [30]. Brief psychological interventions which focus on the day to day aspects of health and problem solving in low-income contexts have also been found to be effective for reducing symptoms of depression in Pakistan [31] It is noteworthy; however, that evidence from other Low and middle income countries suggests that psychological interventions alone might not be effective or as effective as those combined with a pharmacological component. Participants in a study in Goa, India,

were found to respond well to antidepressants in the short term period, but not to psychological intervention. Antidepressants in this study were also more cost effective than placebos in the short and long term [32].

Pregnancy related factors for maternal depression

One study reported increased risk of postpartum depression with poor infant health, but another found reduced risk of depression among women who had delivered before term [32]. The single strongest risk factor for postpartum depressive symptoms was depressive symptoms during pregnancy, as has been seen consistently. To the extent that depressive symptoms before, during, and after pregnancy represent a consistent underlying depressive syndrome, it is possible that depressive symptoms preceding pregnancy might increase social and economic risk (such as unemployment or lack of a partner); if this were the case, these social and economic risks might seem as spurious ‘‘predictors’’ of antenatal and postpartum depression. Lack of a partner and unwanted pregnancy remained associated with antenatal depressive symptoms among women with no history of depressive symptoms, suggesting that the risks associated with partnership status and pregnancy intention are not spurious artifacts of antecedent depressive symptoms [34].

Antenatal depression and child outcomes

Though less well documented than postpartum depression, depression in pregnancy is also associated with adverse child outcomes. Antenatal depression places women at greater risk for inadequate prenatal care, alcohol use and poorer weight gain in pregnancy, all of which impact poorly on the unborn infant [37]. Depression in pregnancy is associated with spontaneous preterm births [38]; slower fetal growth [39]; increased incidence of depression in infants when they are adolescents [40]; and with depressed infant behavior in general. Antenatal depression is also a strong predictor of postnatal depression, with women who are depressed in pregnancy having a heightened risk of developing depression during the postpartum 6 period [41]. Research suggests that the impact of depression in pregnancy on physical infant outcomes is more detrimental in Low and middle income countries than it is in high income contexts. For example, neonatal outcomes in Sweden do not differ between infants of anxious or depressed mothers, and infants of healthy mothers [42] in rural Pakistan, however, depression in pregnancy predicts poor infant growth and high risk for diarrhea. In addition, research from Ethiopia has found Common Mental Disorder in pregnancy to be associated with prolonged labor (of more than 24

hours) and delayed initiation of breastfeeding, which is indicative of more diarrheal episodes [43]. This might be attributable to the fact that the environments in richer contexts are characterized by less adversity, so mothers' agency in contending with food insecurity, limited access to water and other adverse circumstances is not as critical for the health and survival of the child, as it is in low income contexts.

Personal factors

Women in their reproductive years are at greatest risk for developing depression [44]. Rates of antenatal depression in high income countries range between 7.4% and 12.8% depending on the trimester of pregnancy [45]. However, studies from high income countries which have specifically sought out impoverished samples of women have found prevalence rates to be higher. For example, Hobfoll,[76] found rates of depression in pregnancy to be 24,27% for a sample of impoverished inner, city women in America, which is double the prevalence of middle class samples[45]. With the exception of Nigeria, where rates of antenatal depressed mood were 10.8% [56], prevalence rates of depressed mood in pregnancy are much higher in Low and middle income countries than they are in high income countries. In rural Pakistan, the prevalence for antenatal depression is 25% [47], in Brazil it is 20% [48], and in Jamaica, it is 56% [49]. In South Africa, where there are large discrepancies in living standards between rich and poor, there are no prevalence data for antenatal depression.

However, study found rates of postnatal depression in impoverished areas of South Africa to be as high as 34.7%, which is two to three times the expected rate internationally. A later study in South Africa [49] examined postnatal depression in Soweto, finding 16.4% of probable cases of depression, which is much lower than that found 10 years earlier by Cooper at al. (1999). Part of the reason for this finding may be that women who dropped out of the study were those who were at greater risk for depression, potentially causing an underestimate of the real prevalence in this population [50]. As antenatal depression is one of the strongest predictors for postnatal depression [51].

Predisposing factors

In research from different countries, or from impoverished populations in high income countries, social factors associated with antenatal depression/distress include: being single [52]; having poor family and social support ; receiving poor financial and emotional support from one's partner[53] ; the infant being unwanted[54] ; being the victim of violence[55]; substance abuse[56]; having a low level of education

financial hardship[55]; experiencing more threatening or negative life events[56; 57]; the loss of an intimate relationship[58]; experiencing a previous stillbirth and polygamy[52]. In addition, lower health related functioning has also been associated with antenatal depression [58], as has being disabled [47], and having a history of depression [48] . Factors found to be protective include the presence of a grandparent and receiving help with childcare [47]. Many of these factors are also found to be associated with antenatal depression in high income countries, suggesting that at least in part, that there are a few common etiological factors across contexts. The implication of a possible association between depression and substance abuse is particularly concerning in South Africa, given that we have the highest rate of Fetal Alcohol Spectrum Disorders (FASDs) in the world [59, 60]. It is well established that psychological distress is a significant contributing factor to high-risk drinking in non pregnant women [61, 62] and in pregnant women [62]. Furthermore, women with higher levels of depression often continue to use alcohol despite knowing they are pregnant and clinician advice against such use [62]. Importantly, co-morbid alcohol use and mental disorders have been shown to have negative consequences on infant outcomes in addition to FASDs. For example, a retrospective report of over 500 000 women in California found that those women diagnosed with co-morbid substance use disorders and psychiatric disorders were more likely to deliver low birth weight and preterm infants than those with either of these conditions alone [63].

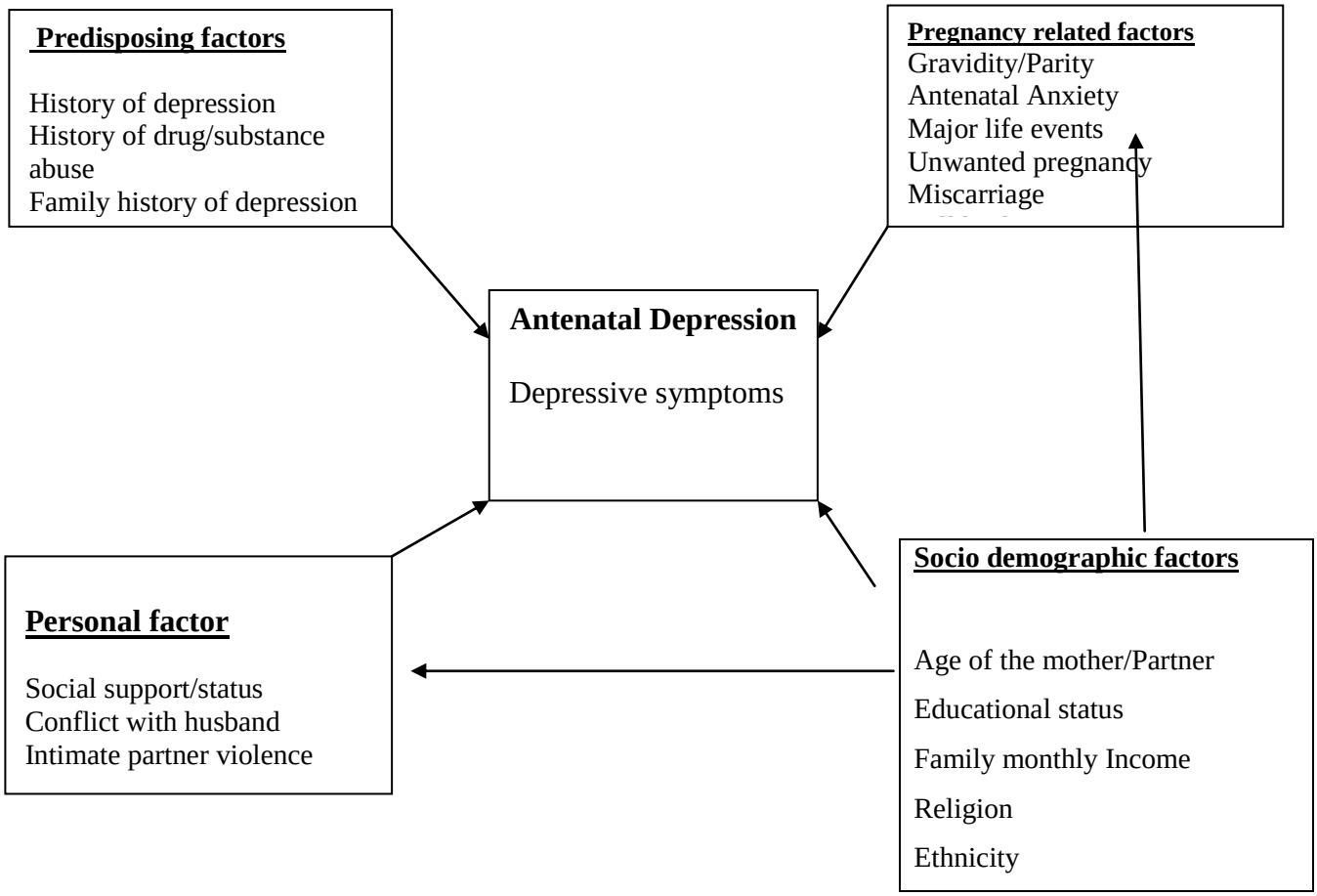
In South Africa, no studies have investigated the social factors associated with depressed mood in pregnancy. However, factors associated with postpartum depression from South Africa and other LAMI countries include: marital violence[33]; unplanned pregnancy[64]); lack of support from or problems with one's partner [50, 64]; poor financial support from the child's father (Tomlinson, et al., 2004); the child's father having a negative attitude towards him/her [64]); and being faced with extreme societal stressors such as witnessing violent crime or having one's life threatened[50]. Evidence is less clear regarding the association between other socio-demographic variables and postpartum depression. Cooper et al. (1999) found age, parity, infant gender, educational history and marital status to be unrelated to postnatal depression. While other study [49] supported the majority of these findings; they found that maternal education was protective. Patel et al. (2002) also found that education was protective, and that employment was protective. One reason why socioeconomic variables do not yield significant associations in these studies might be due to insufficient variability in samples. In a review of research investigating the relationship between poverty and mental health, Patel and Kleinman (2003)

state that although mental health is not frequently associated with income levels per say, that it is associated with social correlates of poverty, such as the risk of violence and ill health, rapid social change and experiences of insecurity and hopelessness, which are embedded in poorer populations. More encompassing definitions of poverty would infer that these factors are not necessarily mediators of poverty, but facets of poverty itself. As such, it could be argued that their adverse influence on mental health outcomes could be reduced through poverty alleviation efforts. With this in mind, poverty remains an important consideration in public mental health debates [65].

Socio-demographic factors

Race/ethnicity, age and socioeconomic status are also predictors of maternal depression. Rates of depressive symptoms are estimated to be as high as 35 percent in African American women. While estimated prevalence rates among Latina women vary from high to very low, low-income Latina women have uniformly high prevalence rates [66].) Regardless of race, research suggests low-income women are particularly at risk. In a study of 17 Early Head Start programs, which serve low-income children, 42 percent of the mothers reported depressive symptoms [67]. A study of young mothers at community pediatric health centers found that an average of 40 percent screened positive for depressive symptoms. Pregnant and parenting adolescents also face a higher risk of PPD [68]. Data from the 2004–2005 PRAMS survey confirm the importance of race/ethnicity, age and socioeconomic status as maternal depression predictors. According to data from the 17 states reporting on the prevalence of self-reported postpartum depression in those years, younger women, those with lower educational attainment, and women who received Medicaid benefits for their deliveries were more likely to report postpartum depressive symptoms (PDS) [68].

In 13 of 16 states IV for which race/ethnicity data were available, a significant association was observed between race/ethnicity and depressive symptoms, with non-Hispanic white women having a lower prevalence of depressive symptom compared with women of other racial/ethnic groups, also useful in identifying other risk factors for Antepartum depression. Tobacco usage during the last three months of pregnancy, physical abuse before or during pregnancy, partner related stress during pregnancy, traumatic stress during pregnancy, and financial stress during pregnancy were significantly associated with a higher likelihood of self-reported depressive symptoms in all or nearly all of the 17 states [69].



Figure, Conceptual framework of predictors of maternal depression

Chapter Three

3. Objectives

3.1 General Objectives

To assess Prevalence of antenatal depression and its predictors among pregnant women on antenatal care in Shashemene town health facilities.

3.2 Specific Objectives

1. To assess the prevalence of antenatal depression in Shashemene town health facilities among women following antenatal care.
2. To identify factors associated with depression in pregnant women in Shashemene town Health Facilities

Chapter Four

4. Method and materials

4.1 Study areas and Period

The study was conducted in Shashemene town, from September1-30, 2013; the town is located, approximately 253 km south of Addis Ababa, in East Shewa Zone of the Oromia National Regional State. Geographically, it is found at 7-degree North Latitude and 38-degree East Longitude. The town is economically important and expanding quite rapidly compared to other towns. This is perhaps due to its location as a crossroad and a junction point for most towns located in the southern part of the country. It serves as an international highway route connecting Ethiopia with Kenya. The urban land of Shashemene stretches over 1,858 hectares of land. Climatically, Shashemene district falls into three climatic zones known as Dega, Woinadega and Kolla. Its altitude ranges from 1,672 to 2,722 meters above sea level. The temperature level ranges from 12-28°C and yearly rainfall varies from1, 500-2,000mm. According to the official Central Statistical Survey, the total population of Shashemene was estimated to reach over 153,162(CSA 2007). The Shashemene town has been restructured into ten administrative units called Kebele which are managed by the Municipality.

The potential health coverage is 98% and there are two Hospitals (one district Melka Odda and the other Kuyera referral); there are three Governmental health centers (Abosto, Awasho and Bulchana). The study entirely focuses on Health facilities in the town where there is ANC is provided. .The annual and monthly client for maternal health services particularly for ANC is 8568 and 714 respectively.

4.2 Study Design

Institution based cross sectional study design was employed.

4.3 Study Population

4.3.1 Source Population

All pregnant women, attending antenatal care in the health facilities.

4.3.2 Study Population

The study population was randomly sampled pregnant women who are attending the ANC during the time of data collection.4.4 Study variables

4.4.1 Dependent variables

Antenatal depression (Depression during the time of pregnancy)

4.4.2 Independent variables

Socio-demographic characteristics such as: age, educational status, monthly income, marital status, religion, occupation, ethnicity, family size and number of living children.

Other Independent variables: obstetric history (miscarriage, still birth and congenital malformation), intention of pregnancy, history of intimate partner violence, marital conflicts (support from husband, conflict with husband during pregnancy and Substance (cigarette, khat, alcohol, others).

4.5 Inclusion and exclusion criteria for the study population

Inclusion criteria

All pregnant women, able and willing for interview,

Exclusion criteria

- Pregnant Women, who are critically ill, could not speak or listen, were excluded from the study.

4.6 Sampling and sample size determination

4.6.1 Sample size determination:

Single population proportion formula is used to determine the sample size.

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

$$n = \frac{(1.96)^2 (0.5)(0.5)}{(0.04)^2}$$

$$n = 600$$

With 10% non response rate (refusal and absenteeism) the total sample size will be:

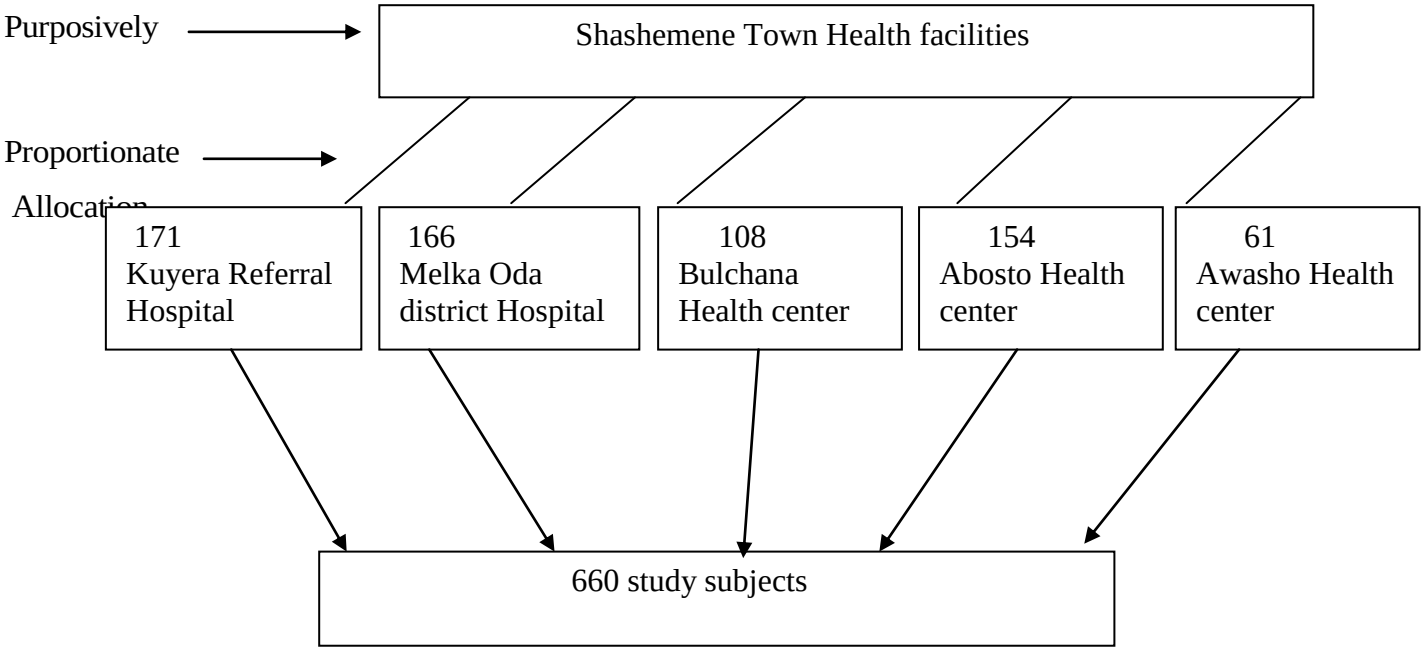
n= 660

Where,

- n = is desired sample size
- $Z_{\alpha/2}$= is reliability coefficient which is 1.96 with 0.05 level of significance (α=5%)
- P= since the magnitude is unknown in the study area, the prevalence of maternal depression (50%)
- d = margin of error (4%),

4.6.2 Sampling procedures

The calculated sample size was used to recruit the study subjects from two hospitals (Melka Odda, and Kuyera) and three health centers (Abosto Awasho, and Bulchana). The study subjects were selected by using systematic random sampling technique. To select study subjects, first the total number of Pregnant Mothers on antenatal care during the data collection was estimated/ determined for all the facilities, by taking the average number of pregnant mothers on registration book for the month prior to the data collection period, and to control the day of the week effect (i.e variation of days) average flow of client for each days from Monday to Friday were considered then systematic sampling technique was used by dividing the total number of clients on ANC with the calculated sample size (i.e. K). Then, those pregnant mothers was interviewed every K's persons until the final required sample size were obtained.



Systematic random sampling

Figure: Schematic presentation of the sampling procedure of Pregnant Mother, 2013

4.7 Data collection method:

4.7.1 Measuring instruments and Measurements

The data was collected using a standardized questionnaire consisting of the Edinburgh's postnatal depression scale/EPDS, it is widely used to measure the depression status during the Antenatal and postnatal period. It is composed of 10 variables scaled out of 30, each item scores in 0 to 3 scores. Item 1, 2 and 4 scores are arranged from zero to three. The other items (3, 5-10) scores are arranged from three to zero. The total score is calculated by adding together the scores for each of the ten items. Using a cutoff point 13 and above as validated by other studies the depression status were [70]. The translation to local language Oromiffa and Amharic and back translation of the scale by experts had been conducted. A face- to- face interview was conducted by using **the scale and variables** having the information on socio-demographic characteristics, economic status, intimate partner violence, conditions of current pregnancy and maternal healthcare utilization (ANC and delivery) using a pre validated and tested depression scale. (Annex iii).

4.8 Data Collection process

4.8.1 Recruiting and training

A selected health professional, who can speak local language (Afan Oromo), were hired as a data collectors and supervisors. A three days training was given on the objectives, the procedures of the study, art and skill of interviewing and data collection techniques by going through the questionnaires and the scale before the actual work Practical exercise was made through peer interviewer.

4.8.2 Pre-testing

The pre test of the questionnaire was carried out in Arsi Negele town health center which is at 18 kms distance and has similar socio-demographics characteristics with the people residing in the study area. A total of 30 respondents were interviewed. The principal investigator to gather with supervisors examined the clarity, understandability, and completeness of the questions, and then the r edited the tool.

4.8.3 Data collection

The data was collected while pregnant mothers receiving ANC service and in waiting area to receive the service. The supervisors in charge were checking the activities of each data collectors by a random spot-checking of the questioner to ensure reliability of the collected data. Supervisors were there every day to control as well as to support data collectors.

4.9 Data Quality Assurance

The quality of data was assured by properly designing and pre-testing of the questionnaire/scale, proper training of the interviewers and supervisors on the data collection procedures, proper categorization and coding of the questionnaire/scale. In order to ensure the quality of the data the supervisors and principal investigator were reviewing at least 10% of the computed questionnaires for completeness and clarity.

4.10 Data processing and analysis

Data were checked for completeness and coded, and then analyzed using SPSS (Version 20). First, frequency distributions of the characteristics of study population were tabulated then bivariate analysis was done to compare depressive status with the other characteristics using Chi-square tests. All Variables in the bivariate analysis having $P < 0.25$ were entered into multivariable models. Multivariable logistic regression was done to identify factors that are independently and significantly associated with depression during pregnancy. Adjusted odds ratios with 95% confidence intervals were reported.

4.11 Operational Definitions

Antenatal depression: a pregnant mother who scored greater or equal to 13 for EPDS that has 10 item questions.

Postnatal depression: an affective mood disorder often occurring in women up to one year after child birth. Usually within the first two to three months postpartum, though onset can be immediate after delivery (distinguishable from baby blues" as it lasts beyond two weeks pos

Baby blue syndrome: depressive symptoms Begins during the first few weeks after delivery (usually in first week, peaking at 3 to 5 days) Symptoms usually resolve by two weeks after delivery.

Pregnant woman in the third trimester: -a woman who claims to be seven, eight, and nine months of pregnancy.

Antenatal care attended: Pregnant women who had attended antenatal clinics during the recent pregnancy at least once.

Antenatal care non-attended: A pregnant women who had not attended antenatal care clinics at all during the recent pregnancy.

Towns: are localities in which urban Kebele administrations that have 1000 or more people whose inhabitants are primarily engaged in non-agricultural activities as town irrespective of whether urban administration has been established or not.

Permanent residence: lived in the study area more than one year at the time of the survey.

4.12 Ethical clearance

The proposal was reviewed by the ethical clearance committee of Jimma University college of Public Health and Medical sciences. The study was commenced after obtaining a written consent from the University, to Oromia regional Health bureau and Shashemene town health office. Informed verbal consent was secured for each study subjects. Each respondent were informed about the objective of the study and assured of its confidentiality.

4.13 Communication of the result

The final report will be presented as partial fulfillment of the degree of Masters of Public Health to Jimma University, College of public health and Medical sciences, Department of Population and Family Health, and a copy of it will be offered to Oromia regional health bureau and to Shashemene town health office and then disseminated, on different presentations, on annual scientific meeting, conferences, etc. Finally it will be sent for publication of local or international journal.

5. Result

5.1 Socio Demographic Characteristics

A total of 649 pregnant women participated in this study making the response rate 98.3%. The mean (SD) ± ages of the study participants ranged from was 25 years (± 5.2 years). The majority (71%) of the study participants lives in the urban. One-fourth (26%) of the study participants were illiterate and one-quarter (25%) had a formal education. Majority of the respondent, 53.2% were Oromo and 50.7% are Muslims. (Table1).

Table1. Socio demographic characteristics of respondents in Shashemene town, Ethiopia, 2013

Variables	Categories	Number	Percentage
Residence	Urban	462	71.2
	Rural	187	28.8
Age of respondents	15-24	303	46.7
	25-34	302	46.5
	≥35	44	6.8
Occupation	House wife	359	55.9
	Farmer	84	12.9
	Merchant	81	12.5
	Gov. employee	64	9.9
	Others*	61	9.4
Marital status	Married	593	91.4
	Other**	56	8.6
Ethnicity	Oromo	343	53.2
	Amhara	95	14.6
	Wolayita	81	12.5
	Other***	128	19.7
Religion	Muslim	327	50.7
	Orthodox	147	22.4
	Protestant	140	21.6
	Others****	35	6.3
Educational status	Illiterate	172	26.8
	Read and write	151	23.5
	Primary/secondary	171	26.6
	College and above	88	13.7
Number of children	0 -4 children	402	61.9
	≥4 children	247	38.1
Family monthly income	≤500	82	12.6
	500-999	116	17.9
	≥1000	451	69.5

*daily laborer ** single, widowed and divorced ***Tigre, Gurage, Sidama ****Catholic, Wakefeta

5.2 Obstetric characteristics

One hundred ninety three (29.7%) of the respondents were primigravidas. And 30.4% has at least one live birth .Out of the total pregnant women 13.3% were at their first trimester while 49% and 37.7% were at the second and third trimester respectively, and 51.1% of them received ANC once, of which 33% had received their first visit of ante natal care at the fourth month. (Table 2)

Table 2: Obstetric history of the participants in Shashemene town 2013

Description		**Frequencies**	
Variables	**Categories**	**Number**	**Percentage**
Gravidity	0-6	619	95.4
	≥6	30	4.6
Still birth	Yes	48	7.4
	No	601	92.6
History of Abortion	Yes	122	18.8
	No	527	81.2
History of Congenital Malformation	Yes	25	3.9
	No	624	96.1
Trimester of pregnancy	First trimester	86	13.3
	Second Trimester	318	49
	Third trimester	245	37.8
Pregnancy wanted	Yes	468	72.1
	No	181	27.9
Desire to have additional children	Yes	225	34.7
	No	171	26.3
	I can't decide now	181	27.9
	It is not my decision	72	11.1
ANC visits	One time	329	51.1
	Two times	215	33.4

	Three times	84	13
	Four times	16	2.5
Support of Husband and family member	Yes	559	86.3
	No	90	13.7
History of conflict with husband	Yes	258	39.8
	No	390	60.1
History of Intimate partner violence	Yes	89	13.7
	No	560	86.3
stress / unhappiness current pregnancy	Yes	315	48.5
	No	334	51.5
stress/ unhappiness previous pregnancy	Yes	195	30
	No	454	70
Major life event ever faced lasts for long	No any	465	71.6
	Death	107	16.5
	Fire accident	12	1.8
	Chronic illness	48	7.4
	Other*	17	2.6

5.3 Alcohol and substance use status of the participants

Out of the respondents 9.1 %(58) are chat chewers, and 44% of the Khat users use it once in a week before this pregnancy and 18% are using Khat once in a week in the current pregnancy.64% pregnant women are using khat for recreational purpose. According to the study 1.9% and 58% have ever smoked cigarette and consumed alcohol respectively. (Table 3)

Table 3 Alcohol and Substance use character of respondents

Description		Frequencies	
Variables	**Categories**	**Number**	**Percentage**
Ever khat chewed	Yes	82	12.6
	No	567	87.4
Khat chewing habit previous pregnancy	once/week	35	42.7
	2-4/week	2	2.4
	Daily	2	2.4
	Occasionally	42	51.2
Khat chewing habit current pregnancy	once/week	20	24.7
	2-4/week	5	6.2
	Daily	1	1.2
	Occasionally	55	67.9
Attempt to quit Khat chewing	Yes	67	82.7
	No	15	17.3
Tobacco/Cigarette smoking	Yes	13	2
	No	636	98
Current smoking habit	Yes	6	46.2
	No	7	53.8
Ever consumed alcoholic drink	Yes	72	11.1
	No	577	88.9
Current alcohol consumers	Yes	48	65.8
	No	20	34.2

5.4 Depression status of the respondents:

The prevalence of depression among the pregnant women was 25.6 % (95%CI: 22.0, 28.8). Factors found to be significantly associated with increased risk of depression, were marital status, number of children, gravidity, parity, and trimester of pregnancy, intent of the pregnancy and support of the husband and family members. Those pregnant mothers who were not married(single, divorced and widowed) have 2.7 times more likely to have a depressive symptoms than those who are married (COR=2.7,95%CI:1.59, 4.59) and women who did not want the current pregnancy were twice as likely as women who wanted the pregnancy experience depression during pregnancy(COR=2.11,95%CI:1.45, 3.07),

Those factors significantly associated with a decreased risk of depression were Educational status, monthly family income, with previous negative obstetric histories like still birth, abortion and congenital malformations, presence of intimate partner violence, history of conflict with husband, presence of stress and/or anxiety, substance misuse like Khat chewing and cigarette smoking. Those women who had no history of abortion were less likely to have depressive symptom than that of their counter parts (COR=0.23, 95%CI: 0.12, 0.42). However, this depression status has not significantly association with place of residence, age, occupation, ethnicity religion and with major life event ever faced by the women.

Table 4 Prevalence of maternal depressive symptoms by women's sociodemographic, obstetric and other characteristics, West Arsi, Shashemene Ethiopia, 2013.

Variables		Depression		
	Categories	**No**	**Yes**	**COR (95% CI)**
Residence	Urban	351(76.2)	109(23.7)	1
	Rural	132(69.8)	57(30.2)	1.39(0.95, 2.02)
Age	15-24	231(75.2)	76(24.8)	1
	25-34	224(74.9)	75(25.1)	1.01(0.70, 1.47)
	≥35	28(65.1)	15(34.9)	1.62(0.82, 3.20)
Education	No-formal education	70 (60.3)	46(39.7)	1
	Read and write only	84 (75.0)	28 (25)	0.50 (0.28, 0.89)

	Primary and Secondary	155(68.3)	72(31.7)	0.45(0.29, 0.71)
	Higher education	66 (83.5)	13(16.5)	0.30(0.14, 0.60)
Occupation	Farmer	65(76.5)	20(23.5)	1
	Gov't employee	56(87.5)	8(12.5)	.46(0.19, 1.13)
	Merchant	59(72.8)	22(27.2)	1.21(0.60, 2.44)
	House wife	258(71.9)	101(28.1)	1.27(0.73, 2.20)
	Other*	45(75.0)	15(25.0)	1.08(0.50, 2.33)
Ethnicity	Oromo	255(73.7)	91(26.3)	1
	Amhara	73(78.5)	20(21.5)	0.76(0.44, 1.33)
	Wolayita	54(65.9)	28(34.1)	1.45(0.86, 2.43)
	Other**	101(78.9)	27(21.1)	0.74(0.46, 1.22)
Religion	Orthodox	113(76.9)	34(23.1)	1
	Muslim	238(72.8)	89(27.2)	1.12(0.78, 1.95)
	Protestant	107(76.4)	33(23.6)	1.02(0.59, 1.77)
	Other***	25(71.4)	10(28.6)	1.32(0.58, 3.04)
Marital Status	Married	448(75.7)	137(23.4)	1
	Other****	35(54.7)	29(45.3)	2.70(1.59, 4.59)
Monthly family income	<500	45(50.6)	44(49.4)	1
	501-999	76(62.8)	45(37.2)	0.60(0.34, 1.05)
	>1000	362(82.5)	77(17.5)	0.21(0.13, 0.35)
Number of children	0-4 children	454(77.2)	134(22.8)	1
	>4 children	29(47.5)	32(52.5)	3.73(2.18, 6.40)
Trimester of Pregnancy	First trimester	71(82.6)	15(17.4)	1
	Second trimester	228(71.7)	90(28.3)	1.86(1.07, 3.43)
	Third trimester	184(75.1)	61(24.9)	1.56(0.83, 2.94)
Still birth	Yes	21(43.8)	27(56.3)	1
	No	462(76.9)	139(23.1)	0.23(0.12, 0.42)
Abortion	Yes	62(50.8)	60(49.2)	1
	No	421(79.9)	106(20.1)	0.26(0.17, 0.39)
Cong/Malformation	Yes	3(12.0)	22(88.0)	1
	No	480(76.9)	144(23.1)	0.41(0.12, 0.13)

Pregnancy wanted	Yes	368(78.6)	100(21.4)	1
	No	115(63.5)	66(36.5)	2.11(1.45,3.07)
ANC visits	One time	238(72.3)	91(27.7)	1
	Two times	161(74.9)	54(25.1)	0.87(0.59, 1.2)
	Three times	64(76.2)	20(23.8)	0.81(0.46,1.42)
	Four times	15(93.8)	1(6.3)	0.17(0.23,1.33)
Support /living with anyone else	Yes	427(76.4)	132(23.6)	1
	No	55(61.8)	34(38.2)	2.00(1.25, 3.20)
History of IPV	Yes	23(25.8)	66(74.2)	1
	No	460(82.3)	99(17.7)	0.74(0.44, 0.12)
History of stress in this pregnancy	Yes	177(56.2)	138(43.8)	1
	No	306(91.6)	28(8.4)	0.11(0.75, 0.18)
History of stress in the last pregnancy	Yes	110(56.4)	85(43.6)	1
	No	373(82.2)	81(17.8)	0.28(0.19, 0.40)
Major life event faced	Death of F/member	61(57)	46(43.0)	1
	Fire accident	6(50.0)	6(50.0)	1.32(0.40, 4.37)
	Chronic illness	22(45.8)	26(54.2)	1.56(0.79, 3.10)
	No any	384((82.6)	81(17.4)	0.92(0.32, 2.62)
	Other	10(58.8)	7(41.2)	0.28(0.32, 2.62)
Khat use	Yes	45(54.9)	37(45.1)	1
	No	437(77.3)	128(22.7)	0.35(0.22, 0.57)
Cigarette smoking	Yes	5(38.5)	8(61.5)	1
	No	478(75.2)	158(24.8)	0.20(0.67, 0.64)
Alcohol consumption	Yes	56(77.8)	16(22.2)	1
	No	483(74.4)	166(25.6)	1.26(0.68, 2.20)

*daily laborer **Tigre, Gurage, Sidama ***Catholic, Wakefeta ** **single, widowed and divorced

5.5 Multivariate Regression modeling:

After controlling the confounders such as age, residence, occupation, number of children, gravidity desire to have additional child, stress in the last pregnancy, major life events and substance misuse (Khat and cigarette).during sequential regression modeling the effect of food insecurity on depression was observed. Those unmarried (single, widowed and divorced) pregnant women were 3 times more likely [AOR 95% CI: 3.15(1.34, 7.38)] to have depression than their counter parts and also those pregnant women who hadn't negative obstetric history (miscarriage) less likely to have depressive symptom [AOR 95%CI: 0.77(0.35, 0.97)].

Table 5 Multivariate model Prevalence of maternal depressive symptoms by women's sociodemographic, obstetric and other characteristics, West Arsi, Shashemene Ethiopia, 2013.

* Single, widowed and divorced

Variables		Depression		Odds Ratio with 95%CI	
Variables	**Category**	**No**	**Yes**	**COR (95% CI)**	**AOR(95%CI)**
Education	No-formal education	70 (60.3)	46(39.7)	1	1
	Read and write only	84 (75.0)	28 (25)	0.50 (0.28, 0.89)	0.73(0.33, 1.64)
	Primary& Secondary	155(68.3)	72(31.7)	0.45(0.29, 0.71)	0.91(0.47, 1.74)
	Higher education	66 (83.5)	13(16.5)	0.30(0.14, 0.60)	1.06(0.40, 2.77)
Marital Status	Married	448(75.7)	137(23.4)	1	1
	Other*	35(54.7)	29(45.3)	2.70(1.59, 4.59)	3.15(1.34, 7.38)
Monthly income	<500	45(50.6)	44(49.4)	1	1
	501-999	76(62.8)	45(37.2)	0.60(0.34, 1.05)	0.39(0.18, 0.82)
	≥1000	362(82.5)	77(17.5)	0.21(0.13, 0.35)	0.20(0.10, 0.38)
Number of children	0-4 children	454(77.2)	134(22.8)	1	1
	≥4 children	29(47.5)	32(52.5)	3.73(2.18, 6.40)	1.98(0.71, 23.09)
Abortion	Yes	62(50.8)	60(49.2)	1	1
	No	421(79.9)	106(20.1)	0.26(0.17, 0.39)	0.77(0.35, 0.97)
Pregnancy wanted	Yes	368(78.6)	100(21.4)	1	1
	No	115(63.5)	66(36.5)	2.11(1.45,3.07)	1.11(1.23, 1.69)
	Can't decide now	141(77.9)	40(22.1)	1.10(0.68, 1.78)	0.58(0.30, 1.13)
	Not my decision	55(76.4)	17(23.6)	1.20(0.63, 2.26)	0.68(0.27, 1.70)
Support husband	Yes	427(76.4)	132(23.6)	1	1
	No	55(61.8)	34(38.2)	2.00(1.25, 3.20)	0.35(0.62, 0.97)
History of IPV	Yes	23(25.8)	66(74.2)	1	1
	No	460(82.3)	99(17.7)	0.74(0.44, 0.12)	0.19(0.10, 0.37)
History of stress in this pregnancy	Yes	177(56.2)	138(43.8)	1	1
	No	306(91.6)	28(8.4)	0.11(0.75, 0.18)	0.29(0.14, 0.52)
Khat use	Yes	45(54.9)	37(45.1)	1	1
	No	437(77.3)	128(22.7)	0.35(0.22, 0.57)	0.68(0.33, 1.37)
Cigarette smoking	Yes	5(38.5)	8(61.5)	1	1
	No	478(75.2)	158(24.8)	0.20(0.67, 0.64)	0.23(0.46, 1.16)

Chapter Six

6. Discussion

Prevalence of depression during pregnancy

The prevalence of antenatal depression in this study was 25.6%.Marital status and history of a previous miscarriage were associated with increased odds of antenatal depression: while others factors like family monthly income, intent of pregnancy; marital relationships (conflict with husband during pregnancy), history of any form of intimate partner violence and feeling of stress/anxiety and unhappiness during the current pregnancy are associated with decreased odds of antenatal depression.

Though it is within the range of findings reported from developing countries with low and middle income that is ranging from 15%-28% in Africa and Asia, and 28%-57% in Pakistan [71]it is higher than the study conducted in Gilgel gibe (Demographic surveillance site) which was ascertained using a similar screening questionnaire, the Edinburgh Postnatal Depression, with a cutoff point >13that is 19.9% (95% CI, 16.8-23.1)[6] . A hospital-based cross sectional study conducted in Turk which is done on health facilities as that of the current study founds10.9% which is lower prevalence rate [72]. The prevalence of antenatal depressive symptom reported here is lower than the study in cape town periurban settlement 39% [73] and consistent with most studies from developing countries [74.75, 76] pooled prevalence of 23.1% – 95%CI: 20.9 - 25.4 – for lower income countries) .Rates of antenatal depression in high income countries range between 7.4% and 12.8% depending on the trimester of pregnancy [54]. However, studies from high income countries which have specifically sought out impoverished samples of women have found prevalence rates to be higher. For example, 86 found rates of depression in pregnancy to be 24%-27% for a sample of impoverished inner city women in America, which is consistent with current study.

With the exception of Nigeria, where rates of antenatal depressed mood were 10.8% [55], prevalence rates of depressed mood in pregnancy are much higher in Law and middle income countries than they are in high income countries. In rural Pakistan, the prevalence for antenatal depression is 25% [56], in Brazil it is 20% [57], and in Jamaica, it is 56% [58]. The lower prevalence in the high income countries

might have resulted from high quality antenatal care, better nutrition during pregnancy, and less stressful life events such as financial difficulties [77, 78]. The relative high prevalence of maternal depression in low- and middle-income countries may be related to women's exposure to multiple depression-related risk factors, including conflict, disasters, violence, migration, and a high prevalence of HIV/AIDS[79].

Associated factors

With the exception of marital status, household income and history of miscarriage, the majority of sociodemographic and obstetric indicators examined in this study were not significantly associated with antenatal distress. Place of residence, age, ethnicity, occupation and religion, gravidity, trimester of pregnancy, alcohol and substance use all showed no significant association with depressed mood. These findings are similar with research from Ethiopia Gilgel Gibe [6].

Based on the results of the data analysis after adjustment and control of the confounders, there were factors associated with increased and decreased odds of antenatal depression. Marital status and history of a previous miscarriage were associated with increased odds of antenatal depression: while an monthly family income, unplanned pregnancy; marital relationships (conflict with husband during pregnancy and absence of support from husband), history of any form of intimate partner violence and feeling of stress/anxiety and unhappiness during the current pregnancy are found to be associated with decreased odds of antenatal depression. These factors have been found to be a strong predictors evidenced by a literature review of epidemiological research on the prevalence of gestational depression or depression symptoms and their associated risk factors, including longitudinal research that estimated this prevalence before and after birth, in developed and low income countries[79]

The one factor which did yield significance both in the bivariate analysis and in the multivariate model, was monthly family income: those mothers having a total household income of above 1000 Eth. birr per month are less likely to experience depressive symptoms than those earning below 500 Eth. birr. For most of the low and middle income countries this remains true and concurrent, for example in a study conducted in peri-urban area of Cape Town in South Africa results suggest, that a household income of below R2000 per month may be a discriminating vulnerability factor for antenatal distress in this population[73].

Those unmarried (single, widowed and divorced) pregnant women were 3 times more likely [AOR 95% CI: 3.15(1.34, 7.38)] to have depression than their counter parts and also those pregnant women who

hadn't negative obstetric history (miscarriage) less likely to have depressive symptom [AOR 95%CI: 0.77(0.35, 0.97)] [72].

It is clear that pregnancy intent is associated with the potential presence of depressive symptoms in pregnant women. Women who had not planned their pregnancy were more likely to score higher on the in the prenatal period than the women who had planned to get pregnant, this finding is in line with a study conducted in Ethiopia, Gilgel Gibe DSS area and South Africa Cape Town[71,72].

The presence of social and emotional support from women's partners and family members in this study was the strongest predictor of antenatal distress. Women who had reported a supportive relationship with their partners were less likely to have experienced depressive symptoms in pregnancy than women who did not (OR: 0.35, 95% CI0:62, 0.97). This finding concurs with a study conducted in Ethiopia, Gilgel Gibe DSS area, though it has also the level of the support [71, 72].

Intimate partner violence was the other strongest predictor of antenatal distress, with women who had experienced intimate partner violence more likely to have depressive symptom in pregnancy than women who did not. Research from several Low and middle income countries finds violence to be associated with depressed mood both in pregnancy [79].

Limitation of the study

The study has several limitations. The design is cross-sectional, and therefore difficult to infer that the associations reported here are causal. The sample was recruited from mothers attending a antenatal care in Shashemene town health facilities public and private primary health service, which may have introduced a selection bias, since the study findings relates to women attending maternity health care services particularly antenatal care, and may differ from women who are outside the health care system or follow their antenatal care in rural health facilities. Therefore, the results may not be broadly representative of other periurban and rural settings in Ethiopia. It is recommended that further research be conducted in the community, as the vast majority of the pregnant women are not following antenatal care in Ethiopia(Antenatal coverage is 34% DHS 2011) with women who have very limited resources and access to health care.

Chapter Seven

7. Conclusion and Recommendation

As previously reported in the result antenatal depression is found to be common , to the extent of one out of four pregnant women attending the antenatal care and that an unwanted pregnancy, low monthly family income, and being single, widowed and divorced pregnant women, are associated with an increased prevalence of antenatal depression. These risk factors are similar to those reported for other populations, including women who are not pregnant. However, pregnancy is a unique social and biological event in a woman's life which may pose specific vulnerabilities. Thus, the impact of these factors may be exacerbated during pregnancy, especially in developing countries like Ethiopia, where women face great inequalities. The implications of the study for practice are to emphasize the need for screening for depression during pregnancy by health professionals in settings where antenatal care is provided. Provision of safe, effective and acceptable range of sexual reproductive health service and information (family planning and comprehensive abortion care) is recommended in order to reduce the incidence of unwanted pregnancy. Partner involvement, notification and education on the consequences of marital conflict and lack of social support on pregnant mothers. For gender-based violence like the intimate partner violence Law enforcement and social support is required at reducing the prevalence and risk factors.

Annex One Time schedule

Activities	Months											
	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Topic selection/approval Proposal Preparation and defense												
Preparing questioners												
Proposal approval/defense												
Ethical clearance and securing Budget												
Data collector recruitment and training												
Pretest & finalize questionnaire												
Data collection												

Data entry & Analysis												
First draft report writing												
Second draft report writing												
Final draft writing												
Final Defense												

Annex Two Budget break down:

2.1 Personal cost:

No	Type of personnel		Number of personnel	Number of days	Person- day	Per-diem	Total birr
1.	Data collector	Training	6	2	12	150	1,800
		Pretesting	1	1	1	100	100
		Actual collection	5	10	50	100	5,000
2.	Supervisor	Supervision	3	10	30	100	3,000
	Sub Total						9,900

2.2 Stationary and communication:

No	Item	Total unit	Unit cost	Total
1.	Duplication paper	10	100	1000
2.	Pencil	10	2	20
3.	Eraser	10	1	10
4.	Pen	10	5	50
5.	Marker	2	10	20
6.	Binder	6	30	180
7.	Photo copy	-	-	500

8.	Note book	12	10	120
9.	Transportation	-	-	500
10.	Communication (card)	5	100	500
	Sub total			2900
Total	Personal cost		9,900	
	Stationary & communication		2,900	
	Grand total:		12,800	

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Annex three questionnaire

Jimma University, College of medical sciences and public health, department of Population and family health, structured questionnaire and Edinburg's postnatal depression scale on maternal depression.

001 QUESTIONNAIRE IDENTIFICATION NUMBER |___|___|___|

002 REGION _____

003 TOWN _____

004 SITE_____

INFORMED CONSENT

Hello. My name is _____ and I'm working with the research team of Jimma University. We're interviewing pregnant women on Antenatal follow up here in Shashemene town about maternal depression.

We are conducting a study about maternal depression in this area. The information we collect will help the researcher to plan health services. You are selected for the study. The questioner usually takes about 30 to 45 minutes. All of the answers you give will be confidential and will not be shared with anyone other than members of our study team. You don't have to be in the study, but we hope you will agree to answer the questions since your views are important. If I ask you any question you don't want to answer, just let me know and I will go on to the next question or you can stop the interview at any time. Do you have any questions?

May I begin the interview now?

_____ (Signature of interviewer certifying that informed consent has been given verbally by respondent)

005 INTERVIEWERS: Code [____|____] Name_____

006 DATE INTERVIEW: __\ ____ \ _____

No	Questions	Coding categories	Skip to

RESULT: _____ (Result codes: Completed 1; Refused 2; partially completed 3; other 45.)

CHECKED BY SUPERVISOR: Signature _____ Date _____:

Part I Information on Socio-demographic Characteristics

101	Residence	1. Urban 2. Rural	
102	How old are you?	.....Years (age in completed years)	
103	Which of the following best describes your main work status over the past 12 months?	1. Farmer 2. Government employee 3. Merchant 4. Daily laborer 5. Other ; specify_____	
104	What is your religion?	1. Orthodox 2. Catholic 3. Muslim 4. Protestant 5. Others (specify)_____	
105	To what ethnic group do you belong to?	1. Oromo 2. Amhara 3. Tigre 4. Gurage 5. Wolayita 6. Sidama 7. Other(specify)_____	
106	What is the highest educational level you attained?	1. Illiterate 2. Read and write (Non Forma 3. Formal , Please write completed grade_____ 4. Higher education(Diploma Degree or Masters	
107	Marital status	1. Married 2. Single 3. Divorced 4. Widowed 5. Others ; _____	
108	If married, for how many years did you lived with your husband?	_____Years	
109	Occupation of your partner	1. Farmer 2. Government employee 3. Merchant 4. Daily laborer 5. Other ; specify_____	

110	Level of education of your partner	1. Illiterate 2. Read and write (Non Formal 3. Formal , Please write completed grade____ 4. Higher education(Diploma Degree or Masters	
111	Religion of your partner	1. Orthodox 2. Catholic 3. Muslim 4. Protestant 5. Others (specify)_____	
112	What is the ethnicity of your partners	1. Oromo 2. Amhara 3. Gurage 4. Tigre 5. Wolayita 6. Sidama 7. Others;_____	
113	Is your husband married before you?	1.Yes 2. No	
114	Does your husband have any other wife	1. Yes 2. No	
115	Monthly Household Income	In ETH Birr_____	

Part II Information about obstetric history

No.	Questions	Coding categories	Skip
201	Gravidity		
202	Parity		
203	Number of live births		
204	Still birth	1. Yes 2. No	
205	Abortion	1. Yes 2. No	
206	History of Congenital malformation	1. Yes 2. No	

207	How many months pregnant are you?	……...Months	
208	When you got pregnant, did you want to get pregnant at that time?	1. Yes 2. No	
209	Did you want to have a baby later on or did you not want any (more) children?	1. Yes 2. No 3. I cannot decide now 4. It is not my decision	
210	How many months pregnant were you when you first received antenatal care for this pregnancy?	……..Months	
211	How many times did you receive antenatal care visit during this pregnancy?	..……Number of Visits	
212	Is there anyone else living with you to support you including your husband? if married	1. Yes 2. No	
213	Were there times on which you had conflict with your husband during this pregnancy? If married	1. Yes 2. No	
214	Do you have a history of intimate partner violence (e.g. verbal, sexual, physical)	1. Yes 2. No	
215	Have you ever felt anxiety, stress or unhappiness during this pregnancy	1. Yes 2. No	
216	Have you ever felt anxiety, stress or unhappiness during or from previous Pregnancy	1. Yes 2. No	

217	Which of the following Major life event that lasts for long period of time, you ever faced?	1. Death of intimate family member 2. Fire accident 3. Chronic illness 4. No any 5. Other specify_____	

Part III Information on maternal Depression EPDS

No.	Questions	Coding categories	Skip
301	In the last week, have you been able to laugh and see the funny side of things? For example: can you laugh at things which normally make you laugh?	Yes As much as I always used to 0☐ No Not as much as I used to 1☐ Certainly not as much as I used to 2☐ Not at all 3☐	
302	In the last week, have you looked forward with enjoyment to things? For example if your cow is pregnant would you be able to look forward to it giving birth? Another example is, are you able to look forward to market day? Or to something like this?	Yes As much as I always used to 0☐ No Rather less 1☐ Certainly less 2☐ Never looked forward 3☐	
303	In the last week, have you blamed yourself unnecessarily when things went wrong? For example if your child gets ill do you blame yourself? Or, for example, if the crops fail? Or something like this?	Yes, most of the time 3☐ Yes, some of the time 2☐ Not very much 1☐ No never 0☐	
304	In the last week Have you been worried or anxious for no good reason	Yes Most of the time 0☐ Sometimes 1☐ No Not often 2☐ Never 3☐	

305	In the last week have you felt scared or panicky for no very good reason	Yes Most of the time 3☐ Sometimes 2☐ Rarely 1☐ No Never 0☐	
306	In the last week, have things been getting on top of you?	\Yes Most of the time unable to cope 3☐ Sometimes unable 2☐ No Mostly able 1☐ Coping as usual 0☐	
307	In the last week, have you been so unhappy that you have had difficulty sleeping?	Yes Most of the time 3☐ Sometimes 2☐ No Never 1☐ Rarely 0☐	
308	In the last week, have you felt sad or miserable?	Yes Most of the time 3☐ Sometimes 2☐ No Occasionally 1☐ Never 0☐	
309	In the last week, have you felt so unhappy that you have been crying?	Yes Most of the time 3☐ Sometimes 2☐ Occasionally 1☐ No Never 0☐	
310	In the last week, has the thought of harming yourself occurred to you?	Yes Frequently 3☐ Sometimes 2☐ No Not often 1☐ Never 0☐	

PART IV - Information on Substance abuse

No.	Questions	Coding categories	
401	Are there khat producers and/or sellers in your home place or village?	1. Yes 2. No	

402	Did you have any close relationship or association with one or more khat chewers?	1. Yes 2. No	
403	Have you ever chewed khat?	1. Yes 2. No→	
404	How old were you when you started chewing khat?	Age ------	
405	Before this pregnancy, how frequent is your chat chewing habit for a typical week?	1. Once per week 2. 2-4 days per week 3. 4-6 days per week 4. Daily 5. Occasionally (specify)_____	
406	How frequent is your chat chewing habit since you became pregnant?	1. Once per week 2. 2-4 days per week 3. 4-6 days per week 4. Daily 5. Occasionally (specify)_____	
407	What are the reasons for your chewing khat? (more than one answer is possible)	1. Recreational 2. Medicinal 3. Habit 4. For socialization 5. For avoiding stress 6. Other(specify)_____	
408	Do you take alcohol after chewing khat?	1. Yes 2. No	
409	Have you tried quitting khat?	1. Yes 2. No	
410	What do you think are the major problems associated with Chat use? (more than one answer is possible)	1. Financial crisis 2. Social relationship problem 3. Physical health problem 4. Psychological/mental health problem 5. Reproductive/fertility health problem 6. Sexual weakness/impotence	

		7. Exposure to other harmful habits related to Chat use (smoking/drinking) 8. Other/specify_____	
411	Have you ever smoked any tobacco products, such as cigarettes, cigars or pipes??	1. Yes 2. No	
412	Do you currently smoke tobacco products daily?	1. Yes 2. No→416	
413	How old were you when you first started smoking?	Age _____	
415	Have you tried quitting smoking?	1. Yes 2. No	
416	Have you ever consumed an alcoholic drink such as beer, wine, spirits, fermented cider or [add other local examples]?	1. Yes 2. No	
417	How old were you the very first time you ever drank an alcoholic beverage?	Age _____	
418	Do you currently drink alcohol?	1. Yes 2. No	
419	How often do you have a drink containing alcohol?	1. Daily 2. 5-6 days per week 3. 1-4 days per week 4. 1-3 days per month 5. Less than once a month	
420	Do you have any problems related to drinking alcohols?	1. Yes 2. No	
421	Why don't you chew khat? (circle all possible answers)	1. Because it is not acceptable in my family 2. Because I am concerned about my health. 3. Because it is against social tradition. 4. Because I cannot afford it. 5.Because it is against my religious teaching	

422	Why don't you smoke tobacco? (circle all possible answers)	1. Because it is not acceptable in my family 2. Because I am concerned about my health. 3. Because it is against social tradition. 4. Because I cannot afford it. 5.Because it is against my religious teaching	
423	Why don't you drink alcohol? (circle all possible answers)	1. Because it is not acceptable in my family 2. Because I am concerned about my health. 3. Because it is against social tradition. 4. Because I cannot afford it. 5.Because it is against my religious teaching	

Dammee Fayyaa maattii

Annex Four Oromic version

Yuuniversitii Jimmaatti Koolleji Saayinsi Meedikaal fi Fayyaa Hawaasummaa, Dammee Fayyaa maattii

Guca qo'annoo dhimma Haadholee hoordoffi da'umsaa duraa gaggesani irratti waa'e dhibee dhippina sammu ykn of jibuu xinxaluuf qopha'e.

001 Lakkofsa gucaa_____

002 Naannoo _____

003 Magaala_____

004 Dhaabata fayyaa_____

Fedhiif waligaltte

Nagaa ooltanii (bultanii) anni_____n jedhema.Garee qo'anno Yuuniversitii Jimaattin gaggeefamu wajjinin hojjjedha.Dhaabbilee fayyaa magaalaa addaa Shaashamanne keessatti argaman hundatti haadholle Hordoffi da'umsaa duraa gaggessan irratti rakko of-jibaachuu darbee darbee uummammu wajjin walqabateef gaaffi fi deebii yeroo gabaaba gonna.

Odeefannon gama keetti /keessani argannu hundii qo'anno kanaaf bayye'e barbaachisaadha. Kanaaf akka carraa ta'e qaama qo'anno kanaa ta'u keetif guddaan si galteeffadha.Turteen gaafffi deebii kanaa daqiiqaa 30-45 kan fudhatu ta'a. Oddefannon si biraa argamu kamiyyuu iccitin kan eggamu yoo ta'u misensaa garee qo'anno kanaa qoofaan kan bekkamu ta'a.Tarii gaaffi atti debisuuf fedhi hinqabaanne yoon si gaafadhee dibisuu dhisuuf mirga gutuu qabda yoo hinfeenes yeroo barbaaddeti gaaffi debii kana dhaabus ni dandeessa. Waan na gaafattu qabdaa?

Kanaaf amma gara gaff fi deebii ti cehuu hindandenyaa?

_____Mallatto gaafataa.

005 Koodii nama gaaffi fi deebii kana raawwatte_____

006Guyya gaaffi fideebiin kun itti rawwate_____

007 Xiinxala_____ 1. Gutumaan guttuti kan guttame

2. Walakkaan isaa kan guutame

3. Guutumaan kan hin guutamin

Supparvisara Mirkannesse

Mallatto_____ Guyyaa _____

Kutaa tokkofaa Gaafilee dhima hawassumaa waligalaa ilaalatan

Lakk	Gaaffii	Coding categories	Irra ce'ame
101	Bakka jireenyaa	1. Magaala 2. Baadiyaa	
102	Uummurin kee meeqa?	Waggaa..... (Ummuri lakkofsaan)	
103	Hojjin kee maali??	1. Qotte bulaa 2. Hojjattuu mootummaa 3. Daldaltuu 4. Hojii humnaa 5. Kan bira ibsii_____	
104	Amantaa maali hordoftaa?	1. Ortodoksi 2. Kaatooliki 3. Muslimaa 4. Pirootestaantii 5. Kan bira ibssi_____	
105	Qomoon kee maali?	1. Oromoo 2. Amaara 3. Guragee 4. Tigree 5. Walaayitaa 6. Sidaamaa 7. Kan bira ibssi_____	
106	Sadarkaan barumsa ketti hangamii?	1. hinbaranne 2. dubisaaf bareesu danddesisu 3. Barumsaa idilletin kutaa____xumuree 4. Sadarkaa barumsa ol'aanaa	

107	Haali gaa'ila keeti akkami?	1. hin heerumne 2. herumte 3. kan hiikte (gursumeetti) 4. irraa du'ee	
108	Yoo heerumte ta'e uumuriin abba waraa keetti hangami?	_____Years	
109	Abbaan waraa kee maal hojjata	1. Qottee bulaa 2. Hojjataa mootummaa 3. Hojji daldalaa 4. Dafaqaan bulaa 5. Kan biraa ibssi_____	
110	Sadarkaan barumsaa abbaa waraa ketti hangam?	1. Hinbaranne 2. dubisuuf barresuu qoofaa 3. Barumsa iddileen kan hanga kutaa_____baratee 4. barumsaa sadarkaa ol'aana	
111	Amantaan abba waraa ketti maalii?	1. Orttodoksii 2. Kaatolokii 3. Muslima 4. Proteestaantii 5. Kan bira ibsii_____	
112	Qomoon abbaa waraa ketti maali?	1. Oromoo 2. Amaara 3. Guragee 4. Tigree 5. Walaayitaa 6. Sidaamaa 7. Kan biraa ibssi;_____	
113	Abbaan waraa kee siin dura fuudhee beeka?	1. Eyye 2. Lakki	

114	Amma si malee niitii biraa ni qabaa?	1. Eyye 2. Lakki	
115	Gallin ji'atti argatan qarshiin yoo tilmaamamu hagam ta'a ?	Qarshii_____	

Kutaa lammafaa

Lakk	Gaaffii	birkii koodii	Irra ce'ame
201	Bara jireenya kee kessatti si'a meqaa ulfoftte?		
202	Bara jirenyaa kee kessatti si'a meeqa desse?		
203	Ijjoolee lubbun jirtu meqaa qabda?		
204	Daa'ima yeroo malee dhalate qabda?	1. Eyye 2. Lakki	
205	Ulfii sirraa bahee (cabana'ee) beeka??	1. Eyye 2. Lakki	
206	Daa'ima umamaan midhaa qaama wajjin dhalte qabdaa?	1. Eyye 2. Lakki	
207	Yeroo amma kana ulfa ji'a/baati meqaatti?	Ji'a/baatii……	
208	Ulfu yaroo amma kana karoorfatte ykn barbaadde ulfooftee?	1. Eyye 2. Lakkii	
209	Kanan booda da'uu ni barbaadaa?	1. Eyye 2. Lakki 3. Amma murteessuu hindanda'uu 4. Murtee koo qofaa miti	
210	Hordoffi da'umsaa duraa isa jalqabaa argachuuf yeroo dhuftuu ulfa ji'a/baatii meqaa turte?	Ji'a/baatii……	
211	Ulfa kee kana kessatti yeroo meqa tajaajila da'umsaa duraa argatte?	……	
212	Namnii si gargaaru ykn si wajjinin jiraatu jiraa?	1. Eyye	

		2. Lakki	
213	Yaroo uulfaa kana keessatti yaroon atti abbaa waraa keettin waldhabdee ni jiraa? Heerumteeta yoo ta'e	1. Eyye 2. Lakki	
214	Miidhaa dirqin gudeedu, rebbichaa ykn arabsoo namaa dhiheenyaattin kan tahee si qunaamee beekaa?	1. Eyye 2. Lakki	
215	Yaroo ulfaa kee kana keessatti yaadnii sammuu kee sidhipisuu ykn of sijibbisisuu ykn abdii si kuchisiisu si muddachaa ture?	1. Eyye 2. Lakki	
216	Yeroo ulfaa kee duraanni kessatti yaadnii samuu kee sidhipisuu ykn off si jibbisisuu si muudachaa turee?	1. Eyye 2. Lakki	
217	Mudanoon gadda cimmaafi kan yeroo dheraa sirra turee kan akkamitu siqaqabe?	1. Anna hin mudannee 2. Balaa du'aattin fira dhihoo dhabuu 3. Balaa umaamaa 4. Balaa 5. Hin yaadadhuu	

Kutaa sadafaa

No.	Questions	Coding categories	Skip
301	Torbee darbe keessatti kolfuu fi waan nama kofalchiisan arguu danda'eera jette yaadaa ?	Akkuma yeroo kaan godhuu danda'u 0☐ Hanga yeroo kaanii gochuu hindanda'u 1☐ yeroo hedduu hinkolfu 2☐ tasumaa hinkolfu 3☐	
302	Torbee darbee kessa waan tokko-tokko gara fuul-duraatti Abdiif Gammachuudhan ilaaluu dandessa turte?	Akkuma duraan godhaa ture 0☐ Kan Kanaan duraan godhu irraa gadi 1☐ Kan duraanii irraa haalan gadi 2☐ Tasuma akkas hingodhu 3☐	
303	Torbee darbee kessa Yeroo dhimmi	Eyyee, yeroo heddu 3☐	

	ykn waanti atti yaaddu tokko hin milka'in haafu gar malee of balaaleffata turtee?	Eyyee, yeroo tokko-tokko 2☐ Lakkii, yeroo hedduu miti 1☐ Lakkii, tasumaa akkana hingodhu 0☐	
304	Torbee darbe kesssa sababa ga'aa/amansiisaa hintaaneen yeroo hedduu cinqamaa turtee?	Eyyee, yeroo hedduu 0☐ Eyyee, yeroo tokko-tokko 1☐ Hedduu akkas godhee hinbe 2☐ Lakkii, tasayyuu akkana hingodhu 3☐	
305	Torban darbee keessa sodaanii fi naasuun sababa ga'aa/amansiisaa malee sitti dhaga'amaa turee?	Eyyee, yeroo hedduu 3☐ Eyyee, yeroo tokko-tokko 2☐ Lakkii, yeroo hedduu miti 1☐ Lakkii, tasayyuu natti hindhaga'aman 0☐	
306	Torbee darbee kessa Waanni marti sii yaaddeesa turee?	Eyyee, yeroo hedduu 3☐ Eyyee, yeroo tokko-tokko 2☐ Lakkii, yeroo hedduu miti 1☐ Lakkii, tasayyuu natti hindhaga'aman 0☐	
307	Torbee darbee kessa irriba rafuu irratti rakkina qabaachaa turte?	Eyyee, yeroo hedduu 3☐ Eyyee, irra dabree dabree 2☐ Yeroo hedduu miti 1☐ Lakkii, tasa akkasi ta'ee hinbeeku 0☐	
308	Torbee darbee keessa gaddi yokaan ammoo yaadni samuu nama jeequ si qunnamaa turee?	Eyyee, yeroo hedduu 3☐ Eyyee, irra deddeebi'ee 2☐ Yeroo hedduu miti 1☐ Lakkii, tasa akkas godhee hinbeek 0☐	
309	Torbee darbee kessa gammachuu qabaachuu haafuu irraa kan ka'e ni boosa turtee ?	Eyyee,yeroo hedduu 3☐ Eyyee, irra deddeebi'ee 2☐ Yeroo tokko-tokkko qofa 1☐ Lakki, tasa akkas godhee hinbeeku 0☐	
310	Torbee darbee kessa yaadni 'ofi-miidhi' jedhu sitti dhaga'amaa turee?	Eyyee, irra deddeebi'ee 3☐ Yeroo tokko-tokko 2☐ hedduu miti 1☐ Tahee hin bekku 0☐	

Kutaa Afurafaa

No.	Gaafii	Filenno debbi	
401	Naanno atti jiraatutti Namootni Chaatii/Jimma Omishaan ykn daldalan jiruu?	1. Eyye 2. Lakki	
402	Nama chaati/Jimaa cafaqu kan itti siqxu ykn walit addemtan jiraa?	1. Eyye 2. Lakki	
403	Caatti ykn Jimaa qaamtee bektaa?	1. Eyye 2. Lakki→412	######
404	Yeroo chaati qaamu jalqabdee umuriin kee meqa tuee?	Wagaa ------	
405	Ulfaa'u keettin duraa Jimaa/caatti yeroo ammam ammamin qaamta turtee?	1. Torbee kessa sia tooko 2. Torbee kessa Guyya 2-4 3. Torbee kessa Guyya 4-6 4. Guyya Guyyaan 5. Darbe darbee ibsii_____	
406	Ergaa ulfooftee bodda yeroo ammam ammamin qamaata ?	1. Torbee kessa sia tooko 2. Torbee kessa Guyya 2-4 3. Torbee kessa Guyya 4-6 4. Guyya Guyyaan 5. Darbe darbee ibsii ____	
407	Sababnii atti caatti itti qaamtu maali? (debii tokko ol kennu hin dandessa)	1. Bashananaaf/yeroo dabarsuuf 2. Qorichuumaaf 3. Araadaaf 4. Namaa wajjin waligaluuf 5. Cinqii samuu dhabamsiisuuf	

		6. Kan biraa(ibsi)_____	
408	Caatti erga qamaatte bodaa dhugaatti alkooli hin fiudhataa?	1. Eyye 2. Lakki	
409	Caatti qaamuu dhisuuf yaadde baktaa?	1. Eyye 2. Lakki	
410	Caatti qaamu dukka rakooleen gurgudaa dhufuu dandahu jeette yaaddu maal faadhaa?(Debii tokko ol kennu hin danddesaa)	1. Qisaasina dinagdee 2. Walitti dhuffenyaa fi jireenyaa haawaasuma midhu 3. Fayyumaa qaamaa midhu 4. Fayyaafi nagenyaa samuu midhu 5. Fayyaa qaama hormaat midhu 6. Fedhii walqunamti saala midhu 7. Araada adda addaaf saxilammu 8. Gara biraa Ibsii____	
411	Waan akka sijaara tamboo ykn shishaa xuxxe bektaa?	1. Eyye 2. Lakki→419	
412	Yeroo amma kan sijaara ykn tamboo hin xuxxa?	1. Eyye 2. Lakki→419	
413	Yeroo tamboo ykn sijaara xuxxu jalqabde ummuriin kee meqa ture?	Wagaa _____	
414	Walumaa galatti sijaara meqaa xuxxa lakofsaan guyaatti?		
415	Sijaara xuxu dhisuu ykn dhaabu yaadde bektaa?	1. Eyye 2. Lakki	
416	Dhugaatti alkoola qaban kan akka Biraa diraafti farsoo daadhii,araqee dhugdee bektaa?	1. Eyye 2. Lakki	
417	Yeroo jalqabaaf dhugaati alkoola qabuu yeroo dhugdee ummuriin kee meqa turee?	Wagaa _____	

418	Yeroo amma kan dhugaatti alkoola qaban hin fudhata?	1. Eyye 2. Lakki	 → End
419	Yeroo amma ammamin dgugaatti alkoola qabuu dhugdaa?	1. Guyya guyyaan 2. Torban kessa guyya 5-6 3. Torban kessa guyya 1-4 4. Torban kessa guyya1-3 5. Jia keesa guyya tokkof	
420	Dhugaatti alkoola wajjin walqabatte rakkon si qunnamme jiraas?	1. Eyye 2. Lakki	
421	Sababnii atti caatii hin qaamneef maali? Deebi tokko ol kenuu dandessa	1.Maati koo kessattii fudhatama hin qabuuf 2. Fayyaan koo akka hin hubamneef. 3. Aaddaa koo wajjin hin demuu. 4.Baasi issaa waanin hindandenyeef 5.Amantiin anni hordoofu wajjin hin demmu	
422	Sababnii atti Sijaara xuxxu jibbituf maali? Deebi tokko ol kenuu dandessa	1.Maati koo kessattii fudhatama hin qabuuf 2. Fayyaan koo akka hin hubamneef. 3. Aaddaa koo wajjin hin demuu. 4.Baasi issaa waanin hindandenyeef 5.Amantiin anni hordoofu wajjin hin demmu	
423	Sababnii atti dhugaati alkooli jibbituuf maali? Deebi tokko ol kenuu dandessa	1.Maati koo kessattii fudhatama hin qabuuf 2. Fayyaan koo akka hin hubamneef. 3. Aaddaa koo wajjin hin demuu. 4.Baasi issaa waanin hindandenyeef 5.Amantiin anni hordoofu wajjin hin demmu	