

**A Screening for Antenatal depression: a formative
study for development of a perinatal mental
health liaison service in Zewditu hospital**

In partial fulfillment of the Post-graduate Program in Psychiatry

Asmeret Andebirhan

Addis Ababa University, Department of Psychiatry

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Advisors

Dr Charlotte Hanlon

Addis Abeba University, Department of Psychiatry (MD, PhD, Psychiatrist)

Dr Ahmed ,Abdela

Addis Abeba university Department of Obstetrics and Gynecology (MD, Obstetrician and Gynecologist)

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Abstract

Pregnancy is a time when a woman experiences major psychological and biological changes. Many factors can affect the emotional state of the mother during pregnancy. This changes might predispose her for mental distress. Studies have shown grave consequences both on the mother and on the fetus in high and LMIC countries like Ethiopia .Screening might decrease the occurrence ,early treatment and prevention of complications of CMD

The aim of the study was to study the probable depressive symptoms and treatment acceptability of perinatal service among women who come for ANC visit in Zewditu Memorial Hospital ,Addis Ababa Ethiopia .It was a cross sectional study ,taking 187 women from the ANC clinic and administered PHQ 9 and other scales to asses violence, alcohol consumption and treatment acceptability questions.

The study found 30% of high depressive score .High association with being unmarried, lack of support, exposure to violence in pregnancy, having a ‘low risk’ pregnancy and reported lower relative wealth .Negative association with HIV status and high risk pregnancy .Low treatment seeking behavior .Participants prefer to be screened at the ANC clinic rather than the psychiatric clinic .

The study concluded that having a separate intervention for their mental distress is unlikely to succeed so joint intervention with their obstetric care is recommended .Obstacles that women have from getting psychiatric service also should be studied for a better intervention outcome

Table of Contents

Abstract.....	1
Abbreviations.....	1
Error! Bookmark not defined.	
Introduction	2
literature review.....	5
Statement of the problem.....	9
Objectives.....	10
Methodology.....	11
Study Design.....	11
Study setting	11
Study period.....	11
Exclusion criteria	11
Sampling strategy.....	12
Instruments.....	12
Data collection	1217
Process of data collection	1317
Piloting	1318
Sample size.....	1318
Data cleaning	14
Ethical considertation	15
Analysis	16
Results	17
Characteristics of the sample.....	17
Factors associated with high depressive symptoms.....	18
Acceptability of mental health care in high scorers.....	18

Table 1 Sociodemographic characteristics of women attending antenatal clinic at Zewditu.....	19
Table 2 Obstetric and health characteristics of participants	20
Table 3 reason for attending Zewditu Antenatal hospital	21
Table 4 Psychosocial characteristics of women attending antenatal case t Zewditu Hospital	22
Figure 1 .Frequencies of PHQ items in high and low scores	23
Table 5 Univariate analysis of factors associated with scoring 4 or more on the PHQ 9.....	24
Table 6 Crude and partially adjusted odds ratio for association with scoring 4 or more on PHQ9.....	25
Discussion.....	27
Conclusion	29
Reference	30
Appendix	33
Obstetric questionnaire.....	33
PHQ 9.....	34
Alcohol assessment	35
Violence assessment.....	39
Treatment acceptability	39

bbreviations

AAU:	<i>Addis Ababa University</i>
ANC:	Antenatal care
CI:	Confidence interval
CMD	Common mental disorder
DHS:	Demographic health survey
HICs:	High income countries
LBW:	Low Birth weight

PTD: Preterm delivery
PHQ: Patient health questionnaire
LMICs: Low and middle income countries

Introduction

Background

Pregnancy is a time when a woman experiences major psychological and biological changes. Many factors can affect the emotional state of the mother during pregnancy, including the woman's attitude towards being pregnant, whether or not the pregnancy is planned or wanted, and the availability of a supportive relationship with a partner.

Pregnancy is generally assumed to be a happy time, both for parents and for society as a whole, but pregnancy can be a difficult and even a dangerous period for women living in low- and middle-income countries (LMICs). In Ethiopia, according to the 2013 global report by the World

Health Organisation (WHO), maternal mortality is estimated to be 420/100,000 live births [Trends in Maternal Mortality: 1990, 2013]. The infant mortality rate is estimated to be 59/1000 live births [DHS 2011]. Other chronic difficulties, for example, intimate partner violence, have also been shown to increase during pregnancy [Gossaye, Y., et al. (2003)].

In this harsh reproductive health context, it is perhaps not surprising that the prevalence of common mental disorders during the antenatal period, mostly depression and anxiety (15.6%), is found to be higher in pregnant women in LMICs compared to women living in high-income countries [Fisher, J., et al. (2012)].

Despite the high prevalence of depression during pregnancy, large numbers of women do not receive treatment; in a study from a high-income country setting, one in five pregnant women experienced depression but only 13.8 % sought treatment [Bonari, et al. (2004)]. This is of concern because of the impact of untreated depression on the mother, for example in terms of neglecting her health and increasing the risk of suicide, as well as for the unborn child. There is evidence that untreated prenatal depression is associated with pre-term birth and low birth weight [Rahman, A., et al. (2007)]. Prenatal depressive symptoms have been associated with prolonged labour and delayed initiation of breast-feeding in women in rural Ethiopia [Hanlon, C., et al. (2009)].

Low help-seeking in women with prenatal depression, under-detection by health professionals and low uptake of antidepressant medication in the pregnancy period means that depression in pregnancy is associated with poorer outcomes than at other times in the lifespan.

Psychological and social factors relevant to Ethiopia

A qualitative study in rural Butajira, south central Ethiopia, found that emotional distress in pregnancy was linked to fear of dying in childbirth, becoming pregnant within one year of delivery of the previous child, marital and economic difficulties and unwanted pregnancy, for example when a child is conceived outside of marriage [Hanlon C et al 2010]. In a context where women may be held responsible for poor prenatal outcomes, prenatal depression may also be expected to be more common.

Even though there is evidence that socio-cultural practices may help to maintain perinatal mental health in women in rural Ethiopia [Hanlon et al., 2009], this might not be the case in urban settings where perinatal rituals are not practiced strongly.

The lack of awareness about depression in pregnancy and stigma in reporting depression during pregnancy means that the majority of women with prenatal depression in Ethiopia remain untreated, with adverse consequences for both themselves and their babies.

For all of the reasons summarized above, there is a strong argument to try to address the large gap in untreated prenatal depression. The prenatal period is the time in a woman's life when she is most likely to be in contact with health services through attendance at antenatal care clinics (ANC). In Addis Ababa, around 90% of pregnant women attend ANC [DHS 2011].

Routine screening for prenatal depression could be one approach to improving detection. However, this approach is resource-intensive in the ANC setting and may not be acceptable to women who are well. Indicated screening, whereby only women with detectable risk factors or overt distress are screened may be more feasible but understanding of the relevant risk factors is needed. On the other hand this also can be part of the focus of the antenatal clinic. Validated brief screens for depression do exist and appear to work as well as longer questionnaires (Akana et al., 2012).

The Patient health questionnaire 9 (PHQ-9) is a simple instrument which is used to screen for probable depression and has been validated for use in antenatal women in Ethiopia.

The study described in this proposal aims, therefore, to investigate the burden of probable prenatal depression in women who come for ANC follow up at Zewditu hospital and to explore the acceptability of depression screening and the acceptability of various treatment modalities for depression. The study findings will inform plans to develop a perinatal mental health liaison service in Zewditu hospital.

Literature Review

Common mental disorders (CMD), including anxiety and depression and somatic complaints, occur predominantly in women, affecting up to one in three people in the community (WHO 2014). Perinatal CMD is increasingly recognized to be an important public health issue in low- and middle-income countries (LMICs). This is shown by a systematic review done by WHO on prevalence of common mental health disorders during pregnancy, the prevalence ranged from 5.2 % to 32.9 % (Fisher et al 2012).

Untreated depression during pregnancy has been shown to be associated with poor maternal and fetal outcomes, with increased risk of spontaneous abortion, pre-eclampsia, worsening of mental health, suicide or suicide attempts, poor antenatal care attendance, poor self care and nutrition, low motivation to seek help and delays in the offspring's cognitive and emotional development [Bonari L et al 2004].

In a prospective cohort study carried out in Brazil, the prevalence of prenatal CMD was 33.6%, with 7.6% of newborns having low birth weight (LBW) and 6.9 % pre-term births. But the study did not find any association between CMD or LBW or pre-term delivery. The study concluded that CMD prevalence is high among low-income and low risk pregnant women attending a public health service [Faisal-Cury et al 2010].

In population-based cohort studies from Bangladesh [Nasreen H et al. 2005] and Pakistan [Rahman, A., et al. (2007)] and a facility-based cohort study from India [Patel, V., et al. (2006)], prenatal depressive and anxiety symptoms were associated significantly with LBW.

In a study done in rural south Africa, where there is a high prevalence of HIV and where most women will test for HIV for the first time during their pregnancy, findings were of a high prevalence of depression (46.7%). Lack of access to a regular income and never having practical support from a partner, partnership and family conflict, as well as testing HIV positive were significantly associated with depression [Rochat et al 2011]. A similar finding was found

between relationship of HIV and depression in a study done in Tanzania among pregnant women who knew about their serostatus, with 45% found to be depressed (Antelman et al 2007).

In Ethiopia there has been only one published study investigating antenatal common mental disorders, located in a predominantly rural community in Butajira. In the Butajira study, the prevalence of high CMD symptoms in pregnancy, defined as having six or more symptoms on the validated Self-Reporting Questionnaire, was 12.0% [Hanlon, C., et al. (2009)]. Potential risk factors associated with antenatal CMD included worry about child birth, exposure to stressful life events or intimate partner violence, and a past history of stillbirth, current ill-health, poverty and unwanted pregnancy [Hanlon, C., et al. (2009)]. In this study from Ethiopia, increased levels of antenatal CMD symptoms were associated with adverse consequences, including prolonged labor (lasting more than 24 hours) and delaying initiation of breast-feeding more than eight hours; however, the study did not find any association between psychosocial stressors (including CMD) and lower mean birth weight, stillbirth or neonatal mortality [Hanlon, C., et al. (2009)]. Antenatal CMD was also associated with functional impairment [Hanlon, C., et al. (2009)]. Antenatal CMD was found to be an independent risk factor for postnatal CMD [Hanlon, C., et al. (2010)], with 50% of cases of postnatal CMD having onset in pregnancy. Postnatal CMD has also been found to have adverse effects, for example associated with increased risk of infant diarrheal episodes [Ross, J et al 2010], increased risk of injuries to the child and increased risk of later emotional and behavioural problems.

In an unpublished Masters thesis from Ethiopia, carried out in the ANC clinic at Adama hospital, the prevalence of antenatal depressive disorder was found to be 31.2% as measured using the Beck Depression Inventory, which has not been validated for use in Ethiopia [Assefa M et al. 2011]. Marital conflict, previous induced abortion, fear of pregnancy complications, economic problems and unwanted pregnancy were found to be associated significantly with antenatal depressive disorder [Assefa M et al. 2011]

In another study carried out in public health centers in Addis Ababa, the prevalence of antenatal depression was found to be 53.4% using a cut-off of 8 or more on the Edinburgh Postnatal Depression Scale (EPDS). Having no formal education, being in elementary school, unplanned

pregnancy, support from the baby's father and previous history of depression were associated with occurrence of antenatal depression (Biratu A 2012 E.C).

In a recent study that was done in Addis Abeba , at the Saint Paul's Hospital ANC clinic among pregnant women in their third trimester attending ANC by using Self-reported Questionnaire (SRQ-20)showed the prevalence mental distress (MD)(SRQ-20 score > 6) was found to be 26.2 %. Women with obstetric problems in their current pregnancy , unplanned pregnancy ,Psychiatric illness in the past were found to have a strong association with the presence of significant MD . The study concluded that Health care providers responsible for ANC must be trained about the relevance and detection of MD during pregnancy. Proper counseling and emotional support should be given for women exhibiting the risk factors. (Bekele. D et al 2013)

In providing an integrated maternal and mental health service in south Africa, The Perinatal Mental Health Project (PMHP) developed an intervention to deliver mental health care to pregnant women in a collaborative, step-wise manner making use of existing resources in primary care. Over a 3-year period, 90% of all women attending antenatal care in the maternity clinic were offered mental health screening with 95% uptake. Of those screened, 32% qualified for referral to counselling. From this experience the PMHP model demonstrates, through routine screening and referral, can lead to the feasibility and acceptability of a stepped care approach to provision of mental health care at the primary care level (Honikman et al. PLoS Medicine).

On a recent published article which summarized the evidence of prenatal mental health, somatic symptoms were reported more common in women with depression than in women who do not have depression in the prenatal period (with the exception of appetite change), suggesting that they might be valid markers of the disorder. This presentation is common among women in low-income and middle-income countries(LMICs).The paper included the outcome of cohort study from Ethiopian.(Howard, et al Lancet 2014)

The PMHP has stated some key points after the three year intervention, These are

1. Maternity health workers may be trained to screen and refer for mental distress in low-resource primary care settings.
2. Training programmers that address and support the mental health needs health workers may help staff to manage their workload and prevent compassion fatigue and “burn out”.
3. On-site screening and counseling fosters the establishment of efficient referra mechanisms and access to mental health care often lacking in maternity settings in LMIC

4. On-site, integrated mental health services increase access for women who have scarce resources and competing health, family, and economic priorities
5. Coordinating mental health visits with subsequent antenatal visits further facilitates access for women with insufficient resources.
6. Dedicated, supervised mental health counseling personnel are required to meet the mental health needs of mothers living in adversity.
7. Mental health counselors require adequate training, supervision, and support

About screening for CMD ,the strongest evidence is for combined identification and treatment programs, mainly from three cluster randomized controlled trials in HICs that reported improvement in maternal mental health for women who received integrated post-partum screening and management strategies by trained health professionals. Due to low quantity of research into local understandings of perinatal depression syndromes in different African Countries the outcome of screening needs additional research.(Howard, et al Lancet 2014)

Statement of the problem

The scientific literature shows that prenatal CMD is a significant problem in LMICs, affecting both the woman and her unborn child. There are challenges in introducing evidence-based services because of the lack of research in addressing this issue in LMIC settings.

One of the challenges may be that treatment might not be acceptable to pregnant women, for example, due to fears about harming the baby. Another challenge is to differentiate the symptoms of pregnancy from symptoms of depression because of overlap (so-called ‘diagnostic overshadowing’). The lack of expertise in general (non-specialist) health workers to detect and manage prenatal CMD contributes further to worsening the situation.

In Ethiopia there are limited figures on the burden of depression symptoms in women attending ANC or information about the risk profile of women with high depressive symptoms.

Furthermore we know nothing of the treatment preferences of prenatally depression women in Ethiopia. The possibility of integrating brief screening instruments in the focused ANC has not been investigated.

In seeking to launch a new service to optimize mental health in pregnant women to reduce the various adverse impacts of prenatal depression, it is essential to have more information about the baseline situation pre-service development

Objectives

General objective

To investigate the burden of depressive symptoms in the antenatal clinic in Zewditu hospital in order to inform development of a perinatal mental health liaison service.

Specific objectives

- To assess the prevalence of probable depression among pregnant women
- To investigate the risk profile of women with high depressive symptoms.
- To explore the acceptability of treatment options for mothers who are found to be clinically depressed.

Methodology

Study Design

A hospital-based, cross-sectional study.

Study setting

The study was carried out in Zewditu Memorial Hospital ('Zewditu hospital'), a referral hospital located in Addis Ababa, the capital city of Ethiopia. Zewditu hospital provides Obstetric and Gynecological services to women living within a geographical catchment area around the hospital, as well as to those referred for specialist (tertiary level) care from primary care and other health facilities across the city. The antenatal clinic is run by a team of clinical nurses, medical interns, general practitioners, gynecology residents. General practitioners and medical interns evaluate and manage the low risk mothers (with no complications), whereas high risk mothers (with complications) are reviewed by residents for specialized care. Specific criteria exist to define high risk pregnancies, none of which include mental health risk factors. Clinical nurses measure vital signs and weight.

Study period

The study was conducted from 4th to 14th August 2014.

Exclusion criteria

- Acutely ill and needing emergency intervention.
- Non Amharic speakers

Sampling strategy

Due to the low number of mothers being seen in the clinic per day, all mothers who attended during the study period and fulfilled the inclusion criteria were included in the study.

Instruments

- The Amharic version of the Patient Health Questionnaire, nine item version (PHQ-9) [Kroenke, K. and R. L. Spitzer (2002) was used to measure depressive symptoms. The

PHQ-9 is a self-report questionnaire that has been validated in antenatal clinics in health centers in the Butajira area of Ethiopia. A score of four or more on the PHQ-9 was found to indicate the presence of probable depression against a gold standard of psychiatric nurse interview using the Mini International Neuropsychiatric Interview (Girma, F., personal communication).

- Sociodemographic and obstetric characteristics were measured using a structured questionnaire previously used in studies of perinatal women in Ethiopia [Hanlon, C., et al. (2009)]. The following characteristics were measured: age, educational level, marital status, parity and gravida, high-risk pregnancy (with complications), co-morbid medical conditions, past history of stillbirth, past history of neonatal death, past history of induced abortion, social support.
- Exposure to intimate partner violence was measured using two items from the WHO multi-country study on domestic violence which were found to be acceptable and informative in the Ethiopian setting [Garcia-Moreno, C., et al. (2006)].
- The Amharic version of the ‘FAST’ (Fast Alcohol Screening Test) was used to measure alcohol use disorders [Hodgson R 2001]
- Additional structured questions asked about the acceptability of various evidence-based treatment modalities for prenatal depression.

Data collection

Two psychiatry nurses from the psychiatric unit at Zewditu Hospital and one general clinical nurse (working in the ANC) were selected to collect the data. Before piloting, a meeting was held to discuss about the research objectives and training was given on the questionnaires. Direct observation of practice interviews was made during the training and feedback was given. This was done both for the psychiatric nurses who were collecting the psychiatric aspects of the questionnaire and the ANC nurse who was filling data about the obstetric history.

Process of data collection

Women were informed about the research when they entered into the nurses’ office for weight and other measurements. For women who gave informed, written consent, the obstetric part of

the questionnaire was then completed by the ANC nurse. Women then waited for their ANC assessment. After that they were taken to the room next to the nurses' room for a private interview. When they had completed the interview, if they scored four or more on the PHQ-9 and were willing to receive full assessment at the psychiatric clinic, they provided their phone numbers and were appointed for the next Wednesday afternoon for psychiatric evaluation.

Piloting

Piloting was carried out from 25th to 30th July 2014 to identify problems that might arise during data collection and create a smooth link between the ANC clinic and the psychiatric clinic.

The finding from the piloting was that women who were interviewed at the end of their ANC follow up complained of being tired and exhausted and refused to participate. Furthermore, those who were sent for investigations tended not to come back to the data collection area. A further difficulty was the place of data collection; the psychiatry clinic is located on a different side from the ANC clinic and this proved to be an obstacle to organizing a smooth flow of mothers from the ANC to the data collection area.

Because of the above reasons and after discussing with the ANC head nurse and the data collectors, it was decided to make a change of place at a room next to ANC clinic and the time during their waiting hours for evaluation.

Sample size

The required sample size was calculated using the formula below, with the following assumptions:

$$N = \frac{3.841 P (1-p)}{e^2}$$

Prevalence – 12 % [8]
Confidence interval 95 %
e – margin of error = 0.05

N = 160

To allow for the possibility of refusals and incomplete questionnaires, 15% was added and a sample of 187 women was collected.

Data cleaning

Data cleaning was done on each day of data collection which helped in giving immediate feedback on the quality of work.

Ethical considerations

- Ethical clearance for the research was given by Addis Abeba Health burro and the Department of Psychiatry, College of Health Sciences, Addis Ababa University. Zewditu memorial hospital also acknowledged the research and informed the respective departments to request their cooperation.
- Before data collection began, participants were informed about the research and their right to refuse to participate .At the end of the briefing they were asked to sign a consent form.
- Mothers who scored high on the depression screening instrument were identified and appointed to attend the psychiatric clinic on Wednesday afternoon for evaluation and treatment.
- Those who didn't appear for treatment where contacted by their telephone number which they gave voluntarily during the interview. The purpose of the telephone contact was to check on the woman's well-being and try to help overcome any barrier to attending for treatment.

Analysis

After data quality was checked, data were analyzed using SPSS 20 software [IBM statistic 20]. Descriptive characteristics were presented using percentages for categorical variables and mean (standard deviation) or median (with 25th and 75th centile) for continuous variables. Univariate analysis was used to examine the association between potential explanatory variables and scoring four or more on the PHQ-9. Chi-squared test with Fisher's exact test was used to assess for statistical significance at the level of $p < 0.05$. A limited multivariable analysis was conducted using logistic regression. In this analysis, associations between potential explanatory variables and having PHQ score of four or more were adjusted for age and educational level of the woman. A more comprehensive multivariable model was not possible because of the small numbers and instability of the estimates.

Results

During the period of data collection it was observed that the number of mothers seen per day was about half of that expected (usually 12 to 20 per day).

One hundred and eighty nine women were invited to participate in the study. The aim was 176 adding 10 % from the calculated sample of 160 to compensate for the first piloting days twenty women were added and it became 187

Two women refused, giving a response rate of 98.9%.

Characteristics of the sample

See Table 1. The mean age of participants was 28 years (standard deviation 4.5), ranging from 18 up to 43 years. All of the women were residents of Addis Abeba and spoke Amharic. Most women (164; 87.7%) were able to read and write and almost all (85.6%) were educated formally. Only 13 women (7.0%) were not married.

See Table 2 for a summary of the obstetric and reproductive health characteristics. Nulliparous women comprise 40.6% of women attending ANC. The majority of women (62.6%) were referred from health centers after being classified as a high risk pregnancy. The most common cause for being considered to be high risk was found to be previous Caesarian Section.

See Table 3 for the details of high risk pregnancies. Just under one quarter (24.1%) of women had experienced a previous pregnancy loss and 10.1% were HIV positive. In terms of psychosocial characteristics (see Table 4), 30% (n=56) of women scored four or more on the PHQ-9 indicating high levels of depressive symptoms. Only a minority (n=32; 17.1%) reported having adequate social support but the pregnancy was wanted by the majority of women. None of the women fulfilled criteria for harmful alcohol drinking, as indicated by a score of three or more on the FAST. Five women (2.6%) from the study reported experience of violence during pregnancy.

When comparing high scorers on the PHQ-9 (scoring 4 or more) to low scorers (<4), the three somatic symptoms differed most between the groups: sleep problems (96.6% vs. 29.0%), low energy (83.3% vs. 25.0%) and problems with appetite (73.3% vs. 22.0%) for high vs. low scorers, respectively. Only half of women with high depressive symptoms reported persistent sadness and only 33.3% reported anhedonia. Suicidal ideation was reported by 13.3% of high PHQ scorers.

Amongst the participating women, 56 women (30.0%) scored four or more on the PHQ and were considered to have 'high levels' of depressive symptoms.

Factors associated with high depressive symptoms

Scoring high (4 or more) on the PHQ-9 was associated significantly with being unmarried, lack of support, exposure to violence in pregnancy, having a 'low risk' pregnancy and reported lower relative wealth in univariate analyses (Table 5) and after partial adjustment for age and educational level (Table 6).

Acceptability of mental health care in high scorers

Fifty four percent of the women who scored high on PHQ were asked about their cause and explanation of their symptoms and (86.7%) thought their depressive symptoms are due to physiologic changes of pregnancy. Even though all said it is good to have special service for their symptoms only (14.2 %) actually attended for a psychiatric evaluation.

From those evaluated mothers 37.5 % mothers were found to be clinically depressed from mild to moderate severity and others had adjustment disorders and physical illness.

The majority of the women (83.0%) who reported high depressive symptoms preferred talk therapy to medication and preferred it to be in the ANC clinic rather than the psychiatry clinic .

Table 1 Sociodemographic characteristics of women attending antenatal clinic at Zewditu Hospital (n=187)

Characteristic		Number	%
Literacy	Yes	164	87.7
	No	23	12.3
Educational status	No education	23	12.3
	Informal only	4	2.1
	Formal	160	85.6
Marital status	Married	174	93.0
	Single	13	7.0
Occupational status	Housewife	83	44.4
	Employed	97	52.4
	Jobless	4	2.1
	Student	1	0.5
Perceived wealth relative to others	Lower	59	31.6
	Comparable	112	59.9
	Higher	3	1.6

Table 2: Obstetric and health characteristics of participants (n=187)

Obstetric profile		Number	Percentage
Gravidity	Multigravida	129	69
	Primigravida	58	31
Parity	Nulliparous	76	40.6
	Primiparous	64	34.2
	Multiparous	45	24.1
	Grandmultiparous	2	1.1
High risk pregnancy	Yes	117	62.6
	No	70	37.4
Planned pregnancy	Yes	170	90.9
	No	17	9.1
Systolic blood pressure	Mild hypertension	7	3.7
	Severe hypertension	1	0.5
Diastolic blood pressure	Mild hypertension	17	9.1
HIV status	Positive	20	10.7
	Negative	162	86
Previous pregnancy loss	Yes	45	24.1
	No	142	75.9

Table 3: Reason for attending Zewditu hospital antenatal clinic

Reasons for referral	Number	No
Maternal obstetric factors	Twin	6
	Breech presentation	6
	Pre-eclampsia	1
	Previous Caesarian Section	24
	Endometrial myoma	9
	Adverse obstetric history	3
	Hyperemesis gravidarum	2
	Rhesus positive	4
	Placental abnormalities	5
	Ectopic pregnancy	1
	Fetal movement	1
	Premature rupture of membranes	1
	Gestation-induced hypertension	2
	Post-term	12
	Intra-uterine growth restriction	1
Previous anencephaly	2	
Maternal medical factors	Cardiac disease	3
	Back pain	1
	Breast tumour	1
	Varicose veins	1
	Hepatitis B positive	4
	HIV positive	7
	Bronchitis	1

Trauma wound	1
Social (relative of staff)	13
Self referral	6
Delivery service	3

Table 4: Psychosocial characteristics of women attending antenatal care at Zewditu Hospital

Psychosocial characteristic		N	%
	Yes	56	29.9
PHQ of 4 or more	No	131	70.1
	Yes	32	17.1
Social support	No	155	82.9
Alcohol (harmful drinking)	No	187	0
	Yes	170	90.9
Wanted pregnancy	No	17	9.1
	Yes	5	2.6
Experience of violence in pregnancy	No	182	97.3

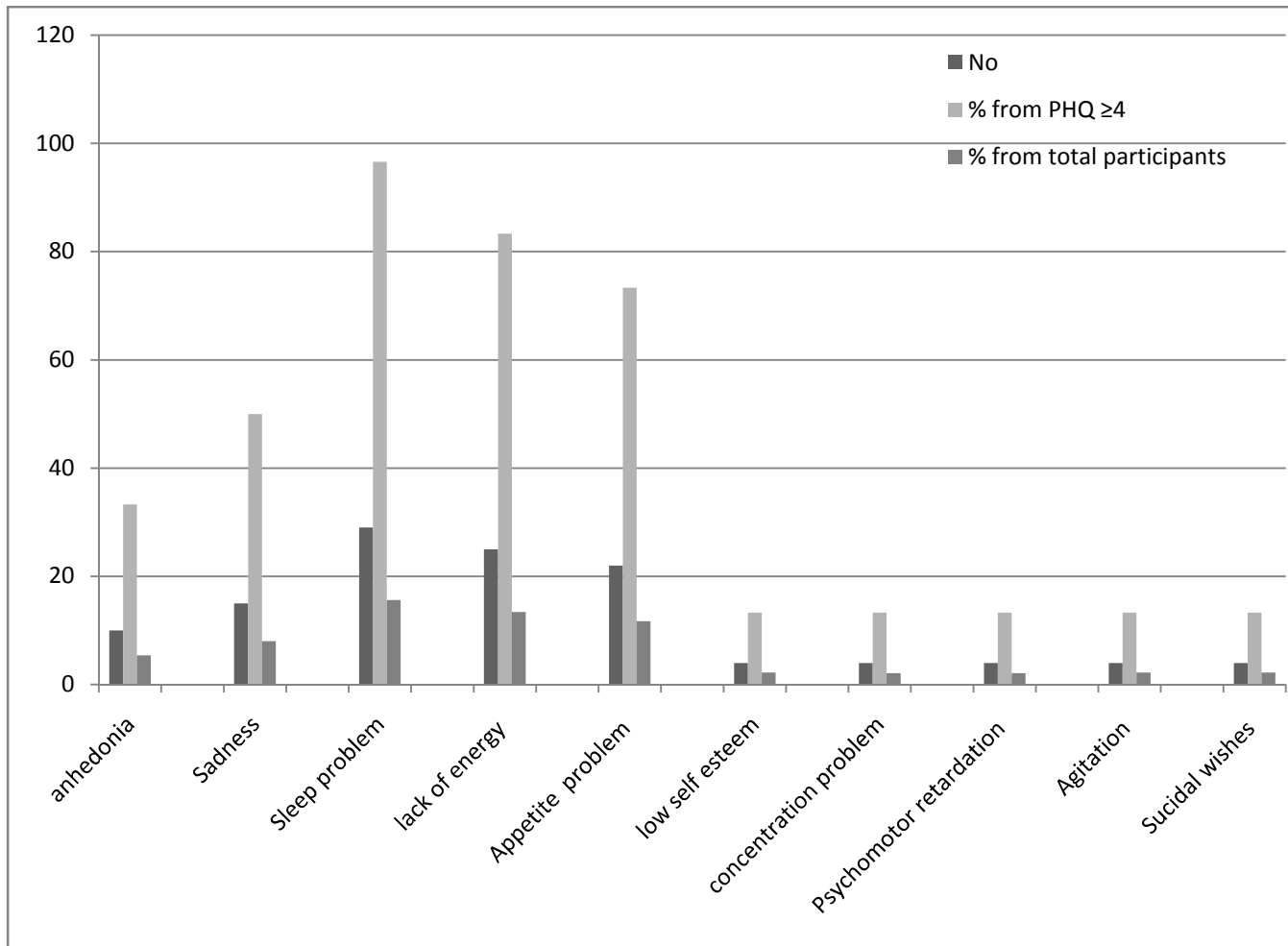


Figure 1: Frequencies of PHQ items in high (≥ 4) and low (<4) scorers

Table 5: Univariate analysis of factors associated with scoring 4 or more on the PHQ-9

Characteristic	% with PHQ core of ≥ 4	P value
HIV positive		
Yes	35.0	0.60
No	28.4	
Supported pregnancy		
Yes	28.0	0.04
No	58.3	
High risk pregnancy		
Yes	24.8	0.05
No	38.6	
Read and write		
Yes	31.7	0.2
No	17.4	
Diastolic blood pressure		
Normal	29.9	0.78
Abnormal	35.3	
Social support		
Yes	25%	0.67
No	31%	
Wanted pregnancy		
Yes	28.8	0.28
No	41.2	
Marital status		

	Married	27.6	0.023
	Single	61.5	
Parity			
	Nulliparity	28.9%	Asymp 0.9
	Primiparity	31.2%	
	Multiparity	29.8%	
Employment			
	Housewife	22.9	Asymp 0.01
	Employed	33	
	Jobless	100	
Wealth			
	Lower	40.7	Asymp 0.10
	Comparable	25	
	More	33.3	
Supported pregnancy			
	Yes	28.0	0.04
	No	58.3	
Violence in pregnancy			
	Yes	100	0.20
	No	0	

Table 6: Crude and partially adjusted odds ratios for association with scoring 4 or more on the PHQ-9

Characteristic	Crude Odds Ratio (95% confidence interval) for association with PHQ \geq 4	Partially adjusted OR ¹ (95% confidence interval) for association with PHQ \geq 4
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Socio-demographic

¹ Adjusted for age and education

Age	0.99 (0.93, 1.06)	0.99 (0.93, 1.06)
No formal education	0.49 (0.17, 1.36)	0.49 (0.17, 1.35)
Not married	4.20 (1.31, 13.48)	3.87 (1.19, 12.56)
Lower relative wealth	2.03 (1.04, 3.97)	2.30 (1.15,4.58)
<i>Obstetric</i>		
Primiparous	1.03 (0.69, 1.52)	1.06 (0.68, 1.65)
High risk pregnancy	0.53 (0.28, 0.99)	0.51 (0.27, 0.97)
Previous pregnancy loss	1.41 (0.69, 2.87)	1.46 (0.71, 3.02)
HIV positive	1.36 (0.51, 3.62)	1.31 (0.49, 3.53)
<i>Psychosocial</i>		
Unwanted pregnancy	1.73 (0.62, 4.80)	2.11 (0.73, 6.15)
No social support	1.35 (0.56, 3.21)	1.47 (0.61, 3.57)
Unsupported pregnancy	3.60 (1.09, 11.88)	3.50 (1.05, 11.63)
Violence in pregnancy	9.92 (1.08, 90.89)	9.33 (1.00, 82.22)

Discussion

In the context of previous studies that have shown a high prevalence of CMD in pregnant women in LMICs, the study tried to assess symptoms of depressive disorders and treatment acceptability among women in Zewditu hospital who came for ANC follow up.

We found that 30% of women attending Zewditu ANC had high levels of depressive symptoms, including suicidal ideation, as indicated by a score of four or more on the PHQ-9. High levels of depressive symptoms were associated with being unmarried, lack of support, exposure to violence in pregnancy and self-reported lower relative wealth. No association was seen with high risk pregnancy or with being HIV positive. Even though all women with high scores reported that it is good to have a special service to help them and the majority expressed a preference for talk therapy, only 14 % came for psychiatric evaluation.

The prevalence of depressive symptoms in this study was high (30 %). This estimate falls at the upper margin of the WHO report on CMD (5.2 % to 32.9 %), and also comparable with the other study that were done in Adama and Addis Abeba health center ,St paulos Hospital (31.2 % , 53.4 % ,26%) respectively . But when we compare it with other study that was done in Butajira , rural part with in the community ,it was found to be much higher (12%). This can be because of the difference in the study area were in the urban part (Addis and Adama) women are more educated and might be more aware and tend to report more on their depressive symptoms. Other factors like magnitude of stress , leaving in rural and urban setting might be different. The other factor that inhibits direct comparison is the different screening instruments which were used in the above mentioned studies except the Butajera study and St Paulo's study which used SRQ ,others were not validated. But in all four studied the risk factors that was identified were found to be similar.

When the result of this study is compared with other countries like South Africa ,it was found to be lower (46.7%)which might be the high prevalence of HIV and comparable with Brazilian study (33.6%) .

In our study we found that high risk pregnancy seem to be found as a protective factor for depressive symptoms in pregnancy, which was an unexpected result .This might be because women who are high risk pregnancy might be more educated and more concerned and reporting symptoms of depression. Another reason can be women with high risk are more likely to have frequent visit to the hospital , more spousal support and social support because of the high risk pregnancy.

There was negative association with HIV status which was a different result as we compared it with the south African and Tanzanian study. This can be explained by the fact that there were no new diagnosis unlike the other studies were women knew their HIV status during pregnancy

.This time difference might assist them to adjust to their new state and being pregnant might bring them hope.

In this study from those who scored high on depressive symptoms only half of the women reported persistent sadness and only 33.3% reported anhedonia , most were reporting sleep problems , low energy and problems with appetite. This finding is comparable with evidence generated from LMIC including Ethiopia on ways of expression of depressive symptoms during pregnancy. Rather than having mood change having multiple somatic symptoms can be used as an indication to refer women for screening.

There are few published examples of perinatal mental health services in sub-Saharan Africa. One example is a stepped care service for maternal mental health was implemented in South Africa by the Perinatal Mental Health Project (PMHP). The PMHP developed an intervention to deliver mental health care to pregnant women in a collaborative, step-wise manner making use of existing resources in primary care.

In our study we have noticed from our piloting that screening was more acceptable when done within the obstetric service ,which goes with PMPH recommendation 4,5 .Even though only half of them were informed about the service there were only a few women who came back for assessment which led to counseling service .This might be due to different reasons. Some of the reasons that was reported by the women were economic and logistic difficulties , birth of their child .We also speculate the following reasons. Most women though depressive symptoms are due to physiologic changes of pregnancy and hence it is difficult for them to seek treatment if they think it physiologic and another reason can be the risk of stigma in coming at the psychiatric clinic and labeled as ill last since the study didn't provide on-site counseling it might have discouraged the participants, which goes with PMPH recommendation number 3 . This indicates that there is a huge barrier in treatment seeking behavior that should be studied and addressed for effective stepped up care.

From this study it was only half of the women who were offered the counseling service this shows the need for adequate training of mental health professionals who are involved in the service which goes with recommendation 6,7The other possibility is trying a short screening instruments that will be easy to administer in a busy clinic .

From the study the women with the following profile can be candidates for referral for screening of preinatal CMD .

- ✓ Unmarried lack of support
- ✓ exposure to violence in pregnancy
- ✓ Multiple somatic complaints like sleep ,energy ,appetite
- ✓ Mood change

Conclusion .

The study concludes that the probably depressive symptoms among pregnant mothers is high and having a separate intervention for their mental distress is unlikely to succeed so joint intervention with their obstetric care is recommended .

Other factors that decreases women from getting psychiatric service also should be studied for a better intervention outcome

References

1. Central Statistical Agency [Ethiopia] and ICF International (2012). Ethiopia Demographic and Health Survey 2011. Addis Ababa, Ethiopia and Calverton, Maryland, USA, Central Statistical Agency and ICF International
2. Bonari L , Pinto Natasha (2004) , Perinatal risks of Untreated Depression During Pregnancy, review paper : Can J Psychiatry, Vol 49, No 11, November 2004
3. Hanlon C, Whitley R, Wondimagegn D, Alem A, Prince M. Between life and death: exploring the sociocultural context of antenatal mental distress in rural Ethiopia. Arch Women Ment Health 2010;
4. Hanlon C, Whitley R, Wondimagegn D, Alem A, Prince M. Postnatal mental distress in relation to the sociocultural practices of childbirth: an exploratory qualitative study from Ethiopia. Soc Sci Med 2009; 69: 1211–9.
5. Hanlon C, Medhin G, Alem A, Araya M, Abdulahi A, Hughes M, et al. Detecting perinatal common mental disorders in Ethiopia: validation of the self-reporting questionnaire and Edinburgh Postnatal Depression Scale. J Affect Disord 2008; 108: 251–62.
6. FAISAL-CURY1 A , ARAYA .R. Common mental disorders during pregnancy and adverse obstetric outcomes, prospective cohort: Journal of Psychosomatic Obstetrics & Gynecology, December 2010; 31(4): 229–235
7. Nasreen H ,Low birth weight in offspring of women with depressive and anxiety symptoms during pregnancy: results from a population based study in Bangladesh.BMC Public Health 2010, 10:515
8. Hanlon C, Medhin G et al (2009a) Impact of antenatal common mental disorders upon perinatal outcomes in Ethiopia: The PMaMiE

Population-Based Cohort Study. *Tropical Med Int Health*
14(2):156–166

9. Rahman, A., et al. (2007). "Association between antenatal depression and low birthweight in a developing country." *Acta Psychiatrica Scandinavica* **115**(6): 481-486.

10. Patel, V., et al. (2006). "Maternal psychological morbidity and low birth weight in India." *British Journal of Psychiatry* **188**: 284-285.

11. Assefa M et al (2011) 'assessment of prevalence of antenatal depression disorder and associated factors among Adama hospital Anc clinic ,Adama ,Ethiopia .

12. Hanlon, C., et al. (2012). "Impact of perinatal somatic and common mental disorder symptoms on functioning in Ethiopian women: The P-MaMiE population-based cohort study." *Journal of Affective Disorders* **In press**(136): 340-349

13. Ross, J., Hanlon, C., Medhin, G., Alem, A., Tesfaye, F., Worku, B., Dewey, M., Patel, V., Prince, M. Perinatal mental distress and infant morbidity in Ethiopia: a cohort study. *Archives of Disease in Childhood Fetal Neonatal Edition*, 2010; doi 10.1136/adc.2010.183327

14. Hanlon, C., et al. (2009). "Impact of antenatal common mental disorders upon perinatal outcomes in Ethiopia: The P-MaMiE population-based cohort study." *Tropical Medicine & International Health* **14**(2): 156-166.

15. Cox, J. and J. Holden (2003). *A guide to the Edinburgh Postnatal Depression Scale*. London, Gaskell, Royal College of Psychiatrists.

16. Tesfaye, M., **Hanlon, C.** and Alem, A. Detecting Postnatal Common Mental Disorders in Addis Ababa, Ethiopia: Validation of the Edinburgh Postnatal Depression Scale and Kessler Scales. *Journal of Affective Disorders* 2010, 122:102-108.

17. Garcia-Moreno, C., et al. (2006). "Prevalence of intimate partner violence: findings from the WHO multi-country study on women's health and domestic violence." Lancet **368**: 1260-1269.
18. Hodgson R, Alwyn T, John B, Thom B, Smith A: **The FAST Alcohol Screening Test**. Alcohol and Alcoholism 2001, **37**:61-66
19. Biratu A ' prevalence of antenatal depression and associated factors among pregnant women attending ANC clinic at public health centers in Addis Abeba ,Ethiopia 2012.
20. (Honikman et al. PLoS Medicine) . Stepped Care for Maternal Mental Health: A Case Study of the Perinatal Mental Health Project in South Africa. PLoS Medicine 2012
21. Tamsen Jean Rochat "Depression among pregnant women testing for HIV in rural South Africa " 2011
22. G.Antelman ,S kaaya R wei ' Depressive symptoms increase risk of HIV disease progression and mortality among women in Tanzania.2007 JAIDS journals.
- 23 .Fisher Jane ,Meena Cabal de Mello ' Prevalence and determinants of common mental disorders in women low and lower middle income countries : systematic review .Bulletin of the WHO volume 90 /2012 139 – 149
24. Louise M Howard, Emma Molyneaux, Cindy-Lee Dennis, Tamsen Rochat, Alan Stein, Jeannette Milgrom 'Perinatal mental health 1'Lancet 2014; 384: 1775–88

Instruments

Part 1 Obstetric

Obstetric history format sheet

Card number

Gravidity Parity Gestational age

Weight Height blood pressure

1. Is the current pregnancy high-risk pregnancy ?

If yes please indicate which one

1. Previous Caesarian Section
2. Pregnancy induced hypertension
3. Medical illness (hypertension ,cardiac)
4. Gestational diabetes mellitus
5. Adverse obstetric history (past history of stillbirth, past history of neonatal death, past history of induced abortion)
6. Twin pregnancy
7. Hydrocephalus
8. Post term pregnancy
9. Others _____

2. Is the pregnancy supported ?

3. Is the pregnancy wanted ?

4. Do you have social support ?

PHQ-9				Code
<p>ማስታወሻ: አልፎ አልፎ ብቻ (2-6 ቀናት)፣ በዛ ላለ ጊዜ (7-11ቀናት)፣ ከሞላ ጎደል በየቀኑ (12-14ቀናት) መሆኑን ይግለፁ።</p>				
	ላለፉት ሁለት ሳምንታት ከነዚህ ከምዘረዝራቸው ችግሮች ውስጥ፣ የትኞቹ ደርሰውብዎት (በየትኞቹ ተቸግረዋል) እንደነበር እጠይቅዎታለሁ።			
1	የእለት ተእለት ተግባርዎን ለማከናወን (ለመስራት) ያለዎት ተነሳሽነት ወይም ፍላጎት በጣም ቀንሶ ነበር?	አዎ	1	PHLI
		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተሰማዎት?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
2	የመከፋት፣ የመደበኛ ወይም ተስፋ የመቁረጥ ስሜት ይሰማዎት ነበር?	አዎ	1	PHFS
		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተሰማዎት?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
3.1	እንቅልፍ አልወሰድ ብሎዎት፣ ወይም በደንብ መተኛት አቅቶዎት ይቸገሩ ነበር?	አዎ	1	PHIS
		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተቸገሩ?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
3.2	እንቅልፍ በዝቶብዎት ይቸገሩ ነበር?	አዎ	1	PHOS








		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተቸገሩ?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
4.	የድካምወይም የአቅም ማነስ ስሜት ይሰማዎት ነበር?	አዎ	1	PHLE
		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተሰማዎት?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
5.1	የምግብ ፍላጎትዎ ቀንሶ ነበር?	አዎ	1	PHLR
		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ቀንሶ ነበር?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
5.2	የምግብ ፍላጎትዎ ከተለመደው በላይ ጨምሮ ነበር?	አዎ	1	PHLA
		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ጨምሮ ነበር?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
6	ራስዎን የመጥላት ወይም ዋጋ የለኝም የማለት ወይም ራሴንም ሆነ ቤተሰቤን አሳዝኛለሁ የሚል ስሜት ተሰምቶዎት ነበር?	አዎ	1	PHFH
		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተሰማዎት?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	

		ከሞላ ጎደል በየቀኑ	3	
7	በሚሰሩት ስራ ላይ ሃሳብዎን ለመሰብሰብ/ትኩረት መስጠት አስቸግርዎት ነበር? (ለምሳሌ፣ ከሰዎች ጋር ሲጨዋወቱ ትኩረት ሰጥቶ ማዳመጥ?)	አዎ	1	PHDC
		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተቸግረው ነበር?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
8.1	ለሌሎች ሰዎች እስከሚታወቅ ድረስ በእንቅስቃሴዎ ወይም በንግግርዎ በጣም ቀስ ብለው ነበር?	አዎ	1	PHDT
		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተቸግረው ነበር?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
8.2	ለሌሎች ሰዎች እስከሚታወቅ ድረስ መረጋጋት አቅቶዎት፣ አንድ ቦታ አርፎ መቀመጥ ወይም መቆም እስከማይችሉ ሆነው ነበር?	አዎ	1	PHDS
		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተቸግረው ነበር?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
9	ከምኖር ብሞት ይሻለኛል ብለው አስበው ወይም ራስዎን በሆነ መንገድ ሊጎዱ አስበው ነበር?	አዎ	1	PHWD
		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተሰምቶዎት ነበር?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	

10	<p>ከተዘረዘሩት ችግሮች ለአንዳቸውም አዎ የሚል መልስ ከተሰጠ የሚከተለውን ይጠይቁ።</p> <p>በእነዚህ ችግሮች ምክንያት ስራዎን ለመስራት፣ የቤት ሐላፊነትዎትን ለመወጣት ወይም ከሰዎች ጋር ተስማምተው ለመኖር ምን ያህል አስቸጋሪ ሆኖብዎት ነበር?</p>	በጭራሽ አልተቸገርኩም	0	PHDR
		በመጠኑ ተቸግረ ነበር	1	
		በጣም ተቸግረ ነበር	2	
		እጅግ በጣም ተቸግረ ነበር	3	

Part 3 Alcohol

FAST

						
1 ጠርመስ ውስኪ/ቬድካ/ጂን ብላጥ ጠላ 1 ጠርመስ ወይን	1 ብርሌ ጠጅ	1 መላኪያ አረቄ	1 ብርጭቆ ወይን	1 ጠርመስ ቢራ	1 ጃምቦ ድራፍት/ 1	

8:

ነጥብ:- 3+ = አደገኛ/ ጎጅ አጠጣጥ ያመለክታል

Part 4 Treatment accessibility

Treatment acceptability questions

1. Do you think that those symptoms are due to illness ? if yes what kind of illness .if no what caused them ?

2. Do you think that you need treatment for this symptoms ?

ተ.ቁ.	ጥያቄ	ነጥብ					ነጥብ
		0	1	2	3	4	
1	በየስንት ጊዜው ከ6 መለኪያ በላይ (ለሴት)/ከ8 መለኪያ በላይ (ለወንድ) ይጠጣሉ?	ጠጥቶ አላውቅም	</= 1 ጊዜ በወር	በየወሩ	በየሳምንቱ	በየቀኑ	
ቀጣይ ጥያቄዎችን ለመጀመሪያው ጥያቄ ምላሽ በወር ወይም ከወር ባነሰ ጊዜ ውስጥ ከሆነ ብቻ ይመልሱ							
2	ባለፈው ዓመት ውስጥ በየስንት ጊዜው በጠጡበት ጊዜ የሆነውን ለማስታወስ ተቸግረዋል?	ተቸግሮ አላውቅም	</= 1 ጊዜ በወር	በየወሩ	በየሳምንቱ	በየቀኑ	
3	ባለፈው ዓመት ውስጥ በየስንት ጊዜው በመጠጣትዎ ምክንያት መስራት ያለብዎትን ሳይሰሩ ቀርተዋል?	ሳልሰሩ አልቀረሁም	</= 1 ጊዜ በወር	በየወሩ	በየሳምንቱ	በየቀኑ	
4 44	ዘመድ/ወዳጅ/ የጤና ባለሙያ መጠጥ እንዲያቆሙ መክሮዎት ያውቃል?	አያውቅም		አዎ፣ ዓመት አልፎታል		አዎ፣ ባለፈው ዓመት ውስጥ	

3. If treatment is available are you willing to accept them if no why ?
4. How do you feel taking medication for your condition during your pregnancy for your symptoms?
5. What kind of treatment do you prefer for your symptom medication or talking to somebody about it ?
6. What is your opinion getting special service for these symptoms ?

