

**VALIDATION OF PATIENT HEALTH QUESTIONNAIRE (PHQ-9) AND
KESSLER (K-10 AND K-6) SCALES TO DETECT DEPRESSION AMONG
PEOPLE LIVING WITH HIV, JIMMA, ETHIOPIA**



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ABSTRACT

Background: Depression is the most common neuropsychiatric problem among people living with HIV (PLWH). Given the lack of mental health professionals, there is a need to develop a brief and culturally valid instrument to screen for depression among PLWH that can be administered by nurses in order to improve detection.

Objective: This study aimed at assessing the validity of Patient Health Questionnaire (PHQ-9) and Kessler (K-10 and K-6) scales for detecting depression among PLWH attending HIV services in Ethiopia.

Methods: Content, criterion and convergent validity of the Amharic versions of the PHQ-9, K-6 and K-10 were assessed. Criterion validation was conducted on 145 adult PLWH receiving follow-up out-patient care at Jimma University Specialized Hospital (JUSH). The Mini International Neuropsychiatric Interview (MINI) was the gold standard measure, administered by psychiatry nurses.

Results: The area under the Receiver Operating Characteristic curve (AUROC) of PHQ-9 against MINI cases of major depression was 0.96 (95% CI 0.93 to 0.99). The AUROC of Kessler-10 and Kessler-6 was 0.85 (95% CI 0.78 to 0.92) and 0.84 (95% CI 0.77 to 0.91), respectively. The optimal cut off point for PHQ-9 was found to be 5/6 which gave a sensitivity of 87.2% and specificity of 83.7%. For Kessler-10 the optimal cut-off point was 4/5 which gave a sensitivity of 85.1% and specificity of 77.6 %. At the optimal cutoff point of 3/4, K-6 generated a slightly lower sensitivity than K-10 and better specificity of 81.6 %. The spearman correlation coefficients for PHQ-9, K-10 and K-6 with a scale of functional impairment were 0.74, 0.73 and 0.73, thus indicating good convergent validity.

Conclusion: All three instruments were found to be valid scales to detect major depression among individuals living with HIV. The PHQ-9 had the best psychometric properties overall. There was a little difference in the overall performance of the K-10 and K-6.

Recommendation: The PHQ-9 instrument is a good candidate scale for routine screening for depression by nurses working at the HIV clinic. However, studies to evaluate the acceptability and feasibility of depression screening in practice are required.

Key words: Depression, validation study, PHQ-9, K-10, K-6, HIV, Ethiopia

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ABBREVIATIONS

AIDS: Acquired Immune Deficiency Syndrome

ART: Antiretroviral Therapy

AUROC: Area under Receiver Operating Characteristic

CES-D: Center for Epidemiological Studies-Depression

CIDI: Composite International Diagnostic Interview

CMD: Common Mental Disorder

CPRS: Comprehensive Psychopathological Rating Scale

FMOH: Federal Ministry of Health

HIV: Human Immune Deficiency Virus

JUSH: Jimma University Specialized Hospital

LMIC: Low and Middle Income Country

MDD: Major Depressive Disorder

MINI: Mini International Neuropsychiatric Interview

NPV: Negative Predictive Value

ODD: Other Depressive Disorder

PHC: Primary Health Care

PLWH: People Living With HIV

PPV: Positive Predictive Value

WHO: World Health Organization

CHAPTER ONE: INTRODUCTION

1.1 Background

Jimma town is found in south west of Ethiopia 350 km far from the capital city Addis Ababa. The town has a total population of 120, 960 with a male to female ratio of 1:1. The three largest ethnic groups reported in Jimma were Oromo (46.71%), Amhara (17.14%) and Dawuro (10.05%); while all other ethnic groups made up 26.1% of the population. Amharic was spoken as a first language by 41.58% and 39.96% spoke Afan Oromo; the remaining 18.46% spoke all other primary languages reported (1).

One point eight million people died of Human Immunodeficiency Virus (HIV) in the year 2010, of whom those living in sub Saharan Africa were 1.2 million. Major improvement has been made in delivering lifesaving treatment for people living with HIV. There are now 6.6 million people globally on the treatment of Anti-retroviral therapy (ART), of which more than 5 million are in Africa (2).

The adjusted HIV prevalence for Ethiopia in 2005 was 3.5% (urban 10.5% and rural 1.9%). The situation of HIV epidemic in Amhara, Oromia, Addis Ababa, and SNNPR is worse than other regions. Together these regions accounted for 86.6% of all PLWH in Ethiopia. The HIV epidemic continues to pose a threat to the development of Ethiopia where 1.3 million people are living with the virus, 744,100 are orphaned due to Acquired Immune Deficiency Syndrome (AIDS). AIDS accounted for an estimated 34% of all young adult deaths (15-49 years) in Ethiopia and 66.3% of all young adult deaths (15-49 years) in urban Ethiopia (3, 4).

Neuropsychiatric problems are common among PLWH of which depression is the commonest. The association between depression and HIV is often complex, and could have a bidirectional cause-effect relationship. Brief depression screening tools such as the Patient Health Questionnaire-9 (PHQ-9) and Kessler (K-10 and K-6) are widely validated in western as well as African countries in different population however, few studies considered PLWH. The studies reported promising base of using the PHQ-9, K-10 and K-6 scales to screen depression especially in resource limited countries (5, 23, 25, 26, 27, 31, 35, 36, 38).

1.2 Statement of the problem

HIV/AIDS is a chronic life threatening disease imposing big burden especially in Low and Middle Income Country (LMIC). Around 33 million people were living with HIV in 2007 globally. HIV/AIDS and mental disorders are closely interlinked. HIV/AIDS results a significant mental health problems of which depression and anxiety are the most common which in turn could result from psychosocial factors like stigma, discrimination and economic crisis; loss of family and social supports, and psychological distress of acquiring the infection (6, 7, 8).

In low and middle income countries there is a higher rate of depression in patients with HIV compared to their HIV negative counterparts (9). There is strong evidence from a meta-analysis study in that, HIV-positive individuals are nearly two times more likely to have had a recent episode of major depressive disorder than HIV-negative individuals (10). Recent review on HIV and depression reported that depression was the most prevalent psychiatric disorder among HIV-positive (HIV+) adults next to substance use disorders but often ignored in the context of HIV. However, depression is potentially dangerous condition that can influence not only quality of life, relationships, employment, and adherence to medical care, but also perhaps survival by contributing for disease progression (11). Similarly studies conducted in Ethiopia revealed higher rates of depression among PLWH on ART and depression influences adherence to ART (12, 13).

Depression is often underdiagnosed and undertreated in primary care settings, particularly in developing countries. This is, in part, due to challenges resulting from lack of skilled mental health workers and lack of cross-culturally validated screening instruments. In Kenya, descriptive cross-sectional study conducted among adult inpatients and outpatients in different health sectors found high prevalence of psychiatric morbidity in general medical facilities but this largely goes undiagnosed and therefore, unmanaged. Of the study population, 42% of the subjects had symptoms of mild and severe depression but only around 4% had working diagnosis. Chronic conditions like HIV/AIDS, TB, CVD, and Cancer were found to be the highest comorbid medical illnesses with mental disorders, particularly depression and anxiety. These findings call for continuing education on mental health at all levels of general and surgical facilities, and also for routine screening for mental disorders (14, 15).

It's challenging to differentiate clinical depression from the effects of HIV, the side-effects of treatment and even other illnesses, all of which can affect mood. Many health care

professionals believe that an HIV+ diagnosis will naturally result in depression and they often view depression as an expected reaction to a medical illness or declining functional status due to a major medical disease. A kind of situation specific emotional response which can trigger anxiety and distress often mimic the symptoms of depression but not same as depression could happen. Depression is more commonly missed in older patients. Some physical symptoms of depression such as fatigue can be explained away by health professionals as the effects of HIV and the medications used to treat it (16-18). The lack of “gold standard” for assessment of depression and difficulty in identifying and addressing depression by general health professionals among PLWH had been a challenges (19).

Integrating mental health interventions into HIV care can reduce opportunity costs of care and treatment outcomes which could be achieved through task sharing in which early recognition and treatment of the co-morbid cases can be successfully achieved by non-specialized general health care providers especially in a setting with constraint of specialized mental health providers. Since, non-specialized general health providers need a signal and guidance the need of brief screening instrument for screening the cases would be one of the important areas to be considered to provide comprehensive care by identifying mental disorders among PLWH. Most of the instruments (scales) were developed in western countries which might have different culture and setting, contextualizing and validating in specific culture and setting makes simple and suitable to use by a general health care providers (20).

The cross cultural psychiatry examines methods for developing instruments for use in cross-cultural research. Emphasizes, when a research instrument becomes a standard in one culture and is used extensively in that culture, further attempts at cross cultural validation is needed to see whether the instrument work reasonably in another culture than immediately translating to another language and using the instrument for the same purpose. These also include investigations in a single country with culturally different populations (21). This is supported by previous validation studies of brief instrument Edinburgh Postnatal Depression Scale (EPDS) in two different settings of Ethiopia, which demonstrated an important difference in validity of the Western derived instrument between rural and urban populations within the same country (22, 23).

The Kessler Psychological Distress (K-10) and Patient Health Questionnaire- 9 (PHQ-9) scale was well validated brief instrument showed to have an advantage to screen depression in different settings of primary care population (24, 25). A number of studies among peoples infected with HIV, PHQ-9 was validated particularly with high sensitivity, specificity and found to be a reliable brief tool which can be considered useful to HIV-related medical providers in resource-constrained settings for screening depression in HIV-positive peoples and linking them to psychosocial and psychiatric services in the continuum of care (25, 26). The Patient Health Questionnaire- 9 (PHQ-9) and Kessler Psychological Distress (K-10) scales were previously validated in Ethiopia, among hospital outpatient department attending adults and postnatal women respectively (27, 23). As far as to the knowledge of investigator the validity of these scales in detecting depression among PLWH was not yet evaluated in Ethiopia.

Generally the high prevalence of depression among PLWH, constraint of specialized mental health providers and lack of cross-culturally validated screening instruments in our country strongly supports the study aimed at evaluating the validity of PHQ-9, K-10 and K-6 scales to detect depression among PLWH. So, assessing validity of PHQ-9, K-10 and K-6 scales to detect depression among PLWH helps to get early detection and intervention service in wide similar settings of the country.

1.3 Significance of the study

The Federal Ministry of Health's (FMOH) National Mental Health Strategy mandates that mental health be integrated into the general health care system. Through integration it is intended that those with both physical and mental health related needs will be treated in a seamless and comprehensive manner. The strategy considers the special needs of particularly vulnerable populations; namely, the severely mentally ill, those with substance abuse disorders, children and adolescents, persons living with HIV, women, people in prisons, victims of violence and abuse, persons with epilepsy and the elderly so as particular attention to be given despite mental health care will be for everybody. The strategy also is developed to enable health professionals to gain competencies at various level of care to enable them to readily identify, monitor and manage mental health disorders (28). The need of screening scales which better detects depression which is commonly associated with HIV/AIDS will help health professionals to recognize early and adequately treat at various level of care and this study supports the successful implementation of the strategy.

Having better screening scales for these disorders is of important value for clinical practice as well as research reasons. Assessing the validity of Kessler (K-10) and patient health questionnaire (PHQ-9) to detect depression among PLWH helps to have a better tool to assess depression early in an outpatient department of patients on follow up at ART clinic and referral of other cases to psychiatric clinic for further management. Comparing the two scales (K-10) and PHQ (9) psychometric properties for the better detection of depression by determining the best cut off points and recommending as well, will help to use the better instrument as a routine clinical care for patients living with HIV to reduce double burden of the diseases and it saves resources as well for clinicians and for the country at large.

Findings of this study might help to develop collaboration and integration of care of the patients with HIV and that of mental disorders provided at psychiatric clinic of JUSH, which could result in provision of fruitful care which improves quality of care among patients with chronic medical illness HIV/AIDS. The validated instrument can be used as a tool in future studies.

CHAPTER TWO: LITERATURE REVIEW

In LMIC a systematic review comprised nineteen studies validated both brief (PHQ-9, and K-10) and long depression screening instrument, center for epidemiological studies-depression (CES-D) in general and HIV-primary health care (PHC) settings reported that the prevalence of depression ranged from 11.1 to 53%. Brief as well as long screening instruments showed acceptable accuracy of area under curve ($AUC \geq 0.7$). The study found that brief instruments are as accurate as the longer ones in detecting depression in both general and HIV-PHC settings. Using these brief instruments gives advantage over long ones since it can be administered in short time. However, ultra-brief scales such as K-6 and BDI-SF don't consist of a whole range of depressive symptoms including suicide; the use of such scales needs to be followed up with detailed psychiatric diagnostic interviews (24). In north Ethiopia, depression was highly prevalent among PLWH on ART which was found to be 43.9% using Hamilton's depression scale (HAM-D). Similarly, the study conducted in 2009 included three hospitals located in east, west and southwest Ethiopia by Kessler-10 scale reported higher CMD cases, 63.7% among TB/HIV co-infected patients and 46.7% among non-co-infected patients (29, 30).

Study in Netherland validated the Dutch version of the Kessler-10 (K-10) in screening for depressive and anxiety disorders in primary care used the WHO Composite International Diagnostic Interview (CIDI life time version 2.1) as a reference standard found that, the K-10 is an appropriate for screening depressive disorders. At a cut-off point of 20, the K10 reached a sensitivity of 80.0% and a specificity of 81.0% for any depressive and/or anxiety disorder (31). Another Netherland validation study of PHQ-9 against criterion measure of MINI in detecting depression among diabetes specialized outpatients reported the cut-off point of a summed score of 12 on the PHQ-9 resulted in a sensitivity of 75.7% and a specificity of 80.0%. Predictive values for negative and positive test results were respectively 93.4% and 46.7%. The ROC showed an area under the curve of 0.77. So, the study concluded PHQ-9 proved to be an efficient and well-received screening instrument for screening depression (32).

PHQ-9 has acceptable diagnostic properties for major depressive disorder despite the optimal cutoff score may differ depending on the setting. There were no substantial differences in the pooled sensitivity and specificity for a range of cut-off scores (8–11) and the instrument was

found to have acceptable diagnostic properties for detecting major depressive disorder for cut-off scores between 8 and 11. PHQ-9 is a highly useful screening tool, but it is not a stand-alone diagnostic test since the same cut-off score might not be appropriate in all settings PHQ-9 was well-tolerated in a large and diverse sample of individuals with HIV infection (33).

A Study from India compared five screening instruments including PHQ-9, K-10 and K-6 in detecting common mental disorders in primary care against the Revised Clinical Interview Schedule (CIS-R) reported the ability of the scales to identify cases accurately differs little. The K-10 showed high internal consistency (Cronbach's alpha of 0.82), while the PHQ-9 and K-6 demonstrated moderately high levels of internal consistency (Cronbach's alpha 0.79 and 0.74 respectively). The AUROC of all the instruments ranged from (0.84 to 0.89). All of the scales showed moderate to high discriminating ability in relation to gold standard. The poorest performance was for the shorter questionnaires, (K-6 and the PHQ-9). The K-10 was better than PHQ-9 as well as its extracted shorter version, K-6 (34).

In African countries validation studies of PHQ-9, K-10 and K-6 scales are generally scarce of only few studies conducted among PLWH. Most of the studies were among general outpatient persons including studies in Ethiopia. Comparing the screening instruments EPDS, PHQ-9 and SRQ-20 with Comprehensive Psychopathological Rating Scale (CPRS) among illiterate population of Ghanaian postpartum women found Internal consistency (Cronbach's Alpha) was equivalent across all three test scales; EPDS (0.79), SRQ-20 (0.78) and PHQ-9 (0.79). For criterion validity the PHQ-9 (AUROC 0.90 (95% confidence interval: 0.81–0.98)), was superior to the SRQ-20 and the EPDS. At cut off point of 4/5, PHQ-9 gave a sensitivity of 94.0% and specificity of 75.0%. Generally, the study concluded the validity, reliability, and superiority of the PHQ-9 over other screening assessments has been extended and the instrument is short, easy to administer and acceptable to the study subjects (35). Comparatively, the validation study compared a self-administered PHQ-9 to the Mini International Neuropsychiatric Interview (MINI) among a sample of Nigerian university students. The study found PHQ-9 gave a sensitivity of 85.0% and specificity of 99.0% at optimal cut-off point 10 and above (36).

The study conducted in urban Ethiopia concluded as Amharic versions of the K-6 and K-10 have better validity than EPDS as screening tools for detection of postnatal CMD, used the Comprehensive Psychopathological Rating Scale (CPRS) as the criterion measure.

For the K-6, the optimal cut-off point of 4/5 generated superior sensitivity and reasonable specificity, 84.2% and 82.7% respectively. The K10 generated sensitivity and specificity of 84.2% and 77.8% respectively at optimal cut-off point of 6/7. All three instruments had good psychometric properties as indicated by the AUROC of 0.85 and above based on the criterion measure of postnatal CMD. The internal reliability Cronbach's alpha for the K-6 and K-10 were 0.86 and 0.90 respectively. However, difficulty of attaining content validity of the few K-10 and K-6 items was mentioned and left for future studies (23). Additionally recent validation study of Amharic version PHQ-9 with criterion measure of Schedules for Clinical Assessment in Neuropsychiatry (SCAN) interview in detecting depression among adults attending outpatient departments in referral hospital in Ethiopia revealed good sensitivity of 79.0% and slightly lower specificity of 72.0% at optimal cut-off point of 9 (27).

Another recent cross-sectional study in Cameroon compared an interviewer-administered PHQ-9 to the reference standard Composite International Diagnostic Interview in patients on ART found that a low sensitivity of 27% (95% confidence interval: 6–61%) and high specificity of 94% (95% confidence interval: 91–96%), using a standard cut-off score of 10 as a positive depression screen. Sensitivity was extremely imprecisely measured because of the low prevalence of major depression in the sample which was only 3%. Validating alternative depression screening tools for depression was left for future research (37).

The study in western Kenya among adults living with HIV/AIDS on Validity/Reliability of PHQ-9 and PHQ-2 demonstrated PHQ-9 with high sensitivity of 85.0% and specificity of 95.0% for diagnosing any PHQ-9 depressive disorder (AUC, 0.97), and 91.0% and 77.0%, respectively, for diagnosing PHQ-9 major depressive disorder (AUC, 0.91). PHQ-2 demonstrated very good operating characteristics. The best cut-off point for sensitivity and specificity (≥ 3) provided very high specificity for any depressive disorder. An instrument with low specificity creates a problem by generating many false positives. Though using PHQ-2 found to have an advantage in primary care and resource-constrained HIV clinics (25).

The Ugandan validation study of Patient Health Questionnaire-9 (PHQ-9), Centre for Epidemiological Surveys for Depression (CES-D), and the Kessler-10 (K-10) among 368 PLWHA at HIV-PHC facility used the criterion measurement MINI found 17.4% of HIV-positive individuals had major depressive disorder.

The study reported all instruments performed well with high AUROC (0.82 to 0.96) and high sensitivity and specificity at optimal cut off points. The PHQ-9 showed the best validity in terms of all psychometric properties. The PHQ-9 had an AUC score of 0.96 (95% confidence interval: 0.92 to 0.99). At an optimal score of 10, the PHQ-9 had a sensitivity of 91.0%, specificity 81.0%. The K-10 performed modestly with an AUC score of 0.82 (95% confidence interval: 0.72-0.93). The optimal score for the K-10 was 23. At this score, the sensitivity of the K-10 was 83.0% with a specificity of 72.0%. The K-6, a shorter version of the K-10 had an AUC score of 0.81 (95% confidence interval: 0.71-0.93). At an optimal score of 13, the sensitivity of the K-6 was 77.0% with a specificity of 67.0% (26).

The convergent validity of PHQ-9 and K-10 is not evaluated in most studies. However, a study evaluated Validity of the Brief Patient Health Questionnaire Scale (PHQ-9) in the general population found strong associations between PHQ-9 depression severity and convergent variables with Becks Depression Inventory (BDI) scale of 0.73, with General Health Question-12 (GHQ-12) of 0.59 (38).

CHAPTER THREE: OBJECTIVES

3.1 General objective

- To conduct cross-cultural validation of the PHQ-9 and the Kessler (K-10 and K-6) scales, and to determine their optimal cut off points to detect major depression among individuals living with HIV, Jimma, Ethiopia

3.2 Specific objectives

- To evaluate content validity of PHQ-9 and Kessler scales
- To compare the criterion validity of PHQ-9 and Kessler scales against a gold standard measure of major depression
- To evaluate convergent validity of the scales against functional impairment

CHAPTER FOUR: METHODS AND MATERIALS

4.1 Study area and period

The study was conducted in Jimma University Specialized Hospital (JUSH) HIV clinic located in south western part of Ethiopia. The hospital provides different inpatient and outpatient referral services for patients coming to the hospital from the catchment population of about 15 million people since it is only teaching referral hospital in the southwest region of Ethiopia (39).

There were 7,005 people with HIV registered at the ART clinic of JUSH on follow up in 2013. Out of the 7,005 clients about 4,500 of them were taking ART and the rest 2,505 of them were on pre ART follow-up. There are 6,727 adult PLWH aged 18years and above of whom majority of them 4,067 were females (40). Data were collected from adult people living with HIV on follow up at this clinic during January, 2014.

4.2 Study Design

A facility based cross-sectional study design was used.

4.3 Population

4.3.1 Source Population

All adult PLWH who were a registered follow-up cases at the ART clinic of Jimma University Specialized Hospital

4.3.2 Study population

A sample of adult PLWH who were registered follow-up cases at the ART clinic of Jimma University Specialized Hospital

Inclusion Criteria

- o Age 18 years or older
- o HIV positive persons who were registered at the ART follow-up clinic of JUSH
- o Those who were able to give informed, voluntary consent

Exclusion criteria

- ❖ Those who were severely ill/physical or mental illness unable to communicate
- ❖ Those who have just found out their diagnosis/ newly diagnosed persons
- ❖ Unable to converse in Amharic the working language of Ethiopia
- ❖ Unable to communicate, for example due to severe cognitive impairment

4.4 Sample size and sampling procedure

4.4.1 Sample size

Sample size for the criterion validation

A formula for calculating sensitivity and specificity for single tests was used (41).

$$n = [Z^2_{1-\alpha/2} S_N \times (1-S_N)] / [L^2 \times \text{Prevalence}]$$

Where n = required sample size

S_N = anticipated sensitivity,

α = size of the critical region ($1 - \alpha$ is the confidence level),

$z_{1-\alpha/2}$ = standard normal deviate corresponding to the specified size of the critical region (α), and

L = absolute precision desired on either side (half-width of the confidence interval) of sensitivity or specificity.

Using the following assumptions:

Desired sensitivity fixed at 80%

$$\alpha = 0.05$$

$$L = 0.1$$

$$Z^2_{1-\alpha/2} = 3.84$$

$$\text{Prevalence} = 43.9 \% (29)$$

$$\text{Loss due to incomplete information or other reasons} = 3\%$$

The final sample size for the criterion validation was 145.

Sample size for the content validation

Consecutive sample of thirty individuals living with HIV on follow up at JUSH who can speak Amharic were recruited for cognitive interview.

4.5 Sampling technique

Consecutive sampling technique was used

4.6 Data collection tools & Measurements

4.6.1 Data collection tools

The questionnaires consisted of:

- Socio-demographic information and clinical characteristics (gender, age, marital status, employment, educational status, residence place, CD4 counts, opportunistic infection and WHO clinical stage).
- Kessler (K-10 and K-6) scales instrument (42).
- Patient health questionnaire (PHQ-9) scale instrument (43).
- Mini-International Neuropsychiatric Interview (MINI) instrument (44).

The order of administering the two screening scales and the gold standard MINI was randomized and kept recorded.

4.6.2 Measurements

Depression screening scales

1. Kessler 6 and Kessler 10 item scales

The Kessler Psychological distress scale (K-10) is an instrument developed in 1992 by Kessler for use to screen for non-specific mental disorders. It has been widely used in different countries and the scale has 10 items about emotional states used as a brief screening tool to identify levels of distress. The tool is easy to use which can be self-administered or interviewer administered (42).

The K10 scale involves 10 questions of which the six items of Kessler 6 are a subset, asks about emotional states each with a level response scales. The item was asked in two steps, firstly asking whether the person experienced symptom or not. The response categories were (0), 'no symptom' and (1), 'yes'. Each item of the K10 has four response categories if the symptom presents: 'a little of the time' (1), 'some of the time' (2), 'most of the time' (3) and 'all of the time' (4). The total score is the sum of all responses. The total score for the 10-item scale is 40. The scores thus range between 0 and 40. The previously validated Amharic version of the K6 and K10 in Ethiopia with four-level response scale was used (23).

2. Patient Health Questionnaire, 9 item scale (PHQ-9)

The items of this scale correspond to the features of depression enumerated in the Diagnostic and Statistical Manual of Mental Disorders (43). The nine depression symptom items share a common stem: "Over the past 2 weeks, how often have you been bothered by any of the following problems?" The items share a common set of response options: 0, "Not at all"; 1, "Several days"; 2, "More than half the days"; and 3, "Nearly every day." The PHQ-9 total score ranges from 0 to 27 with five severity categories: minimal (0–4), mild (5–9), moderate (10–14), moderately severe (15–19) and severe (20–27). This study used previously adapted Amharic version PHQ-9 in Ethiopia which had split some of the original items. With an additional item (10th question) for the evaluation of the clinical significance of the experienced symptoms, this allowed evaluation of DSM-IV depressive episode

Criterion measures of depression

The Mini-International Neuropsychiatric Interview (MINI)

The MINI is a brief diagnostic assessment scale that allows DSM-IV and ICD-10 diagnosis. Validation and reliability study comparing the M.I.N.I. to the SCID; for DSM and CIDI reported that the M.I.N.I. has similar reliability and validity properties, but can be administered in a much shorter period of time (median 15 minutes) than SCID, DSM and CIDI. It can be used by clinicians, after a brief training session. In MINI each major diagnostic condition is represented by a module, and for this validation study, the modules that focus on major depressive disorder were used. Based on the principles of the MINI Plus, bereavement and organic exclusions were put in place (44).

4.6.3 Validity measures

Content Validity

For the content validity of the instruments; PHQ-9, K-6 and K-10, 30 adult individuals living with HIV on follow up at JUSH who could speak Amharic language were recruited. The principal investigator administered the previously translated Amharic instruments interviewing the subjects while giving due attention to the items required repetition and probing of the responses carried out accordingly to identify problematic items using three criteria used to indicate a problematic item used in previous Ethiopian validation study (23) which are:

1. The respondent disclosed that the meaning was not clear.
2. The respondent gave a response but struggled to elaborate.
3. The respondent gave examples that indicated misconceptualisation of the question

When the instruments found misunderstood by the respondent's modification of the item carried out and again looked for correct understanding of the content of the item as manifested by examples provided to elaborate the items by the respondents.

Inter-rater reliability

To assess major depression with MINI two degree level trained psychiatry nurses working at the psychiatry department of JUSH were trained for two consecutive days prior to data collection. Twenty patients from psychiatry ward were recruited and interviewed by the two data collectors to assess the inter-observer agreement. The two MINI raters interviewed the patients and rated the MINI independently.

Criterion Validity

One hundred forty five consecutive consented individuals attending ART clinic were recruited. Two nurses working at ART clinic who received a one day training were involved in administering Amharic version of patient health questionnaire (PHQ-9), Kessler (K-6 and K-10) scales as well as the questionnaires of socio demographic variables and clinical characteristics.

The criterion measure of depression, with gold standard of Mini-International Neuropsychiatric Interview (MINI), was conducted by the trained psychiatry nurses. The psychiatry nurses administered translated Amharic version MINI which rules out bereavement and organic depression. The instrument had three options for diagnosis: major depression, substance induced mood disorder and mood disorder secondary due to physical illness.

The order of administration of instruments (i.e. the criterion measurement and screening test) was randomized due to problem of order effect (see figure 1). The order of first person to be interviewed was found by tossing a coin, one side of the coin representing to be interviewed first with MINI and another one by K-10 and PHQ-9 then it was continued in such away until all the study populations were interviewed. MINI raters were blinded to the result of screening tests and interviews carried out in a private room. Also, the screening interviewers were blinded to the MINI interview results.

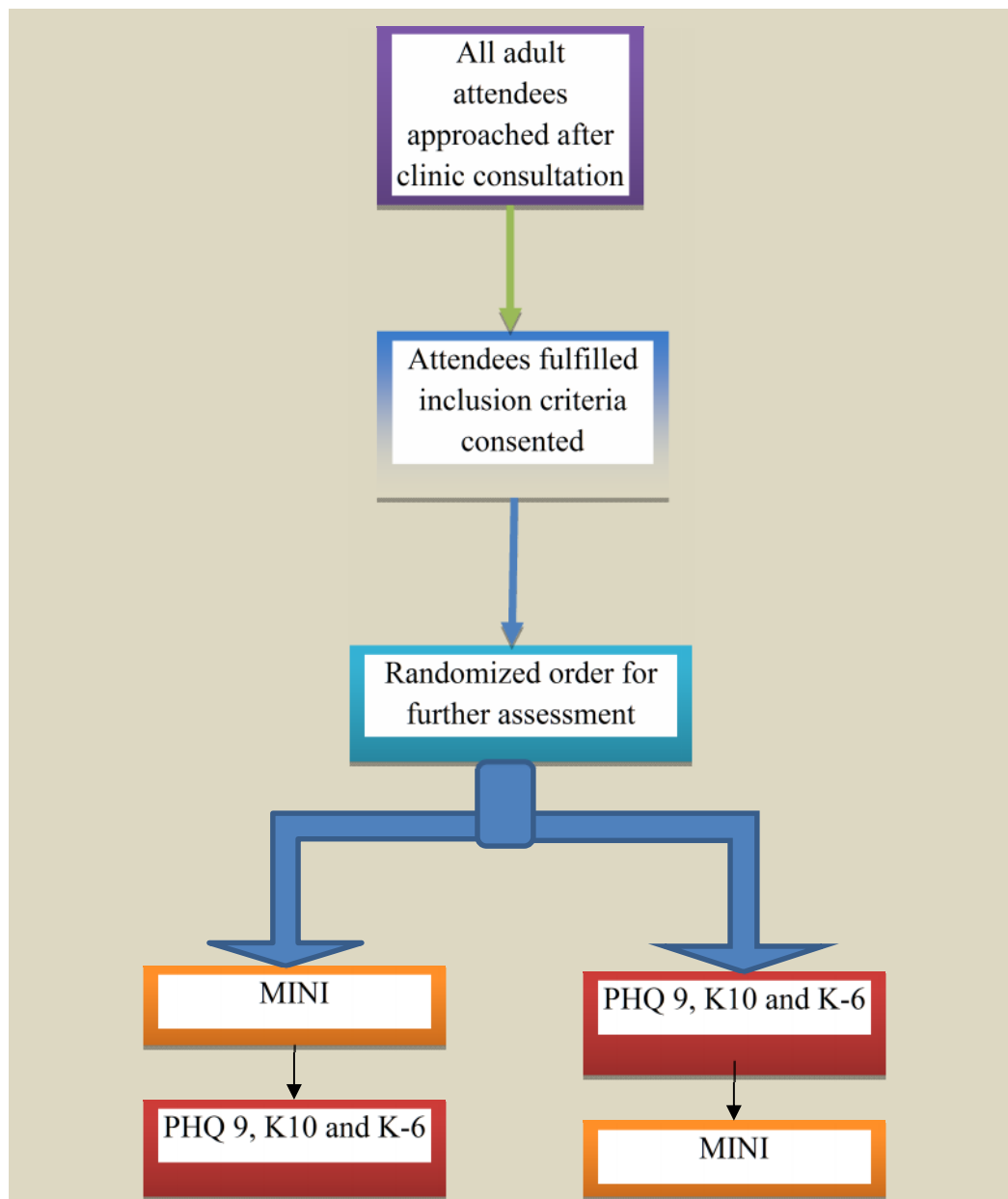


Figure 1: Flow diagram of recruitment and assessment procedures followed for validation of PHQ-9 and Kessler (K-10 and K-6) scales.

Convergent Validity

The convergent validity was evaluated by additional item of PHQ-9 (10th item) about functional impairment for the evaluation of the clinical significance of the experienced symptom administered by nurses at the same time for subjects who reported having at least one symptom of PHQ-9 scale.

4.7 Data Quality Assurance

Data collectors were trained on how to administer the instruments. Follow up of activities done during the phase of data collection by the supervisor. To ensure and maintain the external validity of the study, adequate related literatures were reviewed, comments from advisors invited and shared throughout the research process. Data was checked and entered by the investigator and cleaned before analyses. Epi-data version 3.1 was used for data entry to minimize error during entry. All of the entered data was checked before final analyses.

4.8 Data processing, Analyses & interpretation

Data was analyzed by SPSS version-20. Descriptive analysis was used for socio demographic characteristics and clinical characteristics.

Inter rater reliability between MINI raters was calculated by kappa coefficient.

The psychometric properties of PHQ-9, K-10 and K-6 were determined using Receiver Operating Characteristic (AUROC) analyses with the criterion diagnosis of any depression and major depression caseness (using MINI). Across cut-off points sensitivities and specificities of the screening scales were evaluated. The cut-off point that resulted in the highest specificity which was lower than the sensitivity was considered as an optimal cut-off point. Positive predictive values (PPV), negative predictive values (NPV) and misclassification frequencies at the optimal cut-off points were determined. Youden's index, a measure of overall test performance (sensitivity + specificity-1) and prevalence of cases by scales at the optimal cut-off points also determined. For each scales Item level discrimination of cases and non-cases presented. Internal consistency of the scales was assessed using Cronbach's alpha.

Convergent validity was evaluated by additional item of PHQ-9 (10th item) about functional impairment for the evaluation of the clinical significance of the experienced symptom against the cases of major depression for each scales at optimal cut off points. The validity of the test instruments was assessed with the Spearman correlation coefficient for the correlation with PHQ tenth item.

4.9 Ethical considerations

Ethical clearance was obtained from the ethical committee of Jimma University's College of Public Health and Medical Science. An official letter of co-operation was obtained. Informed written consent was obtained from each study participant. Privacy and confidentiality was maintained during the interview process by using private interview rooms. All persons identified by MINI raters as suffering from depression were referred for follow-up to the psychiatric clinic of JUSH.

4.10 Dissemination plan

The result of this study was presented to Jimma University scientific community as part of MSc thesis. The report will be provided to Jimma zone health bureau. The report will also be provided to Department of psychiatry, College of Public Health and Medical sciences, Jimma University. Finally efforts will be made to publish results in national and international journal for dissemination worldwide.

4.11 Operational Definitions and Terms

Mental disorders: Are diagnosable health conditions that are characterized by alterations in thinking, mood or behavior (or some combination thereof), and are associated with distress and/or impaired functioning.

Validity: refers to whether a study is able to scientifically answer the questions it is intended to answer.

Sensitivity: also called the true positive rate or the recall rate in some field's measures the proportion of actual positives which are correctly identified as such (e.g. the percentage of sick people who are correctly identified as having the condition).

Specificity: measures the proportion of negatives which are correctly identified as such (e.g. the percentage of healthy people who are correctly identified as not having the condition, sometimes called the true negative rate).

Gold standard: refers to a diagnostic test or benchmark that is the best available under reasonable conditions. Also called Reference standard or Criterion measurement.

Reliability: Is the consistency of the measurement, or the degree to which an instrument measures the same way each time it is used under the same condition with the same subjects.

Positive predictive value: The proportion of diseased individual out of positive test.

Negative predictive value: The probability of not having the disease when the test is negative.

Newly diagnosed cases: Diagnosed with HIV within the last 3 months

Severely ill: With serious physical/mental illness which interferes communication and patient needs urgent management

CHAPTER FIVE: RESULTS

5.1 Content validity

Generally, the PHQ-9 was better understood with only minor modification on item number two. On the Kessler-10, item number five was modified so that respondents understood it better. However, the various revisions made to the tenth item of K-10 did not improved. Therefore, the original Amharic version item was used. Further explanations are mentioned for each instrument below:

PHQ-9

Item number two: How often during the past two weeks were you bothered by feeling down, depressed or hopeless?’

Most of the respondents were unable to understand the Amharic word “Yemedebet” which used to indicate/ equivalent to the English term “depressed” used in this item. Even though most of them contextually understood the whole sentence since there was an additional Amharic term “Yemekefat”, some of them reported that the term was strange and they were not familiar with when they are asked for the meaning of the term specifically. The word was then replaced by another Amharic word “Yemedeber” and the rest of the respondents were familiar with the word and understood it well.

Except for the first item, for most of other items some of the respondents understood as if the items were assessing whether they had experienced the symptom in their life time. Others responded to the items associating with the time they have been diagnosed as having HIV.

For example: for item 3.1. ...trouble falling asleep?

“Yes, 3 year ago when I was diagnosed as having the disease (‘HIV’) I spent one month without sleep”.

Others reported similarly “Yes, 8 year ago when I was informed that I already acquired the virus, I had poor appetite, thoughts of hurting myself...”

Therefore, the first part of the sentence which says, “how often during the past 2 weeks were you bothered by...” was incorporated to the beginning of each of the PHQ-9 items. This change made the timing of the symptoms clear to the respondents.

K-6 & k-10

Item number five: During the past 30 days how often did you feel restless or fidgety?

The Amharic word “Eraft Yematat” was found to be wrongly understood by most of the respondents.

For example:

“Yes, all of the time I was restless, because my husband was away and the children spent whole the day time at school”

“Yes, I was restless for most of the time, because I am a daily laborer; I struggle to survive without rest”

“No, I was not restless at all; I have a good servant who handles every work at home”

The Amharic term “Eraft yematat” which is equivalent to English word “restless” was replaced by one of the synonymous word “impatient/ unsettledness” in Amharic “yalemeregagat”. Then the rest of the respondents understood the item better.

Item number ten: during the past 30 days did you feel that everything (e.g. talking, getting up walking etc.) was an effort?

Some of the respondents explained their answer which had indicated the content was misunderstood. The more appropriate Amharic term “yegidowun yadergu” which is equivalent to “effort” was misunderstood.

For example:

“No, no one forced me to talk, walk as well to do every activity”

“Yes, sometimes my family forced me to get up early without my will”

A number of trials were made as to make the term more understood by the respondents.

The first one, the item were modified by adding another Amharic term “ madreg kebdot” which is meant by “found difficult to do” in addition to the usual term “yegidowun yadergu” meant next to the word effort. The phrase looked “yegidowun yadergu/ madreg kebdot” in Amharic and in English it seemed “effort/ found difficult to do”.

With these slight modifications the item found to be misunderstood by some of the respondents.

For example:

“Yes of course, I found everything like walking and talking was an effort/ found difficult to do especially when I feel pain”

“Yes, because most of the time my headache worsens badly when I walk, talk and do some other day to day activities. So, I refrain from walking, talking and doing some other day to day activities speedy”.

In this context the respondents misunderstood the item as if the item was asking if there were some circumstances which prevented them from doing everything like walking, talking and etc. they responded accordingly by associating with physical problems like pain on the above examples.

For these reasons another attempt were made to modify the item again by replacing the term “madreg kebdot” equivalent to effort in English with “wuston madreg kebdot”. The Amharic term “wuston” added indicates contextually the internal feeling which intends to give the meaning of the whole phrase “wuston madreg kebdot” as having an internal feeling of difficulty in doing everything. These attempts were also failed as some of the respondents misunderstood the item. Comparatively they were higher in number than those who misunderstood the original item.

For example:

“No, I do not do anything except I feel happy for doing so”

“No, always I listen to my gut feeling before doing everything. I will not do anything unless I feel ok for doing so”.

“Yes, not only getting up, walking and talking but I also had difficulty in making my internal feeling happy”

However, the various revisions made the tenth item of K-10 did not improved. Therefore, the original Amharic version item was used.

5.2 Inter-rater reliability

Table 1: Agreement between MINI raters (N=20).

		Rater 2		
Rater 1		Yes	No	Total
	Yes	6	1	7
	No	0	13	13
	Total	6	14	20

Observed agreement (P_o) = 0.95

Expected agreement (P_e) = 0.56

The kappa coefficient was found to be 0.88, representing an excellent agreement between raters. The data collectors proceeded with the data collection for the concurrent criterion validation.

5.3 Criterion validity

One hundred forty five individuals living with HIV on follow up at JUSH were interviewed by PHQ-9, K-6 and K-10 scales as well as with MINI. All of the respondents participated in the interview accordingly. Complete data was available for analysis for all the 145 respondents.

Socio demographic and clinical characteristics

All of the hundred forty five individuals living with HIV respondents participated (See Table 2). The mean age (SD) of the respondents was 34.4 years (8.56) and the minimum and maximum ages were 20 and 72 years, respectively. The majority of the respondents were females (n=87; 60.0%). More than half of them were orthodox followed by Muslim. Just over half of the respondents were married (n=76; 52.4%).

A quarter of the respondents were illiterate; and the rest of them had some education ranging from primary school (n=54; 37.2%) up to secondary and above (n=54; 37.2%). The majority of the respondents were employed (n=104; 71.7%). Those currently living in Jimma town were (n=121; 83.4%). Nearly half of the respondents had monthly income $\leq$ 500 Ethiopian Birr (ETB). The majority of the respondents (n=128; 88.3%) had CD4 count of $> 200/\text{mm}^3$. Over three quarters of the respondents had no opportunistic infection and classified as WHO clinical stage one.

Table 2: Socio demographic and Clinical characteristics among respondents of PLWH (N=145)

Socio demographic and clinical characteristics		Number	Percent
Sex	Male	58	40.0%
	Female	87	60.0%
Ethnicity	Oromo	50	34.5%
	Amhara	38	26.2%
	Gurage	8	5.5%
	Kaffa	19	13.1%
	Dawuro	16	11.0%
	Silte	10	6.9%
	others	4	2.8%
	Orthodox	82	56.6%
Religion	Muslim	34	23.4%
	Protestant	25	17.2%
	Catholic	4	2.8%
	18-29	47	32.4%
Age (in years)	30-39	60	41.4%
	40-49	30	20.7%
	≥50	8	5.5%
	Single	16	11.0%
Marital status	Married	76	52.4%
	Divorced	25	17.2%
	Separated	8	5.5%
	Widowed	20	13.8%
Educational status	Illiterate	37	25.5%
	Primary	54	37.2%
	Secondary and above	54	37.2%
Employment	Unemployed	41	28.3%
	Employed	104	71.7%
Current residence	In Jimma town	121	83.4%
	Out of Jimma town	24	16.6%
Income	≤ 500 ETB	75	51.7%
	501-999 ETB	24	16.6%
	≥1000 ETB	46	31.7%
CD4 counts	≤ 200	17	11.7%
	> 200	128	88.3%
Opportunistic infection	Yes	35	24.1%
	No	110	75.9%
WHO clinical stages	Stage one	110	75.9%
	Stage two	16	11.0%
	Stage three	11	7.6%
	Stage four	8	5.5%

The clinicians interviewed one hundred forty five peoples living with HIV on follow up at JUSH using MINI reported among the total respondents 61 (42.0%) of them had received one of the three diagnosis mentioned on the MINI namely; major depressive disorder, substance induced mood disorder and mood disorder secondary to physical illness. The majority of them 47 (32.4 %) had major depressive disorder, followed by substance induced mood disorder and mood disorder secondary to physical illness 9 (6.2 %) and 5 (3.4 %) respectively.

Among those who had major depression a number of situations related to the depression such as past similar depression episodes, number of depression episodes, age at first depression episodes and having family history of mental illness had been assessed by MINI (see table 3)

Table 3: Depression related features among respondents having major depression with MINI

		Major depression (N=47)	
		N	%
Past similar depression episode	Yes	33	70.2%
	No	14	29.8%
Age of first depression	< 20	4	8.5%
	20-29	30	63.8%
	30-39	11	23.4%
	≥40	2	4.12%
Number of episodes	1	14	29.8%
	2-3	25	53.2%
	≥4	8	17.0%
Relatives with mental illness or taking medication for mental illness	Yes	8	17.0%
	No	39	83.0%

PHQ-9, K-6 and K-10 scores

Total scores on all three instruments were positively skewed. The PHQ-9 median scores among major depression cases and non-cases were 18 and 1 respectively. K-10 median scores among major depression cases and non-cases were 16 and 3 respectively. K-6 median scores among major depression cases and non-cases were 10 and 2 respectively. The 25th and 75th centiles of PHQ-9, K-10 and K-6 were 1-17, 2-16, and 1-10 respectively.

PHQ-9 scale

The frequency of PHQ-9 items endorsement in MDD cases and MDD non-cases was shown in figure 2.

All the items of the PHQ-9 discriminated significantly between MDD cases and MDD non-cases (p -value < 0.001). Internal consistency of the PHQ-9 by Cronbach's Alpha was higher, (0.95) than that of K-10 and K-6.

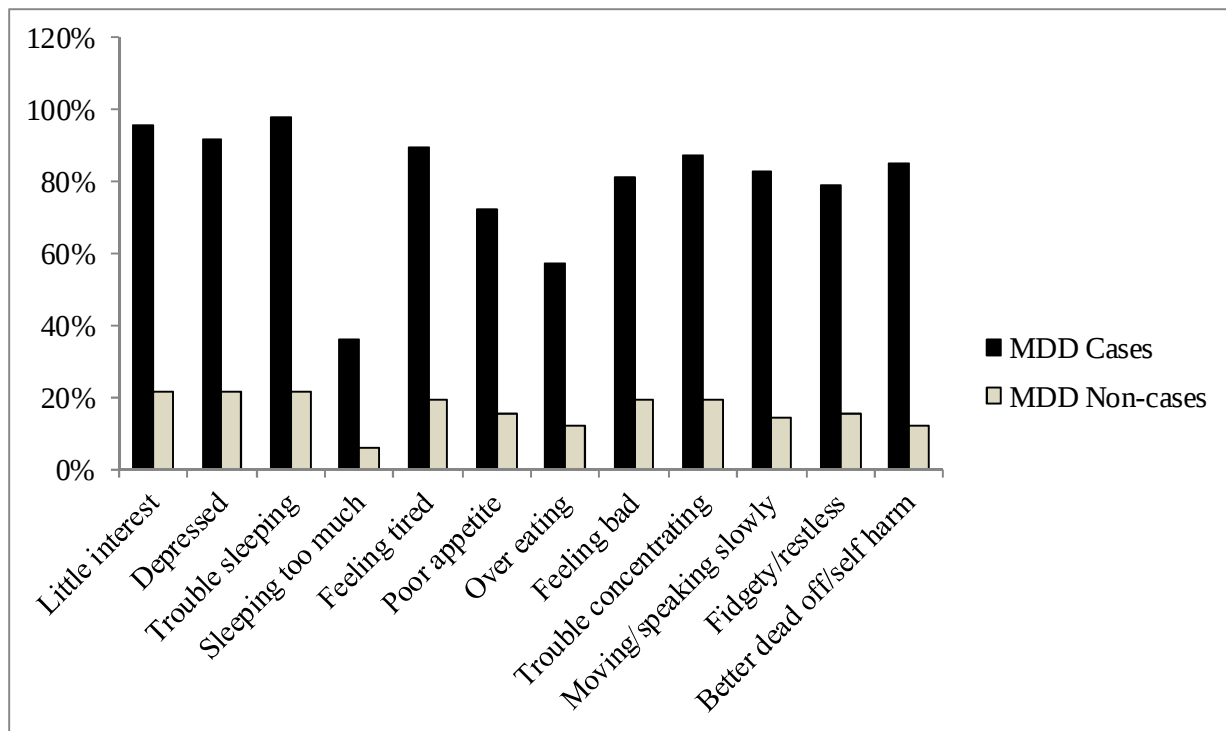


Figure 2: The frequency of PHQ-9 items endorsement in major depression cases and non-cases

K-10 Scale

The individuals who reported being so restless that they could not sit still (item number six) was higher, in MDD non-cases (19.4%) than in MDD cases (10.6 %). There was no significant difference in discriminating MDD cases and MDD non-cases in this case (likelihood ratio = 1.87 and p-value = 0.18). All the other items of K-10 discriminated significantly between cases and non-cases with (p-value = 0.011 to p-value < 0.001). The internal consistency of the K-10 items measured by Cronbach's alpha was high, (0.81).

K-6 Scale

Kessler 6 items extracted from Kessler-10 scale frequency of items endorsement among MINI major depression cases and non-cases shown in figure 3.

Comparing with K-10 items k-6 was better in discriminating cases of major depression and non-cases with MINI. All of the K-6 items discriminated significantly MDD cases and non-cases (p-value = 0.011 to p-value < 0.001). The internal consistency of K-6 measured by Cronbach's alpha was lower, (0.75) than that of K-10.

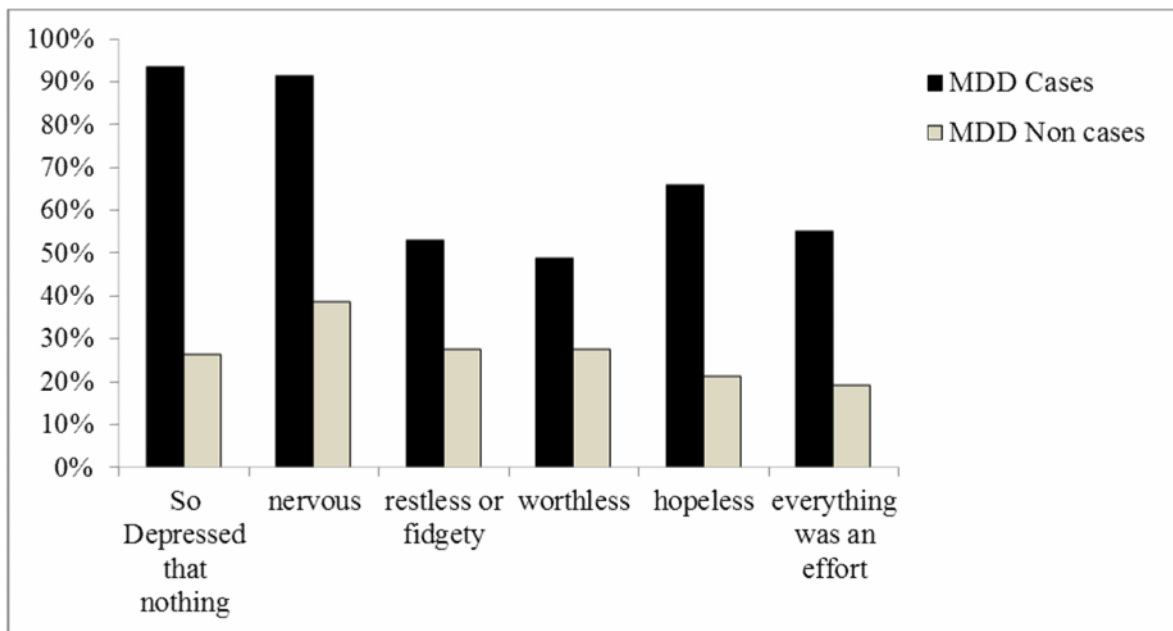


Figure 3: The frequency of K-6 items endorsement among major depression cases and non-cases

Criterion Validity

Major depression as gold standard

The AUROC of the three scales against MINI cases of major depression found, PHQ-9 had an AUROC of 0.96 (95% CI 0.93 to 0.99) which was higher than that of Kessler scales. The AUROC of Kessler-10 and Kessler-6 was 0.85 (95% CI 0.78 to 0.92) and 0.84 (95% CI 0.77 to 0.91) respectively. (See figure 4).

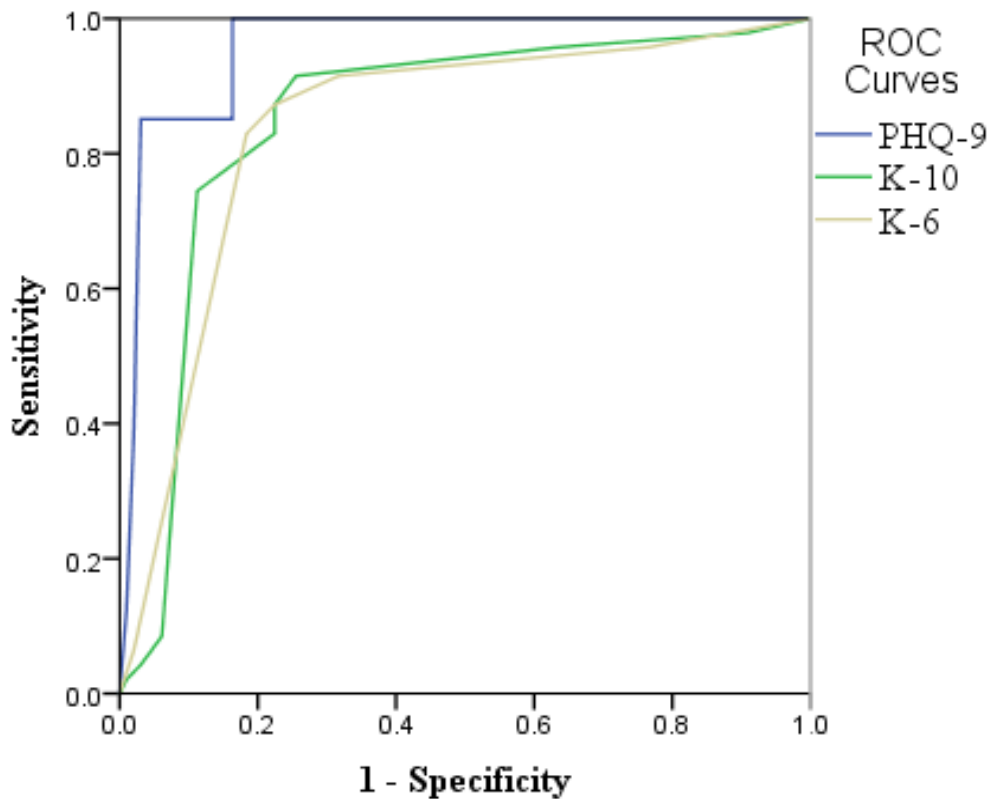


Figure 4: ROC curves for the PHQ-9, K-10 and K-6 scale against clinician diagnosis of major depression (with MINI).

The PHQ-9 generated both sensitivity and specificity of > 80% across several cut off points from 5/6 to 9/10. The optimal cut off point for PHQ-9 found to be 5/6 which gave sensitivity of 87.2% and specificity of 83.7%. For the Kessler-10 the optimal cut-off point found to be 4/5 which gave a sensitivity of 85.1% and specificity of 77.6 %.

At the cut-off point of 6/7 K-10 had better specificity 88.8 % at the expense of sensitivity. At the optimal cutoff point of 3/4, K-6 generated sensitivity of 83.0% and better specificity of 81.6 % in comparison with K-10 optimal cutoff point (see Table 4).

Table 4: Comparison of PHQ-9, K-10 and K-6 scales performance at cut-off points in detecting major depressive disorder (with MINI)

PHQ-9			K-10			K-6		
Cut-off	Sensitivity	Specificity	Cutoff	Sensitivity	Specificity	Cutoff	Sensitivity	Specificity
	(%)	(%)		(%)	(%)		(%)	(%)
<i>Diagnosis of major depression (with MINI)</i>								
5/6	87.2	83.7	4/5	85.1	77.6	1/2	91.5	68.4
6/7	85.1	83.7	5/6	83.0	77.6	2/3	87.2	77.6
7/8	85.1	85.7	6/7	74.5	88.8	3/4	83.0	81.6
8/9	85.1	90.8				4/5	44.7	89.8

Optimal cutoff points, sensitivities and specificities are bolded. PHQ-9, Patient Health Questionnaire-9 scale; K-10, Kessler-10 scale; K-6, Kessler-6 scale; MINI, Mini International Neuropsychiatric Interview.

Additionally for all scales the Positive Predictive Value (PPV), Negative Predictive Value (NPV), Correctly Classified rate (CC rate) were determined at the optimal cut off points to detect major depression. PHQ-9 had a higher PPV of 71.9%, NPV of 93.2% and CC rate of 84.8% than both K-6 and K-10 scales. K-6 had better PPV and CC rate than K-10. PHQ-9 had lower misclassification rate and better prevalence of cases than K-6 and K-10 at the optimal cut points (see Table 5).

Table 5: Comparison of the validity of PHQ-9, K-10 and K-6 scales at the optimal cut-off points in detecting major depressive disorder (with MINI)

Test scale	PHQ-9	K-10	K-6
<i>Criterion validity against MINI major depression</i>			
AUROC (95% confidence interval)	0.96 (0.93 to 0.99)	0.85 (0.78 to 0.92)	0.84 (0.77 to 0.91)
Optimal cut point	5/6	4/5	3/4
<i>At this optimal cut point</i>			
Sensitivity %	87.2	85.1	83.0
Specificity %	83.7	77.6	81.6
PPV %	71.9	64.6	68.7
NPV %	93.2	91.6	90.9
Correctly classified %	84.8	80.0	82.1
Misclassification %	15.2	20.0	17.9
Youden's index	0.71	0.63	0.65
Prevalence %	29.0	28.3	28.3
<i>Convergent validity with functional impairment</i>			
PHQ-9 additional item(PHQ-10)	0.74	0.73	0.73

PHQ-9, Patient Health Questionnaire-9 scale; K-10, Kessler-10 scale; K-6, Kessler-6 scale; AUROC, Area under Receiver Operating Characteristic curve; PPV, Positive Predictive Value; NPV, Negative Predictive Value.

5.4 Convergent validity

Convergent validity of each scale evaluated against additional tenth item of PHQ-9 about impairment in functioning gave a comparable finding. The tenth item of PHQ examines how difficult the problems in several areas of functioning had a response category options ranging from not difficult at all to extremely difficult. The response options were compared with PHQ-9, K-10 and K-6 cases of major depression at the optimal cut-offs.

All the three scales categorized about 90% of cases into combination of very difficult and extremely difficult. About half of cases reported extremely difficult followed by very difficult which account about 40 % for all screening scales.

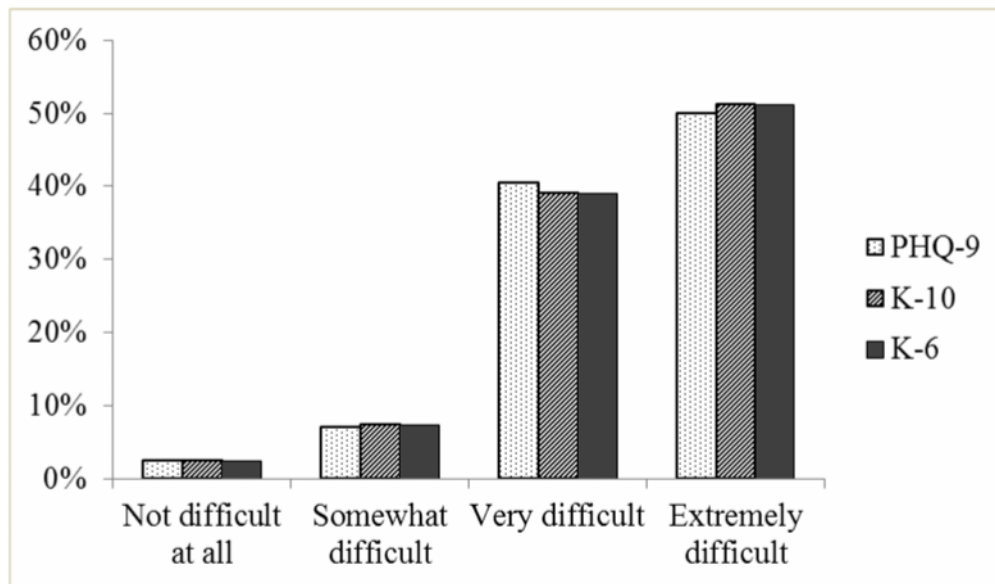


Figure 5: The level of difficulty in functioning among PHQ-9, K-10 and K-6 cases at optimal cutoff points.

All of the screening scales showed good correlation with PHQ-9 additional tenth item. The spearman correlation coefficients for PHQ-9, K-10 and K-6 were 0.74, 0.73 and 0.73 respectively.

CHAPTER SIX: DISCUSSIONS

All the three instruments showed high AUROC, sensitivity, and specificity. The internal consistency and convergent validity with functional impairment were good. The PHQ-9 was superior to the K-10 and the K-6 in terms of validity. Generally, all the three screening scales were valid against criterion measure of MINI but PHQ-9 performed the best.

PHQ-9 was superior to the K-10 and the K-6 in overall psychometric performance. This is in agreement with studies from Africa which supported its better validity over those scales including other several brief screening instruments (26, 35). The apparent superiority of the PHQ-9 might be because it is similar in structure to the MINI i.e. they both follow the diagnostic criteria for depression. The shorter extracted K-6 instrument had the edge over K-10 in detecting major depression which is in line with previous validation study in Ethiopia (23) and in contrast to other studies which reported the better performance of K-10 than K-6 scale (26, 34). The K-10 performed modestly compared to the PHQ-9 which is supported by previous study (26). The modest performance of the K-10 may be explained by the fact that this instrument was developed as a screening instrument for psychological distress rather than for depression per-se. The K-10 has four cardinal questions that can assess for depression, three for anxiety, and three questions that can assess for both disorders.

PHQ-9, K-6 and K-10 in comparison to criterion measure of MINI in detecting major depression among PLWH revealed high accuracy. This is keeping with systematic review comprised nineteen studies in LMIC validated instruments for depression in general and HIV-PHC settings reported acceptable accuracy ($AUC \geq 0.7$) ranged from 0.69-0.99 (24). The PHQ-9 resulted in higher AUROC, 0.96 than Kessler scales which is in line with a number of previous studies reported an excellent PHQ-9 AUROC of ≥ 90 (25, 26, 35,36). Kessler-10 and K-6 gave good AUROC of 0.85 and 0.84 respectively. This is in agreement with previous studies reported AUROC of K-10 and K-6 range of 0.82 to 0.87 and 0.81 to 0.86 respectively (23, 26, 34).

The optimal cut off point which generated high sensitivity and specificity for PHQ-9, K-10 and K-6 were 5/6, 4/5 and 3/4 respectively. In contrast to this study, several validation studies conducted in African socio cultural context reported PHQ-9 had good psychometric properties at higher, optimal cut off point up of 10 and above while another study reported slightly lower,

(4/5) to be optimal cutoff point generated high sensitivity and specificity even though variability in gold standards and population under the studies mentioned (25, 26, 35, 36).

The validation study of self-administered PHQ-9 in detecting major depression with criterion of Mini International Neuropsychiatric Interview (MINI) among a sample of Nigerian university students reported sensitivity of 85% and specificity of 99%, PPV 75.0%, NPV 99.6% and CC rate of 99.0% at higher optimal cut off point of 10 and above (36). Similarly a study in western Kenya among adults living with HIV/AIDS reported high sensitivity and specificity of 91.0% and 77.0%, respectively, for diagnosing MDD (25) and study among PLWHA in Uganda aimed at validation clinician administered PHQ-9 with MINI also reported PHQ-9 sensitivity of 91.0%, specificity of 81.0% and correctly classified rate of 89.3% at the higher optimal cut-off point of 10 (26). The validation study among illiterate Ghanaian postpartum women to detect CMD with Comprehensive Psychopathological Rating Scale (CPRS) reported slightly lower, (4/5) PHQ-9 optimal cutoff point, which generated superior sensitivity of 94.0% , specificity of 75.0%, PPV of 26.0%, NPV of 99.0%, misclassification rate of 21.6% and Youden's index of 0.69 (35).

At commonly recommended optimal cut-off point, 10 PHQ-9 had dramatically low sensitivity of 38.3% despite improvement in specificity of 98.0%. This is keeping with study conducted in Cameroon among PLWH which reported interviewer-administered PHQ-9 to the reference standard Composite International Diagnostic Interview at the cut-off point of ten as positive depression screen PHQ-9 to have sensitivity of 27.0% and specificity of 94.0% (37). The different cut-off scores could be explained by level of literacy of respondents in which about 68% included those were illiterate and educated up to primary school. This might result in difficulty in understanding the adapted instrument of western culture which made them to respond 'no' even though symptoms were actually there.

Kessler-6 instrument extracted from K-10 items at the optimal cut off point, 3/4 had comparable sensitivity to K-10 and better specificity (81.6%) than K-10 at optimal cut-off point of 5/6 in detecting major depression with criterion MINI. This is in line with the study conducted in urban Ethiopia on Amharic version K-10 in detecting postnatal CMD used the Comprehensive Psychopathological Rating Scale (CPRS) as criterion measure, stated comparable sensitivity and better specificity of the extracted instrument however at an optimal cut off point slightly higher, 6/7 and 4/5 for K-10 and K-6 respectively (23).

K-10, positive predictive value and negative predictive value of 64.6% and 91.6% respectively with correctly classified rate of 80.0% which is comparable with the study in India to detect common mental disorders in primary care reported the cut-off point 5/6 gave sensitivity of 65.0%, specificity of 89.0%, PPV of 52.5% and proportion of correctly classified of 85.0% (34). Similarly study among PLWHA in Uganda aimed at validation of clinician administered K-10 scale against MINI found the sensitivity of 83.0% with a specificity of 72.0%, a positive likelihood ratio of 3.01, a negative likelihood ratio of 0.23. A high sensitivity of 80.0% with a specificity of 81.0% was reported on study aimed at validation of the Dutch version of the Kessler-10 (K-10) in screening for depression in primary care using the WHO Composite International Diagnostic Interview (CIDI life time version 2.1) as a reference standard despite difference in optimal cut-off point compared to present study (26, 31).

In the present study at the cut-off point of 6/7 K-10 had better specificity 88.8 % at the expense of sensitivity 74.5% which is lower than specificity. This slightly lower optimal cut-off point of K-6 and K-10 in the present study might be due to problem mentioned on the items of Kessler-10 in attaining content validity which was also mentioned in previous validation study in Ethiopia (23).

The item level analysis revealed PHQ-9 and k-6 items discriminated significantly MDD cases and Non-cases with a maximum and minimum (p-value = 0.011 to p-value < 0.001), at optimal cutoff points. While K-10 had a single item unable to discriminate between cases and non-cases with (p-value = 0.18). The internal consistency of PHQ-9, K-6 and K-10 showed that Cronbach's Alpha of 0.95, 0.75 and 0.81 respectively. This is comparable with validation study from India which reported Cronbach's alpha ranging from 0.74 to 0.82 (34), whereas previous validation study of Amharic version of K-6 and K-10 in Ethiopia reported better internal consistency of Cronbach's alpha of 0.86 and 0.90 respectively (23).

Convergent validity of PHQ-9, K-10 and K-6 with functional impairment gave a strong correlation of 0.73 to 0.74. The spearman correlation coefficient for PHQ-9 was 0.74 and that of both the K-10 and K-6 were 0.73. This is in line with validation study of Patient Health Questionnaire (PHQ-9) in the general population found strong associations between PHQ-9 depression severity and convergent variables with Becks Depression Inventory (BDI) scale of 0.73, with General Health Question-12 (GHQ-12) of 0.59 (38).

The content validity assessment of the instruments further supported the better performance of the PHQ-9 over the K-10 and its extracted shorter version. The Amharic PHQ-9 scale was better understood with only minor modification. K-10 item number five was modified so that respondents understood it better. However, the various revisions made the tenth item of K-10 did not improved. The problems of attaining content validity were already mentioned in previous Amharic validation study specifically but the present study modified item number five (23).

The prevalence of major depression among peoples living with HIV/AIDS conducted on hundred forty five subjects on follow up at JUSH was high, 47 (32.4 %) which is nearly twice (17.4%) the prevalence of major depression in Ugandan study among PLWHA at HIV-PHC facility used the same criterion MINI (26). This is supported by studies in LMIC reported higher rate of depression and a systematic review included nineteen studies in general and HIV-PHC settings reported that the prevalence of depression ranged from 11.1 to 53% (24).

But the study in north Ethiopia among PLWH on ART using Hamilton's depression scale (HAM-D) reported somewhat higher prevalence, 43.9 % (29). This might be due to difference in the instruments specifically the study used symptom-rated scale using a non-validated cut-off point to define cases (the HAM-D) while the present study used a diagnostic measure and mental health professionals. On the other hand the present study included both individuals on ART and Pre-ART follow-up which gave a lower prevalence since peoples on ART are believed to be on advanced stage of the HIV and disease progression is proportional with depression. Similarly, the study conducted in 2009 included three hospitals located in east, west and southwest Ethiopia by Kessler-10 scale reported higher CMD cases, 63.7% among TB/HIV co-infected patients and 46.7% among non-co-infected patients (30). This might be again due to difference in diagnostic instruments used that the other study did not use diagnostic instruments but relied on self-reported symptoms only.

The validity of screening and diagnostic measures of depression was enhanced by the already adapted Amharic version instruments used. The order of administration of screening instruments and MINI was randomized as to counteract the problem of order effect. Additionally an excellent inter-rater reliability of MINI raters ascertained by kappa coefficient before data collection further supports the strength of the study.

The limitations of this study includes: The respondents may not provide the desired information appropriately so that reliability fully depends on how much the respondents discloses their internal thoughts and feelings. The gold standard, MINI was not administered by psychiatrists and relies on western conceptualizations of depression. The diversity in sociocultural context limits the generalizations that could be made the study carried out at only one site to other groups of PLWH in Ethiopia.

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATIONS

7.1 Conclusion

The validation study of PHQ-9, K-6 and K-10 in detecting major depression against MINI concluded that all the three instruments appear valid to detect depression among individuals living with HIV. High sensitivity and specificity found at the optimal cutoff point of 6/7, 5/6 and 3/4 for PHQ-9, K-10 and K-6 respectively. Generally PHQ-9 found to be the best in all psychometric properties. There was a little difference in overall performance of the K-6 and K-10. Comparatively improved specificity of PHQ-9 at optimal cut off points makes valuable instrument over K-10 to counteract many false positives.

7.2 Recommendations

- Jimma zone health department and Jimma University shall:
 - Advocate and conduct studies to evaluate feasibility of screening depression by PHQ-9 among PLWH since the scale is a good candidate for routine screening for depression by nurses working at the HIV clinic.
- Other studies to evaluate the acceptability of depression screening in practice are required.
- Future studies to develop more appropriate tool in this setting are encouraged since the problem of attaining content validity of Kessler scales item remained.
- All interested researchers in this setting can use PHQ-9 optimal cut-off point to assess major depression among PLWH.

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ANNEXES: QUESTIONNAIRES

ANNEX I - QUESTIONNAIRES (English version)

Jimma University College of Public Health and Medical Sciences, Department of Psychiatry, Interviewer administered questionnaire for Validation of Kessler (K-10) and patient health questionnaire (PHQ-9) scales to detect depression among PLWHA, jimma, Ethiopia.

Consent form

Dear respondents!

_____, I am here on behalf of Jimma University, College of Public Health and Medical Sciences, Department of psychiatry. Your honestly participation in study will provide us valid result and show us our real status and help to make intervention; hence we request to participate honestly. Your participation in the interview using prepared questionnaires and every aspect of the study are completely voluntary. You are kindly requested to participate in the study and we would appreciate your cooperation. There is no need of writing your name or id number on the format and we would like to reassure you that the information you are going to provide will be kept confidential. It is your right to participate or refuse to involve in the study. If you need clarification please don't hesitate to ask the facilitators for clarification.

Do you agree to participate in this study?

1. YES 2. NO

THANK YOU!

Part I. Socio demographic and clinical characteristics variables of respondents

Serial no.	Questions	Response
1	Age in years	_____
2	Sex	1. Male 2. Female
3	Ethnicity	1. Oromo 2. Amhara 3. Gurage 4. Kaffa 5. Dawuro 6. Other(specify)_____
4	Religion	1. Orthodox 2. Muslim 3. Protestant 4. Catholic 5. Other(specify)_____
5	Educational status	1. Illiterate 2. Primary 3. Secondary and above
6	Employment	1. Unemployed 2. Employed
7	Marital status	1. Single 2. Married 3. Divorced 4. Separated 5. Widowed
8	Current residence	1. In jimma town 2. Out of jimma town
9	Estimated monthly	

	income in birr	_____
10	CD4 counts	1. < 200 2. >200
11	Opportunistic infection	1. Yes 2. No
12	WHO clinical stage	1. I 2.II 3.III 4.IV

ANNEX II - QUESTIONNAIRES (Amharic version)

በአማርኛ የተዘጋጀ መጠይቅ

ጅማ ዩንቨርሲቲ ህብረተሰብ ጤና ና ሕክምና ሳይንስ ኮሌጅ

የአእምሮ ህክምና ክፍል

በፍቃደኝነት ላይ የተመሰረተ የስምምነት ዉል

ሰላምታ

ስሜ _____ ይባላል።እኔ ጅማ ዩንቨርሲቲ ህብረተሰብ ጤና ና ሕክምና ሳይንስ ኮሌጅ የአእምሮ ህክምና ክፍል ጥናት ለማካሄድ መረጃ በማሳባሰብ ላይ እገኛለሁ። በመሆኑም የእርስዎ ተሳትፎ ወሳኝ በመሆኑ እርስዎን መሰል ከሆኑ ሰዎች ጋር ተመርጠዋል። በጥናቱ እንድሳተፉ ጋብዘዎታለሁ። ስለዚህ ከእርስዎ ጋር ቃለ መጠየቅ ማድረግ እፈልጋለሁ። ቃለ ምልልሱ በመደበኛ ችግር ምክንያት ለሚደርስባቸው ችግሮች መፍትሄ ለማፈላለግ ቃለመጠይቁ ትልቅ ሚና ይጫወታል ብለን እናምናለን ስለዚህ እርስዎ የሚሰጡን ትክክለኛ መረጃ ለምንፈልገው መፍትሄ አየነተኛ ጠቀሜታ አለው ብለን ከፍተኛ ግምት ሰጥተነዋል። ለሚሰጡን መረጃ ስምዎት እና ማንነትዎ አይገለፅም።ጥያቄካለዎትይጠይቁኝ። በአንጻሩ ላለመሳተፉ ከፈለጉ/ ከወሰኑ መብትዎ የተጠበቀ ነው።

ለመሳተፍ ፍቃደኛ ነዎት?

አዎ _____ ቃለ መጠይቅ ይቀጥላል

አይደለም _____ ጥያቄዉን በማቆም አመሰግነዉ ያሰነበቱ።

ክፍል I-Socio demographic and clinical characteristics variables of respondents

ተራቁ.	ጥያቄ	መልስ
1.	ዕድሜ (በዓመት)	
2.	ፆታ	1. ወንድ 2. ሴት
3.	ብሄር	1. አሮሞ 2. አማራ 3. ጉራጌ 4. ክፋ 5. ዳዊሮ 6. ሌላካለይጥቀሱ -----
4.	ሐይማኖት	1. ኦርቶዶክስ 2. ሙስሊም 3. ፕሮቴስታንት 4. ካቶሊክ 5. ሌላካለይጥቀሱ-----
5.	የትምህርት ደረጃ	1. መንበረና መጻፍ የማይችል 2. የመጀመርያ ደረጃ 3. ሁለተኛ ደረጃና ከዚያ በላይ
6.	ሥራ	1. ስራ የለውም/ላትም 2. የመንግስት ስራተኛ 3. ሌላካለይግለፁ -----
7.	የጋብቻ ሁኔታ	1. ያላገባ/ች 2. ያገባ/ች 3. የፊታ/ች 4. የተለያየ የቦታ የሚኖሩ 5. ባለቤታቸው/ሚስታቸው/ሚስታቸው ባለቤት
8.	የመኖር ያቦታ	1. ጅማ 2. ከጅማ ውጭ
9.	አማካይ ወርሀዊ ገቢዎ ምን ያህል ነው?	
10.	የ CD4 መጠን	1. < 200 2. > 201
11.	Opportunistic ኦፊሽን	1. አዎ 2. የለም
12.	WHO ከሊኒካል ቴጅ	1. I 2. II 3. III 4. IV

PHQ-9				Code
ማስታወሻ: አልፎ አልፎ ብቻ /2-6 ቀናት/ 1 በዛ ላለ ጊዜ /7-11 ቀናት/፤ ከሞላ ጎደል በየቀኑ /12-14 ቀናት/ መሆኑን ይግለፁ				
	ላለፉት ሁለት ሳምንታት ከነዚህ ከምዘረዝራቸው ችግሮች ውስጥ /በየትኞቹ ተቸግረው/ እንደነበር እጠይቅዎታለሁ፡፡			
1	ላለፉት ሁለት ሳምንታት የዕለት ተዕለት ተግባርዎን ለማከናወን /ለመስራት/ የለዎት ተነሳሽነት ወይም ፍላጎት በጣም ቀንሶ ነበር ?	አዎ	1	PHQ1
		የለም	0	
	መልስዎ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተሰማዎት ?	አልፎ አልፎ ብቻ	1	PHQ1A
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
2	ላለፉት ሁለት ሳምንታት የመከፋት የመደበር ወይም ተስፋ የመቁረጥ ስሜት ይሰማዎት ነበር?	አዎ	1	PHQ2
		የለም	0	
	መልስዎ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተሰማዎት?	አልፎ አልፎ ብቻ	1	PHQ2A
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
3	ላለፉት ሁለት ሳምንታት እንቅልፍ አልወሰድ ብሎዎት ወይም በደንብ መተኛት አቅትዎት ይቸገሩ ነበር?	አዎ	1	PHQ3
		የለም	0	
	መልስዎ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተቸገሩ?	አልፎ አልፎ ብቻ	1	PHQ3A
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
3.1	ላለፉት ሁለት ሳምንታት እንቅልፍ በዝቶብዎት ይቸገሩ ነበር?	አዎ	1	PHQ4
		የለም	0	
	መልስዎ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተቸገሩ?	አልፎ አልፎ ብቻ	1	PHQ4A
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
4	ላለፉት ሁለት ሳምንታት የድካም ወይም የአቅም ማነስ ስሜት ይሰማዎት ነበር?	አዎ	1	PHQ5
		የለም	0	
	መልስዎ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተሰማዎት?	አልፎ አልፎ ብቻ	1	PHQ5A
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
5	ላለፉት ሁለት ሳምንታት የምግብ ፍላጎትዎ ቀንሶ ነበር?	አዎ	1	PHQ6
		የለም	0	
	መልስዎ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ቀንሶ ነበር?	አልፎ አልፎ ብቻ	1	PHQ6A
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
5.1	ላለፉት ሁለት ሳምንታት የምግብ ፍላጎትዎ ከተለመደው በላይ ጨምሮ ነበር?	አዎ	1	PHQ7
		የለም	0	
	መልስዎ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ጨምሮ ነበር?	አልፎ አልፎ ብቻ	1	PHQ7A
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
6	ላለፉት ሁለት ሳምንታት ራስዎን የመጥላት ወይም ዋጋ የለኝም የማለት ወይም ራሴንም ሆነ ቤተሰቤን አሳዝኛለሁ የሚል ስሜት ተሰምትዎት ነበር?	አዎ	1	PHQ8
		የለም	0	
	መልስዎ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተሰማዎት ነበር?	አልፎ አልፎ ብቻ	1	PHQ8A
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
7	ላለፉት ሁለት ሳምንታት በሚሰሩት ስራ ላይ ሃሳብዎን ለመሰብሰብ/ትኩረት መስጠት አስቸግሮዎት ነበር? /ለምሳሌ ከሰዎች ጋር ሲጨዋወቱ ትኩረት ስጥቶ ማዳመጥ/?	አዎ	1	PHQ9
		የለም	0	
	መልስዎ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተቸግረው ነበር?	አልፎ አልፎ ብቻ	1	PHQ9A
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	

8.1	ላለፉት ሁለት ሳምንታት ለሌሎች ሰዎች እስከሚታወቅ ድረስ በእንቅስቃሴዎ ወይም በንግግርዎ በጣም ቀስ ብለው ነበር?	አዎ	1	PHQ10
		የለም	0	
	መልስዎ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተቸግረው ነበር?	አልፎ አልፎ ብቻ	1	PHQ10A
		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	PHQ11
		የለም	0	
	መልስዎ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተቸግረው ነበር?	አልፎ አልፎ ብቻ	1	PHQ11A
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
9	ላለፉት ሁለት ሳምንታት ከምኖር ብሞት ይሻለኛል ብለው አስበው ወይም ራስዎን በሆነ መንገድ ሊጎዱ አስበው ነበር?	አዎ	1	PHQ12
		የለም	0	
	መልስዎ አዎ ከሆነ በሁለቱ ሳምንታት ውስጥ ለምን ያህል ጊዜ ተሰምትዎት ነበር?	አልፎ አልፎ ብቻ	1	PHQ12A
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
10	ከተዘረዘሩት ችግሮች ለአንዳቸውም አዎ የሚል መልስ ከተሰጠ የሚከተለውን ይጠይቁ፡፡ በነዚህ ችግሮች ምክንያት ስራዎን ለመስራት የቤት ኃላፊነትዎን ለመወጣት ወይም ከሰዎች ጋር ተስማምተው ለመኖር ምን ያህል አስቸጋሪ ሆኖብዎት ነበር?	በጭራሽ አልተቸገርኩም	1	PHQ13
		በመጠኑ ተቸግሬ ነበር	2	
		በጣም ተቸግሬ ነበር	3	
		እጅግ በጣም ተቸግሬ ነበር	4	

አሁን ደግሞ ባለፈው አንድ ወር ስለነበርዎት ስሜት እጠይቅዎታለሁ፡፡ ለእያንዳንዱ ጥያቄ አምስት ምርጫዎች ይቀርብልዎታል አንዱን ብቻ ይምረጡ፡፡				Code
ለጠያቂ ማስታወሻ ተጠያቂው ማብራሪያ ካስፈለጋቸው እምብዛም /2-7 ቀናት/ አልፎ አልፎ ብቻ /8-15 ቀናት/ በዛ ላለ ጊዜ /16-24 ቀናት/ ሁልጊዜ /ከ25 ቀናት በላይ/ መሆኑን ይግለፁ፡፡				
ተ.ቁ	ጥያቄ	ነጥብ		
1	ባለፉት 30 ቀናት ውስጥ የመደበር /የመተከዝ/ ስሜት ይሰማዎት ነበር ?	አዎ	1	KS1
		የለም	0	
	መልስዎ አዎ ከሆነ በአንድ ወር ውስጥ ለምን ያህል ጊዜ ይሰማዎት ነበር ?	እምብዛም	1	KS1A
		አልፎ አልፎ ብቻ	2	
		በዛ ላለ ጊዜ	3	
		ሁል ጊዜ	4	
2	ባለፉት 30 ቀናት ውስጥ በጣም ከመደበኛው /ከመከፋት/ የተነሳ ምንም ነገር ሊያስደስትዎ ያልቻለበት ወቅት ነበር ?	አዎ	1	KS2
		የለም	0	
	መልስዎ አዎ ከሆነ በአንድ ወር ውስጥ ለምን ያህል ጊዜ ይሰማዎት ነበር ?	እምብዛም	1	KS2A
		አልፎ አልፎ ብቻ	2	
		በዛ ላለ ጊዜ	3	
		ሁል ጊዜ	4	
3	ባለፉት 30 ቀናት ውስጥ የመረበሽ ስሜት ይሰማዎት ነበር ?	አዎ	1	KS3
		የለም	0	
	መልስዎ አዎ ከሆነ በአንድ ወር ውስጥ ለምን ያህል ጊዜ ይሰማዎት ነበር ?	እምብዛም	1	KS3A
		አልፎ አልፎ ብቻ	2	
		በዛ ላለ ጊዜ	3	
		ሁል ጊዜ	4	
4	ባለፉት 30 ቀናት ውስጥ እጅግ ከመረበሽዎ የተነሳ ምንም ነገር ሊያረጋጋዎት ያልቻለበት ወቅት ነበር ?	አዎ	1	KS4
		የለም	0	
	መልስዎ አዎ ከሆነ በአንድ ወር ውስጥ ለምን ያህል ጊዜ ይሰማዎት ነበር ?	እምብዛም	1	KS4A
		አልፎ አልፎ ብቻ	2	
		በዛ ላለ ጊዜ	3	
		ሁል ጊዜ	4	
5	ባለፉት 30 ቀናት ውስጥ ያለመረጋጋት ወይም የመቁነጥነጥ ስሜት ይሰማዎት ነበር ?	አዎ	1	KS5
		የለም	0	
	መልስዎ አዎ ከሆነ በአንድ ወር ውስጥ ለምን ያህል ጊዜ ይሰማዎት ነበር ?	እምብዛም	1	KS5A
		አልፎ አልፎ ብቻ	2	
		በዛ ላለ ጊዜ	3	
		ሁል ጊዜ	4	
6	ባለፉት 30 ቀናት ውስጥ እጅግ ከመቁነጥነጥዎ የተነሳ አንድ ቦታ አርፎ መቀመጥ ያልቻሉበት ወቅት ነበር ?	አዎ	1	KS6
		የለም	0	
	መልስዎ አዎ ከሆነ በአንድ ወር ውስጥ ለምን ያህል ጊዜ ይሰማዎት ነበር ?	እምብዛም	1	KS6A
		አልፎ አልፎ ብቻ	2	
		በዛ ላለ ጊዜ	3	
		ሁል ጊዜ	4	
7	ባለፉት 30 ቀናት ውስጥ ለምንም አልጠቅምም /ዋጋ የለኝም/ የሚል ስሜት ይሰማዎት ነበር ?	አዎ	1	KS7
		የለም	0	
	መልስዎ አዎ ከሆነ በአንድ ወር ውስጥ ለምን ያህል ጊዜ ይሰማዎት ነበር ?	እምብዛም	1	KS7A
		አልፎ አልፎ ብቻ	2	
		በዛ ላለ ጊዜ	3	
		ሁል ጊዜ	4	
8	ባለፉት 30 ቀናት ውስጥ ምንም ሳይሰሩ ይደክምዎት ነበር ?	አዎ	1	KS8
		የለም	0	
	መልስዎ አዎ ከሆነ በአንድ ወር ውስጥ ለምን ያህል ጊዜ ይሰማዎት ነበር ?	እምብዛም	1	KS8A
		አልፎ አልፎ ብቻ	2	
		በዛ ላለ ጊዜ	3	
		ሁል ጊዜ	4	

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9	ባለፉት 30 ቀናት ውስጥ ተስፋ የመቁረጥ ስሜት ይሰማዎት ነበር ?	አዎ	1	KS9
		የለም	0	
	መልስዎ አዎ ከሆነ በአንድ ወር ውስጥ ለምን ያህል ጊዜ ይሰማዎት ነበር ?	እምብዛም	1	KS9A
		አልፎ አልፎ ብቻ	2	
		በዛ ላለ ጊዜ	3	
		ሁል ጊዜ	4	
10	ባለፉት 30 ቀናት ውስጥ ሁሉንም ነገር የግድምን ያደርጉ ነበር? /ለምሳሌ መናገር፣መነሳት፣መሄድ የመሳሰሉት/	አዎ	1	KS10
		የለም	0	
	መልስዎ አዎ ከሆነ በአንድ ወር ውስጥ ለምን ያህል ጊዜ ይሰማዎት ነበር ?	እምብዛም	1	KS10A
		አልፎ አልፎ ብቻ	2	
		በዛ ላለ ጊዜ	3	
		ሁል ጊዜ	4	

M.I.N.I

የመጠይቁ የአሞላል መመሪያ (RATING INSTRUCTIONS)፤

ሁሉም ጥያቄዎች መመለስ ይኖርባቸዋል። የለም ወይም አዎን የሚለውን አማራጭ አክብቡ። ምላሹን ለመሙላት የሙያ ግምገማችሁንም ተጠቀሙ። አስፈላጊ ሆኖ ሲገኝ፤ ምላሹ ትክክለኛ መሆኑን ለማረጋገጥ ምሳሌ እንዲሰጥ ጠይቁ። ህመምተኛው ያልተረዱቸው ነገሮች ካሉ ማብራሪያ እንዲጠይቁ አበረታቱ።

ጠያቂ ባለሙያዎች፤ እያንዳንዱ የጥያቄ ክፍል በትክክል መመለሱን ማረጋገጥ ይኖርባቸዋል (ለምሳሌ፤ ምልክቱ ምን ያህል ጊዜ እንደቆየ፤ ድግግሞሹ፤ የህመሙ ብርታት፤ እንዲሁም አማራጮች)

በሌላ ህመም ሳቢያ ወይም በመጠጥ እና በእፅ ምክንያት የተከሰተ የአእምሮ ህመም ምልክት፤ በ M.I.N.I. ላይ መሞላት የለበትም።

A. የአባች ድባቱ ህመም ክስተት

ማስታወሻ፤ የለም ወይም አዎን የሚለውን አማራጭ አከብቡ፡፡

A1	a.	ባለፉት ሁለት ተከታታይ ሳምንታት የመደበር ወይም የማዘን (የመከፋት) ስሜት ነበረዎት ወይ? A1 a አዎን ከሆነ b.ን ጠይቁ፤ A1 a የለም ከሆነ ወደ A2 እለፉ	የለም	አዎን
	b.	የቀኑን አብዛኛውን ጊዜ እና ከሞላ ጎደል በየእለቱ ይህ የመደበር ወይም የማዘን (የመከፋት) ስሜት ነበረ ወይ?	የለም	አዎን
A2		ባለፉት ሁለት ሳምንታት አብዛኛውን ጊዜ ለብዙ ነገሮች ፍላጎት ማጣት ወይም በፊት ያስደስትዎት ለነበሩት ነገሮች ስሜት ማጣት ነበረዎት?	የለም	አዎን
		A1 b. ወይም A2 መልስ አዎን ነው?	የለም	አዎን

A3	ባለፉት ሁለት ሳምንታት			
A	a.1	ከሞላ ጎደል በየቀኑ የምግብ ፍላጎትዎ ከወትሮው ቀንሶ ነበር?	የለም	አዎን
	a.2	ከሞላ ጎደል በየቀኑ የምግብ ፍላጎትዎ ከወትሮው ጨምሮ ነበር?	የለም	አዎን
	a.3	ሆን ብለው ሳይሞክሩ ከብደትዎ ቀንሶ ነበር (ከሰውነት ክብደት ቢያንስ አምስት ከመቶ ያህሉን መቀነስ)?	የለም	አዎን
	a.4	ሆን ብለው ሳይሞክሩ ከብደትዎ ጨምሮ ነበር (ከሰውነት ክብደት ቢያንስ አምስት ከመቶ ያህል)?	የለም	አዎን
B	b.1	ከሞላ ጎደል በየቀኑ እንቅልፍ እንቢ ብሎዎት ነበር? (ማለትም፤እንቅልፍ አልዎስድ ማለት፤ ሌሊት መንቃት/የእንቅልፍ መቆራረጥ/፤ ጠዋት ማልዶ መንቃት)	የለም	አዎን
C	b.2	ከሞላ ጎደል በየቀኑ እንቅልፍ እየበዛብዎት ተቸግረው ነበር?	የለም	አዎን
	c.1	ከሞላ ጎደል በየቀኑ ንግግርዎ ወይም እንቅስቃሴዎ ከተለመደው በላይ ቀስ ብሎ ነበር?	የለም	አዎን
	c.2	ከሞላ ጎደል በየቀኑ መቅበጥበጥ፤ አርፎ አለመቀመጥ እና አረፍት ማጣት ነበረዎት?	የለም	አዎን
D		ከሞላ ጎደል በየቀኑ ድካምና ጉልበት ማነስ ነበረዎት?	የለም	አዎን
e		ከሞላ ጎደል በየቀኑ ዋጋ ቢስነት፤ የቢታችነት ወይም የጥፋተኝነት ስሜት ይሰማዎት ነበር?	የለም	አዎን

	A3e አዎን ከሆነ ምሳሌ ይጠይቁ፡፡ ምሳሌው ከእውነት የራቀ ሃሳብ (delusional idea) ይመስላል?		
	0 የለም 1 አዎን		
F	ከሞላ ጎደል በየቀኑ ሃሳብዎት እየተበተነ ወይም ዉሳኔ ላይ ለመድረስ እየተቸገሩ ነበር?	የለም	አዎን
G	በተደጋጋሚ ራስዎትን ለመጉዳት አስበው፤ ራስዎትን ለማጥፋት ስሜት አድርገዎት ወይም ሞቼ ባረፍኩት ብለው ያውቃሉ?	የለም	አዎን
N	ከተለመደው በላይ ወይም በትንሹም በትልቁም እየተበሳጩ ተቸግረዋል?	የለም	አዎን
A4	3 ወይም ከዛ በላይ የሆኑ የA3 ጥያቄዎች አዎን የሚል መልስ ተሰጥቷቸዋል? (ወይም A1 ወይም A2 የለም የሚል መልስ ከተሰጣቸው ፤4 የA3 ጥያቄዎች አዎን የሚል መልስ ተሰጥቷቸዋል?) <u>ማስታወሻ፡</u> a.1. - a.4. =1, b.1. - b.2. =1, c.1. - c.2. =1 (ለእያንዳንዳቸው አንዳንድ ነጥብ ብቻ ይሰጥ) <u>ማስታወሻ፤</u> ለ A4 መልሱ የለም ከሆነ፤ ወደ መጠይቅ B እለፉ፡፡	የለም	አዎን

A5. የነበረዎት የመደበኛ ስሜት በኑሮዎ ላይ ጫና ፈጠረብዎት? ወይም በስራዎ፣በማህበራዊ ህይወትዎ እንዲሁም በሌላ መልኩ ያለዎትን ኃላፊነት እንዳይወጡ አደረገዎት ወይ?

የለም አዎን

A6.1. የሚወዱትን ሰው በሞት አጥተዋል?

የለም አዎን

A6.1.a. ለጥያቄ A6.1. መልሳቸው አዎን ከሆነ፤ "የሚወዱትን ሰው በሞት ከተለዩ ስነት ጊዜ ሆነው?" ብለው ይጠይቁ፡፡ ____ ወራት፡፡

A6.2. ለጥያቄ A6.1. መልሳቸው አዎ ከሆነ፤ የሚከተለውን ጥያቄ አቅርቡ፡፡

ከላይ የተዘረዘሩት ምልክቶች ሙሉ በሙሉ፤ የሚወዱትን ሰው በሞት ከማጣት የተነሳ የመጡ ናቸው? ከሆነስ እነዚህ ምልክቶች፤ በክብደታቸው፤ በእለት ተእለት ተግባርዎት እና ኑሮዎት ላይ ባደረሱት መስተጓጓድ፤ እንዲሁም ከጊዜው ርዝመት አንጻር ከሌሎች ሃዘን ከደረሰባቸው ሰዎች ጋር ሲወዳደር ጋር ተመሳሳይነት አለው?

ለጠያቂው፡ ይህ ከሆነ ግለሰቡ ያላቸው አግባብ ያለው ሃዘን (uncomplicated bereavement) ነው፡፡ አግባብ ያለው ሃዘን (uncomplicated bereavement) አለመሆኑን አረጋግጠዋል?

የለም አዎን

A7. a. እነዚህ ምልክቶች ከመጀመራቸው በፊት የሚወስዷቸው መድሃኒቶች ወይም ለሱስ የሚዳርጉ እጾች ይወስዱ ነበር?

የለም አዎን

b. እነዚህ ምልክቶች ከመጀመራቸው በፊት ዘዎትር ከሚዎስዱት በላይ አልኮል ወይም ጫት ይጠቀሙ ነበር?

የለም አዎን

c. እነዚህ ምልክቶች ልክ ከመጀመራቸው በፊት አካላዊ ህመም ነበረዎት?

የለም አዎን

በጠያቂው አስተያየት:- የድባቴ ህመሙ ከላይ ከተጠቀሱት ምክንያቶች በአንዱ የመጣ ሊሆን ይችላል ብለው ያምናሉ? አስፈላጊ ከሆነ ሌሎች ተጨማሪ የማብራሪያ ጥያቄዎችን ይጠይቁ።

A7(ማጠቃለያ) ድባተቴው ከሌላ በሽታ የመጣ (organic) እንዳልሆነ ተረጋግጧል?

የለም አዎን አጠራጣሪ ነው

A8. የA7(ማጠቃለያ) መልስ አዎ ወይም አጠራጣሪ ከሆነ አዎን ይምረጡ።

የለም	አዎን
የአባች ድባቴ ህመም ከስተት	

A9. A7c. መልስ አዎን ከሆነና፡ የA7(ማጠቃለያ) መልስ የለም ከሆነ አዎን ይምረጡ

የለም	አዎን
ከአካላዊ ህመም የተነሳ የስሜኑ መታወክ	

A10. A7a ወይም b መልስ አዎን ከሆነና፡ የA7 (ማጠቃለያ) መልስ የለም ከሆነ አዎን ይምረጡ።

የለም	አዎን
በሱስ እስያኸን ንጥረ ነገሮች የተነሳ የስሜኑ መታወክ	

A10 PAST: ከአሁን በፊት ተመሳሳይ የሆነ የድባቴ ህመም አጋጥሞዎት ያውቃል?

የለም አዎን

ቅደም ተከተል

A11. በመጀመሪያ የድባቴ ህመም ምልክቶች ሲጀምርዎ ዕድሜዎ ስንት ነበር? _____ ዓመት

A12. በእድሜዎ ሁሉ እነደዚህ አይነት የድባቴ ህመም ስንት ጊዜ ተመላልሶብዎታል? _____ ጊዜ

A13. ተመሳሳይ ወይም ተቃራኒ የሚመስል በሽታ ያለበት ወይም ለአእምሮ መታወክ መደሃኒት የሚጠቀም ዘመድ አለዎት?

የለም አዎን

B.

1. እስካሁን ስለድባቴ ወይም ስለመተከዝ ስሜቶች አነጋግራዎታለሁ፡፡ ከዚህ ውጭ የሆነ የሚነግሩኝ የአእምሮ መታወክ ወይም ጭንቀት አለ?

ማስታወሻ: briefly explore anxiety symptoms and describe the symptoms and the likely diagnosis

2. ሐኪም ወይም አዋቂ አላወቅልኝም የሚሉት ህመም አለ?

ማስታወሻ: briefly explore somatoform symptoms and describe the symptoms and the likely diagnosis

I, Muktar Beshir, declare that the work presented in this MSc thesis is original. It has not been presented to any other university or institution. Where, the work of other people has been used, reference has been provided. It is in this regard that I declare this work as original mine, and it is here by presented in partial fulfillment of the MSc Degree in Integrated Clinical and Community Mental Health.

Signature _____

Date _____

Advisers:

1. Dr. Markos Tesfaye (MD)

Signature _____

Date _____

2. Mr. Mubarek Abera (BSc, MSc)

Signature _____

Date _____