COMPARISON OF ROUTINE VERSUS SELECTIVE SCREENING STRATEGIES FOR DEPRESSION AMONG PLHIV ATTENDING PRINCESS DIANA MEMORIAL HEALTH CENTRE IV SOROTI

BY

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Declaration

I, Paul Okimat, do declare that the work in this dissertation is my own original work and has not been submitted in whole or part for any academic award in any other university unless otherwise acknowledged.

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Date: ................................................................. 29/11/2018

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<td>Acquired Immune Deficiency Syndrome</td>
</tr>
<tr>
<td>ART</td>
<td>Antiretroviral Therapy</td>
</tr>
<tr>
<td>CES-D</td>
<td>Centre for Epidemiologic Studies Depression Scale</td>
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<td>CD4</td>
<td>Cluster of Differentiation 4</td>
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<td>HAART</td>
<td>Highly Active Antiretroviral Therapy</td>
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<td>Health Information Management System</td>
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<td>HIV</td>
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<td>MDD</td>
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<td>MINI</td>
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Operational definitions

**Depression**

Based on the PHQ-9 scores depression was categorised as: minimal depression (1-4); mild depression (5-9); moderate depression (10-14); moderately severe depression (15-19); severe depression (>20) (1)

Based on the PHQ-9: MDD was diagnosed if the score was 10 and above in addition to the following:

- Questions 1 or 2 had a score of at least 2 (more than half the days)
- Five or more of questions 1 to 9 occurred more than half the days (question 9 was counted if present at all)
- Ruling out a history of a manic episode (Bipolar Disorder).
- Ruling out physical disorder and medication (or other drugs) as the biological cause of the depressive symptoms (1,2)

Based on the MINI: MDD current was diagnosed when 5 or more answers (A1-A3) were coded yes; MDD recurrent was diagnosed when (A4) was coded yes (following diagnosis of major depressive disorder current ) (3).

**Screening**

The presumptive identification of unrecognized cases of depression by the appropriate application of the PHQ-2 and PHQ-9, examinations, or the MINI.

**Routine screening**

Screening every PLHIV attending the HIV clinics at every visit using the PHQ-2 and PHQ-9.

**Selective screening**

This is targeted screening of PLHIV at high risk offered when a health provider finds it appropriate to screen especially when at crisis points of life.
**Crisis points of life**  These include: newly diagnosed with HIV or at disclosure of HIV status; occurrence of any physical illness, recognition of new symptoms/progression of disease or hospitalisation or diagnosis of AIDS; introduction to medication, death of a significant other; necessity of making end of life; and permanency planning decision, major life changes like child birth, pregnancy, loss of a job, and end of a relationship (MOH Uganda, 2016).

**Performance**  Measures of validity: Overall sensitivity, specificity, accuracy, positive predictive value, negative predictive value, false positive proportion, and false negative proportion of the strategy.
Abstract

Introduction: Depression is not usually screened for among PLHIV in Uganda in spite of the fact that depression is more common among PLHIV than in the general population. The study’s aim was to determine whether selective and routine screening strategies for depression differed in case detection, and performance (sensitivity and specificity); and to describe the perceptions of stake holders on the screening strategies.

Methods: The study employed a mixed methods study design with quantitative (a randomized control trial) and qualitative data collection methods. It was conducted in Princess Diana Memorial Health Centre IV HIV clinic. Ethical approval was sought from School of Medicine Research Ethics Committee (REC 2018-041) while registration was done with the Pan African Clinical Trial Registry (PACTR201802003141213). 291 PLHIV and 6 stake holders participated in the study. Participants allocated to selective screening were screened for depression if they had or were at “crisis points” while those allocated to routine screening were screened regardless of whether they had or were at “crisis points” or not. The screening was done at every clinic visit. The PHQ-2 and PHQ-9 were used in sequence for screening while the MINI was used as the reference tool. Audio recorded Key informant interviews were carried out to identify the perceptions of the stake holders.

Results: Routine screening detected 8.4% more cases P-value =0.073, 95% confidence interval (-0.8%, 17.6%) (two sided). Sensitivity was significantly higher for routine screening as compared to selective screening strategy (difference =23.7%) P -value = 0.034, 95% confidence interval (2.6%, 44.9%). The stake holders thought it was important to screen for depression among PLHIV with preference to routine screening strategy.

Conclusion: The findings indicated that PLHIV should be screened for depression regardless of whether they present with risk factors (“crisis points”) or not given the difference in sensitivity of the strategies, and the stake holders’ concerns. This should be supported with trainings, public sensitization on depression and improvement of the Health information Management System to capture data on depression among PLHIV.
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CHAPTER ONE

1.0 Introduction

Human immunodeficiency virus (HIV) is one of the major public health problems in the world. There are over 36.7 million People Living with Human Immunodeficiency Virus (PLHIV) worldwide accounting for 0.8% of the world’s population aged 15-49 years (5). In Sub-Saharan Africa (SSA), there are approximately 25.5 million PLHIV (5) amounting to 4.2% of the population of the region aged 15-49 year (WHO, 2017a). In Uganda, the prevalence of HIV stands at 6.2% (WHO, 2017).

Depression is the leading cause of disability worldwide with over 300 million people affected (4.4% of the world’s population) (8). It is one of the most prevalent mental health comorbidities among PLHIV (9,10), and it is 2 to 3 times more prevalent among PLHIV in SSA (11). Major depression among PLHIV in the SSA region is estimated to range from 9% to 32% (11) while in Uganda it varies in different regions of the country from 8% to 46% (12–14).

Depression has been associated with treatment failure and the emanation of drug resistant HIV strains (15) and it is partly attributed to poor adherence to ART (16).

The lack of screening and subsequent treatment for mental health disorders can affect general health, quality of life, adherence to antiretroviral therapy (ART) and retention into care (Organisation, 2016) and therefore affecting most stages in the HIV cascade of care. Screening for, and treating depression has been found to improve health outcomes (17). One of the ways of improving case detection of depression is routine screening.
Despite the high burden and negative consequences associated with depression, about 46% to 50% of cases of depression are missed in primary care settings in developed countries (18) and close to 100% in developing countries (19–21).

Though the ability of the MOH recommended strategy of “selective screening” to detect depression cases is not known, selective screening for depression could offer an advantage of less time spent on screening for depression and less work load. However, selective screening for depression may leave other PLHIV with depression not diagnosed given that the criteria does not cover all the risk factors.

A study done in a developed country (Spain) found no difference in the cases of depression detected between selectively screening people at high risk and usual clinical practice (basing on signs and symptoms). Failure to adhere to the screening criteria by the primary care physicians was the explanation for the no difference observed (22).

Routine screening for depression among PLHIV was found to be beneficial in not only detecting depression but improving the clinical outcomes as well (23). Though routine screening offers an advantage of seeing to it that all the PLHIV are screened for depression, it may come with a cost of more time and more work load as compared to selective screening. There is also a risk of over diagnosis and high number of false positives.

Majority of studies done have focussed on effects of notification of patients’ depression status to health workers. A meta-analysis on the effects of notification of patients’ depression status identified studies showing varying improvement in case detection and reduction of depression cases ranging from 9% to 32% (24). However, there is hardly any study comparing the two screening strategies of routine and selective screening strategies with emphasis on
case detection and the performance (sensitivity and specificity). There is also hardly any information on the perception of the different strategies by the stake holders.

The PHQ-9 has been tested in different populations in Sub Saharan Africa including Uganda and in different sub populations including PLHIV. The tool has performed well with sensitivity of 91.6% and specificity of 81.2% in the HIV population (25).

The purpose of this study therefore was to determine whether the selective screening strategy differs from the routine screening strategy in case detections; and to describe the perceptions of the health stake holders in the study site on the different screening strategies.
1.1 Problem statement

The prevalence of HIV in Uganda is 6.2 (7) while the prevalence of depression among PLHIV in Uganda is as high as 46% (13,14,25) in some settings. Depression affects the general wellbeing of PLHIV, it is associated with a low CD4 count, poor adherence, and poor retention in care among others therefore affecting every stage in the cascade of care (7). In spite of the high burden of depression among PLHIV in Uganda, it is not routinely screened for and thus likely to be missed as indeed there is no data on depression among PLHIV from the health facilities in Uganda. The failure of health workers to screen for depression is as a result of a number of reasons which include: poor mental health literacy, high patient numbers, shortage of health workers (26), and lack of a clear policy recommending screening. This leads health workers to focus on what is considered urgent or important. More so, there is scarcity of literature on the perceptions or views of stakeholders on screening for depression.

In addition, signs and symptoms of depression mask or mimic the clinical presentations of other physical illnesses thus leading to misdiagnosis of the condition (27). Depression is also at times mistaken to be a reaction to medical illness. However, though understanding depression is important in diagnosing depression, it is important to note that training alone has not been enough to increase case detection (28).

It is also worth noting that in addition to the primary care workers not understanding the manifestations of depression as a mental illness, the patients too do not understand it and may at times mistake it for demonic possession or witchcraft (29,30). As a result, the patients may not take initiative to clearly describe or report it as such during clinic visits. Routine screen-
ing could therefore potentially be beneficial but there is limited information in this setting to support this.

### 1.2 Justification of the study

The MOH through the 2016 consolidated guidelines for prevention and treatment of HIV in Uganda recommends annual screening for depression, screening at presentation of clinical features and at crisis points in life (for example when newly diagnosed with HIV, death of a loved one, etc) among PLHIV. However, this approach targeting those at high risk could be leaving a gap in the ability to detect depression cases among the PLHIV, given that there are other relevant and common risk factors among PLHIV in primary care settings that are left out from the guide for example; age, poverty, social isolation, etc, and in addition the patients are constantly exposed to some risk factors such as treatment with stavudine, efavirenz, and HIV infection itself that are associated with the disease.

The current practice is opportunistic in that patients are screened when a practitioner notices a need or upon request by the patient or patient attendant. Routine screening for depression on every visit gives an advantage of screening most if not all PLHIV in case it is appropriately implemented given that even if physical signs or leading symptoms are not reported, screening would still be done. However, selective screening for depression could be offering an equal detection of cases of depression with an advantage of lower work load and time compared to routine screening. This study would illuminate on the different strategies and enable us identify the most appropriate strategy for screening for depression among PLHIV. Information from this study will contribute towards the knowledge necessary in the development of policy and guidelines for screening of depression among PLHIV.
1.3 Hypothesis

Screening all PLHIV aged 18 years and above for depression on every clinic visit using the PHQ-2 and PHQ-9 will reduce the missed cases of depression by at least 10% during the screening period.

1.4 Research questions

*Primary research question*

1) Is there a difference in number of cases of depression detected when using routine or selective screening strategies among PLHIV?

2) What are the stakeholders’ perceptions on the screening strategies for depression among PLHIV?

*Secondary research question*

1 a) Is there a difference between the performance (sensitivity, specificity, accuracy) of routine and selective screening strategies in detection of major depressive disorder among PLHIV?

1.5 Objectives of the study

1.5.1 General objective

To determine whether routine screening strategy differs from selective screening strategy in depression case detection, performance and to describe the perceptions of stakeholders on the strategies for screening depression among PLHIV.
1.5.2 Specific objectives

Primary objectives

1) To determine whether there is a difference in cases of depression detected when using routine or selective screening strategies among PLHIV.

2) To describe the perceptions of stakeholders on the screening strategies for depression among PLHIV.

Secondary objective

1 a) To determine whether there is a difference between performance of selective and routine screening strategies in detection of major depressive disorder among PLHIV.
1.6 Theories to be used

The theoretical domains framework

The theoretical domains framework (TDF) is a synthesis of 33 theories of behaviour and behaviour change combined into 14 domains. It is a theoretical framework and not a theory as it is sometimes mistaken to be. It provides a theoretical lens through which to view the environmental, social, cognitive, and affective, influences on behaviour. The framework does not propose testable relationships between elements. The TDF was originally developed for implementation science research to bring out influences on health professional behaviour related to implementation of evidence-based recommendations(31). The theory has a number of domains such as knowledge; skills; social or professional role and identity; beliefs about consequences; beliefs about capabilities; motivation and goals; memory, social influences; attention and decision processes; behavioural regulation; environmental context and resources; emotion; and nature of the behaviours among others (32). The theoretical domains framework can either be used before the implementation of an intervention / trial or after the programme or trial. This then helps in identifying how to implement an intervention better. (32). The theoretical domains framework was used to design the interview guide and develop a coding format which was used in analysing the perceptions of health workers on screening for depression.
The health belief theory

**Perceived susceptibility.** This looks at the subjective perception of the risk the patient is in due to a state or condition.

**Perceived severity.** This refers to subjective evaluation of the seriousness of the consequences that could be related to the state or condition.

**Perceived threat.** The product/sum of severity and susceptibility.

**Perceived benefits.** This refers to the subjectively understood positive benefits of taking an initiative to mitigate the threat.

**Perceived barriers.** These are the perceived negatively valued aspects of acting or counteracting anticipated barriers to taking it.

**Self-efficacy.** This refers to belief in one’s ability to perform or carry out a given behaviour.

**Expectations.** They are outcomes of perceived benefits, barriers and self-efficacy.

**Cues to action.** Reminders or prompts to take actions consistent with an intention, ranging from advertising to personal communications from health professionals, family members and/or peers.

**Demographic and socio-economic variables.** These include age and ethnicity (33).

The health belief theory was used as a basis for health educating the patients on depression at the waiting area so as to encourage them to take up screening for depression. It was also the basis for training the health workers so as to encourage them initiate and screen for depression among PLHIV.
1.7 Conceptual framework

1.7.1 Scope of the study

There are several factors that affect screening for depression as shown above (figure 1). All the domains listed above were studied apart from social support structures, patient factors and long-term outcomes of management of depression. The outcome variables of interest are cases of depression detected among PLHIV (primary) and the missed cases of depression by the two strategies (secondary). For the qualitative study the outcome variable is perceptions of stake holders on the screening strategies. The study therefore looked differences in case detection, performance; and perceptions of stake holders on the strategies.

Figure 1. Conceptual framework of screening for depression strategy among PLHIV
CHAPTER TWO

2.0 Literature review

Introduction

The problem identified in 1.1 above is not entirely new. Researchers, scholars and policy makers have been interested in devising means of controlling this hidden morbidity. Several questions have been posed in relation to the best screening tools, screening strategies, the contribution or training health workers, mental health management models among others. The related literature presented here shines some light on some the problem.

2.1 Human Immunodeficiency Virus

HIV is a virus that attacks the body’s immune system, specifically CD4 cells, often called the T-cells. HIV is spread through certain body fluids such as sexual fluids, blood, and breast milk. People usually become infected through sexual intercourse, sharing of needles, birth, breast feeding among others.

HIV if not treated progresses through three typical stages these include: Acute HIV infection, Clinical latency, and Acquired Immunodeficiency Syndrome (AIDS).

Acute HIV infection stage occurs between 2 to 4 weeks after exposure to the infection. It may present with flue like symptoms or not. In most cases people are un aware that they have been infected. Clinical latency stage is sometimes referred to as the asymptomatic HIV infection or chronic HIV infection. People may not have any symptoms or signs during this time. Without any treatment, this stage may take a decade or longer, though some progress through it faster. While people who start medicine straight away may take several decades at the stage. As the immunity lowers and transits into the stage 3 (AIDS). AIDS is the most severe phase of HIV
infection and it is associated with opportunistic infections due to the damaged immune system. The common symptoms at this stage include weight loss, fevers, weakness, and swollen glands.

HIV is tested through the use of either antibody tests or antigen tests. It currently has no cure and is treated using antiretrovirals (34).

2.2 Depression

Depression is a common mental disorder characterised by low mood, loss of interest and enjoyment and reduced energy leading to diminished activity and in severe forms, difficult day-to-day functioning (MOH Uganda, 2016). The prevalence of depression in the general population of Uganda ranges from 8% to 20% (MOH Uganda, 2016). Symptoms of clinical depression are in two categories: affective, somatic, and cognitive. Affective symptoms include depressed mood, loss of interest in normally pleasurable activities, feelings of guilt or worthlessness, hopelessness or suicidal ideation. Somatic symptoms include loss of weight or appetite, sleep disturbances, agitation / retardation, fatigue and loss of concentration (American Psychiatric Association, 2012; MOH Uganda, 2016). While cognitive symptoms include poor memory, diminished ability concentration, and difficulty in decision making (37).

Depression is known to be linked to physical symptoms given that both physical symptoms and depression are influenced by the neurotransmitter’s serotonin and norepinephrine. Dysregulation of these transmitters therefore is linked to both depression and pain. It is because of the link between depression and physical symptoms that depression is often times missed by primary health care workers (38).
2.3 Depression among PLHIV

The clinical features of depression are known to be the same in both HIV positive and negative individuals. However, the insomnia and loss of appetite is known to be more frequent among HIV positive as compared to the HIV negative (39). With time, these effects of depression affect general health.

In addition to HIV infection, depression is associated with a number of factors such as stigmatisation, age, poverty, worsening health, lower CD4 count, and major changes in life such as child birth, loss of jobs, and pregnancy (40).

Ever since the advent of ART, the life expectancy of PLHIV has improved with more HIV infected people living longer in a better state of health. Initiation to ART has been associated with reduced depression. However, some ARVs such as stavudine and efavirenz have been found to be associated with depressive symptoms and thought that they could be triggering depression among PLHIV (36).

2.4 Screening for depression

Screening for depression is done through use of screening tools, history taking and examinations. A number of tools are used to screen for depression and this variability in the tools have partly contributed to the high variability in the prevalence of depression in various settings (11).

Some of the tools include: the PHQ-9 which is a 9-item self-rating scale evaluating the key symptoms of depression during the past two weeks. The total score ranges from 0 to 27 with five categories of severity: minimal (0–4), mild (5–9), moderate (10–14), moderately severe
(15–19) and severe (20–27), which guide in grading depression (MOH Uganda, 2016). The has been estimated to have a sensitivity of 91.6%, and specificity of 81.2% (25)

The PHQ-2 tool is a shorter version of the PHQ-9. It contains the first two questions found in the PHQ-9. The PHQ-2 score ranges between 0–6 and those with a score equal or greater than 3 are further evaluated using the PHQ-9. The PHQ-2 has a sensitivity and specificity of 82.9% and 90% respectively at a score of 3 (41). The PHQs however are mainly recommended for people aged 12 years of age and above(42). The PHQ-9 was developed to be self-administered, however interviewer-administration and telephone administration yielded similar results (43). Other tools include the Centre for Epidemiologic Studies Depression Scale (CES-D); the Hopkins Symptom Checklist (HSCL), among others.

Though a number of tools are used in screening for depression, the PHQ, was recommended for use in PLHIV populations by a number of studies as a result of its performance in screening for depression among PLHIV. The PHQ-9 performed with an accuracy of 96%, sensitivity of 91.6% and a specificity of 81.2% (25). The PHQ has a number of advantages which include; it is shorter than other depression rating scales, can be administered by a clinician, by telephone, or self-administered, facilitates diagnosis of major depression, provides assessment of symptom severity, is well validated and documented in a variety of populations and can be used in adolescents as young as 12 years of age (42).
2.5 Approaches to screening

Routine approach versus Selective approach to screening

Routine screening focuses on screening the entire population for example the entire population seeking care in the health facility. It is known to yield a number of cases of depression. However, universal screening has been found to have shortcomings when it comes to applicability in resource limited settings of which there may not be a possibility of adequate follow up and treatment, increased work burden,(44) and the possibility of the screening leading to a number of false positives.

Selective screening on the other hand focuses on a section of the population for example those at high risk of depression such as; the pregnant, postnatal women, and the elderly. Sub-population screening has been argued to be time saving living more time for other important activities within the population, it is also thought to lead to less false positives (44).

2.6 Studies done on screening for depression strategies / approaches.

There is a limited number of trials done to identify approaches that could increase the detection of depression among high risk populations including PLHIV.

In a high income country (Spain) one study focused on comparing routine screening with usual practice (clinical signs and symptoms) in the high risk groups (22) . This pragmatic cluster randomised trial by Romera et al randomised the health workers to the control and intervention group. The study recruited 69 primary care practices (35 intervention group, and 34 control group) which screened a total of 3414 patients (1713 in the intervention group, and 1701 in the control group). The health workers delivering the intervention screened the patients thought to be at high risk (not necessarily HIV positive) for depression. “High risk”
was defined as fulfilling at least one of the following: history of depression, somatic symptoms without any cause, psychological comorbidities or drug abuse, or chronic pain. These patients were evaluated using two questions: “Over the past two weeks, have you felt down, depressed, or hopeless?” and “Over the past two weeks, have you felt little interest or pleasure in doing things?”. The patients were further evaluated using a diagnostic interview.

The control was subjected to usual clinical practice procedures. There were however un able to detect a difference in cases of depression detected. This was attributed to the failure of the intervention arm to adhere to the screening strategies.

A study done in a developing country Kenya focused on training the health workers to equip them with skills and knowledge on depression. The health workers from the intervention clinics were trained in diagnosis of mental health conditions and allowed to offer mental health services on a daily basis. Evaluation of patients was done using the general health questionnaire (GHQ). A total of 99 health facilities were recruited (49 intervention, 50 control) and were able to evaluate and follow up 946 (468 in the intervention and 478 in the control group) for 3 months. This study found no difference in cases of depression of mental health (including depression) detected between the control and intervention (20). This study didn’t however describe the strategy used.

A prospective observational, quasi-experimental study done by Schumacher and colleagues in a cohort of HIV patients, routinely screened and followed patients for 4 to 6 months. The results obtained were compared against the baseline results (Clinical practice results). The prior sample size estimate was not indicated. However, 820 participants completed the study. The study demonstrated that routine screening for depression can not only identify patients
with depression but also patients at risk of other psychiatric conditions such as anxiety disorders. This study was done in the United States of America in a HIV clinic cohort (23). This study was however prone to confounding bias and the study focused on only one clinic.

There is however hardly any trial comparing selective to routine screening strategy. A number of studies done have focussed on the effect of notifying the health workers about the patient’s depression risk status. In these studies, Patients with depression identified in clinics used to be randomised to either the intervention or control. The intervention arm was notified about the patients’ depression risk status while the control was not. A meta-analysis on the effects of notifying health workers on the patients’ depression risk status showed that the case detection improved by a range of 9% to 32% (24). However, these studies were done in developed countries among general patients not specifically the PLHIV. These studies however focussed on notification and not screening procedures. However, it is important to note that the study brings out the fact that frequent notification increases diagnosis and treatment of depression. A strategy that could therefore bring about more impressions of depression could be of benefit to the people of risk.

In Ugandan HIV clinics, a clustered randomised controlled trial was conducted in which the outcomes of a structured model of depression care and clinical acumen were compared. The study enrolled 1252 clients (640 at structured protocol clinics, 612 at clinical acumen clinics) for over 12 months in 10 HIV clinics in Kampala. One of the outcomes of interest was diagnostic evaluation. The outcome reflected the proportion of patients evaluated for depression per study arm. The study realised more patients evaluated for depression in the structured protocolised arm as compared to the clinical acumen arm (45).
2.5 Perceptions on depression screening

There is scarcity of literature on the perceptions of primary health workers on the screening for depression among PLHIV.

In the United States of America (USA), preventive task force recommends screening for depression in the general population of adults, including pregnant and postpartum females. The task force however recommended screening to be implemented with adequate systems in place to ensure accurate diagnosis, effective treatment, and appropriate follow-up. However, some countries such the United Kingdom do not find it appropriate to screen for depression in the general population citing high false positives as the reason (46).

Nakalawa studied the perceptions of HIV counsellors and found out that the counsellors were positive about managing depression. In this case the studied counsellors were interested in screening for mental illnesses among PLHIV routinely. This however came with a need for training in screening and management of mental illnesses (47). These findings were similar to those of Chan who recognised that there was a positive attitude towards screening for depression among PLHIV (48).

In a systematic review by Schuman et al, it was discovered that primary care physicians were concerned about the time taken to screen and the struggles involved in convincing the patients not only to screen but also accept the results (49).

In Africa, a study in Zimbabwe found the following issues critical and could interfere with the implementation of mental health care. These include: lack of training in mental health, low clinical staff levels, unavailability of psychiatric drugs, unavailability of time for counselling, and poor and unreliable referral systems for people suffering with depression(26).
The shortcoming is however the absence on the view points in the domains of self-efficacy (beliefs about capabilities), beliefs about consequences of screening (anticipated outcomes/attitudes), memory / attention / decision process, social influences, emotions, behavioural regulation, and roles and identity of the health workers.

The study was therefore conducted with a thought that screening all PLHIV aged 18 years and above for depression on every clinic visit using the PHQ-2 and PHQ-9 will reduce the missed cases of depression by at least 10% during the screening period.
CHAPTER THREE

3.0 METHODS

Introduction
This chapter describes the methods employed by the researcher in carrying out the study. It covers the study design, setting, population, variables, instruments used, quality control measures taken, and the ethical considerations taken.

3.1 Study design
A mixed methods study design with quantitative and qualitative data collection methods was used. A randomised control trial was used in answering objective one, two, and three while a qualitative study was used for objective four.

3.2 The study setting.
The study setting was Princess Diana Memorial Health Centre IV a government health facility found in Soroti district in the north-east of Uganda. Soroti district has a population of 296,833. The prevalence of HIV in north-east Uganda is 3.7%\(^\text{7}\). Princess Diana Memorial Health Centre IV is located in a peri-urban setting within northern division along Soroti-Moroto road. Northern division has a population of 19,382\(^\text{50}\). Princess Diana Memorial Health Centre IV has a catchment population of approximately 11,500 people. Basing on the health unit records (attendance list and registers), the health unit has approximately 470 HIV positive patients with two clinic days per week with an attendance ranging from 20 to 35 patients per clinic day. Out of the 470 HIV positive patients approximately 15 are aged 0 to 11 years, 5 are aged 17 to 12 years while 450 are 18 years and above. Basing on the communication with the Incharge, the clinic had attended to over 40 patients with depressive symp-
toms from January 2017 to December 2017 (51). However, one study reported the prevalence of depressive symptoms in eastern Uganda among people living with HIV to be 46.8% (Kaharuza et al., 2006). The health centre is staffed with two psychiatric nurses serving the mental clinics in addition to the other non-psychiatric staff.

3.3 Methods for objective 1, and 1a.

In order to determine whether there is a difference in cases of depression detected, and performance of the strategies when using routine or selective screening strategy, a randomised controlled trial was used.

3.3.1 Population

Target population

All PLHIV aged 18 years and above attending the HIV clinics in Soroti district.

Accessible population

PLHIV aged 18 years and above attending the HIV clinics in Princess Diana Memorial health centre IV site during the study period (April 2018 to June 2018).

3.3.2 Study population

Eligibility criteria

Inclusion criteria

All PLHIV aged 18 years and above attending the HIV clinics in the study site during the study period and who consented to participate in the study.

Children were not included since the MOH has not recommended a standard tool to be used in children in screening for depression, and in addition the population of less than 20 patients who are below 18 years is not representative of the children.
Exclusion criteria

Two (2) PLHIV who are too ill to withstand the study procedures were excluded from the study.

3.3.3 Sample size estimate

The following formula was used; \( n = \left[ Z_\alpha \sqrt{2p_1(1-p_1)} - Z_\beta \sqrt{(p_1(1-p_1) + p_2(1-p_2))} \right]^2 / (p_1-p_2)^2 \) \((53)\) where ‘n’ is sample size per group, ‘\( Z_\alpha \)’ is the critical value of the Normal distribution at ‘\( \alpha \)’, ‘\( Z_\beta \)’ is the critical value of the Normal distribution at ‘\( \beta \)’ and ‘\( p_1 \)’ and ‘\( p_2 \)’ are the expected sample proportions of the two groups.

Assuming 95% of the cases of depression are missed in primary care practice by selective screening \((20)\) and we would like to notice a 10% reduction in the cases missed \((24)\).

Power = 80%.

\( Z_\alpha = 1.96, \ Z_\beta = 1.282 \)

\((P_1 - P_2) / P_1 = 0.1\)

\( P_2 = P_1 - (P_1 \times 0.1) \)

\( P_2 = 0.95 - (0.95 \times 0.1) = 0.855. \)

\( n = \left[ Z_\alpha \sqrt{2P_1(1-P_1)} - Z_\beta \sqrt{(P_1(1-P_1) + P_2(1-P_2))} \right]^2 / (P_1-P_2)^2 \)

\( n = [1.96 \sqrt{(2*0.95(1-0.95))} - (-1.282) \sqrt{(0.95(1-0.95) + 0.855(1-0.855))}]^2 / (0.95-0.855)^2 \)

\( n=142.74 \approx 143 \) PLHIV per group and 286 in two groups

Catering for non-response at 20% per group,

\( 0.20*143 = 28.6 \approx 29. \)

Therefore, a total sample size of 344 patients was to be enrolled for the study with 172 PLHIV per group and this was thought to be achievable within a study period of 1.5 months to 2.5 months basing on the patient turn up of 20 to 35 per clinic day.
This sample size was adopted for objective “1a” since it is secondary to objective “1”.

3.3.4 Sampling procedure

The patients were enrolled consecutively as they fulfilled the eligibility criteria since the number of patients per clinic day (20 to 35) could be evaluated by the study team of one principal investigator and four clinical research assistants.

3.3.5 Randomisation

Randomisation of the patients to the intervention and control was performed at individual level using random block sizes of 4, 6, 8, 10, and 12. The randomisation code was generated by an independent statistician using a computer software called Random Allocation Software version 1.0.0.

Concealment of the randomisation code

The code was concealed using the sequentially numbered opaque sealed envelopes and kept with the Nurse In-charge who picked an envelope for each patient that was enrolled in the study using the eligibility criteria.

Blinding

The health workers who were administering the intervention and the control were not blinded given that it was not feasible to blind them. However, the research assistant (psychiatric nurse) administering the M.I.N.I., and the patients were blinded. The research assistant administering the M.I.N.I was not told which study groups the patients were allocated to. The patients too were not told which arm they had been allocated to.

In addition, the research assistant administering the M.I.N.I was not offered access to the presumptive diagnoses from the research assistants administering the PHQ 2 and 9.
3.3.6 Study variables

The intervention

The intervention was comprised of routine screening. In this strategy PLHIV who consented were subjected to the PHQ-2 and if the patient had a value greater than or equal to 3 in the PHQ-2 the patient was then subjected to PHQ-9. After wards all patients were subjected to the M.I.N.I to confirm cases of major depressive disorder (MDD), and to identify the missed cases of MDD. The attending clinician / health worker recoded the time at which the consultation started and the time at which the consultation ended on the patient’s allocated screening tool.

The control

The control arm provided the standard of care which is “selective screening”. A patient who consented to the study was subjected to the PHQ2 and later (if PHQ2 ≥3) PHQ 9 when the clinician found it appropriate especially at the crisis points in life in accordance with the Ministry of Health 2016 guidelines for prevention and treatment of HIV in Uganda. The clinician was required to indicate the reason for screening before screening for depression.

After wards all patients were subjected to the M.I.N.I to confirm cases of major depressive disorder (MDD), and to identify the missed cases of MDD. The attending clinician / health worker recoded the time at which the consultation started and the time at which the consultation ended on the patient’s allocated screening tool.

The crisis points in life include: newly diagnosed with HIV or at disclosure of HIV status; occurrence of any physical illness, recognition of new symptoms / progression of disease or hospitalisation or diagnosis of AIDs; introduction to medication; death of a significant other;
necessity of making end of life; and permanency planning decision, major life changes like child birth, pregnancy, loss of a job, and end of a relationship.

**Outcome variables**

The outcome variables of interest for objective 1 were:

- Cases of depression detected by the strategies.

The outcome variable for objective 1a was:

- Correctly diagnosed major depressive disorder status.

**The potential confounders**

Basing on literature, the following potential confounders were considered; age (54), marital status (55), sex (56), weight (57), viral load (58), alcohol consumption (Massak & Graham, 2008).

**3.3.7 Data collection**

**Data collection procedure**

The study team comprised of the principal investigator, two psychiatric nurses, two clinical officers, one social worker and two data entrants.

Data was collected in three consultation rooms. Patients in the intervention arm were evaluated by a clinician stationed in a consultation room dedicated to the intervention arm. Patients in the control arm were evaluated by a clinician in a separate room dedicated to the control arm. Finally, all patients were evaluated by a psychiatric nurse using the MINI in the third consultation room.

**Measurement of variables**

**Case detection:** The cases were detected using the PHQ-2 and the PHQ-9.
Everyone who was screened got to be evaluated using the MINI. It was used to determine the cases of depression in either group.

The PHQ-2 tool is a two-item instrument that inquires about the frequency of depressed mood and anhedonia over the past two weeks. The purpose of the tool is to screen for depression in a first step approach. The PHQ-2 score ranges between 0–6 and those with a score equal or greater than 3 are further evaluated using the PHQ-9.

The PHQ-9 is a 9-item depression screening instrument that determines the presence and frequency of the 9 core depressive symptoms identified in the DSM-IV over the previous 2 weeks. This tool has been used in sub-Saharan Africa for a number of studies(25). Scores range from 0–27, with a score of 10 or higher usually used to indicate the presence of a depressive disorder that would benefit from treatment.

The PHQ-9 was developed to be self-administered, however interviewer-administration and telephone administration yielded similar results (43).

**MINI**—The Mini International Neuropsychiatric Interview (MINI) is a brief, structured diagnostic interview for major psychiatric disorders. The MINI served as the reference standard in this study. It therefore served a purpose of measuring the performance of the strategies in detection of major depressive disorder (MDD). The MINI modules for MDD, dysthymia and suicide risk were used for this study. However, the above modules of the MINI were likely to miss milder states of depression.

**Consultation duration / time** – Time was measured using the watches and phone clocks. The attending clinician recorded the time they started and the time they ended the consultation on the patient’s allocated screening tool.
3.3.8 Data management

The filled questionnaires were kept securely under lock and key. Data was entered using Epi- data by two independent data entrants. The data was exported to Stata 13 software. The data was backed up in an external computer.

3.3.9 Data analysis

Skewed data was summarised using median and quartiles while mean and standard deviation was used to summarise non-skewed data.

The trial data was analysed on a per protocol analysis basis.

Objective 1: Two-Sample Z-Test for proportions was used to test the single difference between proportions of cases detected in the two study arms. Fischer’s exact test was used in cases where the observations were less than five (5).

Proportion of cases in a group was calculated as follows,

\[
\text{Proportion in a group} = \frac{\text{Depression cases detected by the strategy}}{\text{Number of PLHIV evaluated by the strategy}}
\]

The scores of the PHQ-9 were used to create the following two variables:

- Category of cases of depression (Depression category): no depression (0 or if not screened using the PHQ-9); minimal (1-4); mild depression (5-9); moderate depression (10-14); moderately severe depression (15-19); severe depression (20-27).

- PHQ-diagnosis: Patients with scores of 10 and above were coded one (1) if it met the criteria of major depressive disorder as provided for by the inventors of the PHQ-9 (1) as earlier described in the operational definitions otherwise, it was coded zero (0) together with all scores bellow 10. Bereavement exclusion was not considered in diagnosing major depressive disorder (2).
The variable “PHQ-diagnosis” was then used to compared by study group to determine whether there was a difference in cases of depression detected or not.

The variable depression category was used to determine whether case detection of depression by category differed in the two groups.

**Objective 1 a):** Two variables were used to answer the objective. The two variables include “PHQ-diagnosis”, and the “MINIMDD-diagnosis”. The variable MINIMDD-diagnosis had code one (1) denoting MDD while (0) denoting no MDD. It was derived from evaluations with the MINI which was used as a reference.

Fischer’s exact test was used in case one of the expected frequencies was less than two or / and when no more than 20% are less than 5.

The measures of validity: sensitivity, specificity, positive predictive values, negative predictive values, and accuracy were compared across groups in order to find out if they differed.

**3.4 Methods for objective 2.**

In order to describe the perceptions of stakeholders on the screening strategies for depression among PLHIV, key informant interviews were conducted.

**3.4.1 Participants**

The 6 health care workers who participated in screening were requested to participate in the qualitative study.

**3.4.2 Sampling procedure**

Purposive sampling was used in the study.

Only the health workers who participated in the study were interviewed.
3.4.4 Data collection

Perceptions

Perceptions were considered to be opinions, thoughts, views, beliefs or feelings about the screening strategies of the stakeholders.

In this study, the Theoretical Domains Framework (TDF) was used in generating the guide and formulating questions to explore the perceptions of the health workers on screening for depression. In addition, the responses of the participants were later mapped against the domains in the framework.

Interview guides were used by a social worker to interview for perceptions of health workers on the screening strategies. The in-depth interviews were voice recorded using a computer voice recorder (application) to ensure that the details of the interview were not missed.

3.4.5 Data management

The recoded interviews were backed up in another computer for safe storage.

3.4.6 Data analysis

The Key informant interviews were transcribed verbatim before editing to remove any identifiers. Transcripts were read thoroughly and over multiple times and coded independently by two research assistants with experience in qualitative data analysis. Information from the in-depth interviews were then coded manually by two independent analysts trained in qualitative data analysis using a thematic approach by identifying, analysing and reporting patterns (themes) within data to bring out the detail. If the responses were relevant to one or two domains (from the TDF) they would then be attributed to those domains. It is from this point
that the content would be considered to derive meaning. Discrepancies or disagreements were discussed until consensus was reached. In cases where the consensus was not reached on which domain to allocate the text, the text was allocated to the two domains. The information from the qualitative data was triangulated with the quantitative data at the discussion level.

3.4.7 Quality assurance and control

The following were considered in quality control

- Prior training of all the team members and research assistants on the data collection followed by a two-day mentorship (guidance provided on site).
- Patient questionnaires were checked for completeness and error daily for rectification before breaking off and storage.
- Double data entry. Discrepancies were rectified by consulting the original questionnaires.
- Participants (patients) were given unique numbers for identification so as to avoid data contamination.
- Participants were led by a research assistant to the allocated room to ensure participants remained in the respective arms.
- The clinicians administering the standard of care (control) would indicate the reason for screening for depression to avoid screening for depression in eligible patients. This was indicted on the provided quality assurance screening checklist.
- Health workers (Clinical research assistants) were not allowed to switch roles.
- Questionnaires were translated to Ateso and back translated to English to ensure consistency in the message.
- The translated questionnaires were pretested on 50 pregnant and postnatal mothers who were not HIV positive before use.
3.4.8 Ethical Considerations

• Permission was sought from the Clinical Epidemiology Unit (CEU) before submitting it to School of Medicine Research and Ethics Committee (SoMREC) for ethical approval. REC REF 2018-041

• Administrative permission from Soroti Municipal Council (SMC) and the Incharge Princess Diana Memorial Health Centre IV was sought for before commencing with the study.

• The study was registered with the Pan African Clinical Trial Registry with a registry identification number of PACTR201802003141213.

• In addition, informed consent was obtained from all participants before enrolment in the study.

• Work was carried out with the specialised psychiatric nurses in addition to the other HIV care providers.

• Patients who were found to have depression were managed according to the standard of care (following the Ministry of Health guidelines).
CHAPTER FOUR

4.0 RESULTS OF THE STUDY

Introduction

In this chapter the findings of the research study undertaken are presented. The researcher presents the data collected, analyses made and the consequent interpretation of the results.

4.1 Study profile

<table>
<thead>
<tr>
<th>ENROLMENT</th>
<th>Assessed for eligibility (n=313)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Excluded (n=21)</td>
</tr>
<tr>
<td></td>
<td>• Not meeting eligibility criteria (n=21)</td>
</tr>
<tr>
<td></td>
<td>Randomised (n=292)</td>
</tr>
<tr>
<td></td>
<td>Selective screening strategy (n=151)</td>
</tr>
<tr>
<td></td>
<td>• Received allocated intervention (n=151)</td>
</tr>
<tr>
<td></td>
<td>• Did not receive allocated intervention (n=0)</td>
</tr>
<tr>
<td></td>
<td>Allocation</td>
</tr>
<tr>
<td>Routine screening strategy (n=141)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Received allocated intervention (n=141)</td>
</tr>
<tr>
<td></td>
<td>• Did not receive allocated intervention (n=0)</td>
</tr>
<tr>
<td>Evaluation with the MINI</td>
<td></td>
</tr>
<tr>
<td>• Missed MINI evaluation (n=0)</td>
<td></td>
</tr>
<tr>
<td>• Discontinued assessment [was in a hurry] (n=1)</td>
<td></td>
</tr>
<tr>
<td>Analysis</td>
<td></td>
</tr>
<tr>
<td>• Analysed (n=151 for objective 1&amp;1a, n=150 for objective 2)</td>
<td></td>
</tr>
<tr>
<td>• Excluded from analysis (n=0)</td>
<td></td>
</tr>
<tr>
<td>• Analysed (n=140 for objective 1&amp;1a, and 138 for objective 2)</td>
<td></td>
</tr>
<tr>
<td>• Excluded from analysis (n=0)</td>
<td></td>
</tr>
</tbody>
</table>

Figure 2. Study profile of PLWHIV at Princess Diana Memorial Health Centre IV, Soroti District, who participated in the study during April and May 2018
After screening using allocated strategies, one (1) participant from the control arm prematurely requested to leave sighting time shortage, while in the intervention arm, two (2) participants left unnoticed (“missed MINI evaluation”) and one (1) was discontinued due to incoherent speech. Therefore, only two hundred eighty-eight (288) out of three hundred thirteen (313) were evaluated using the MINI.

Analysis of data

The quantitative data was used to answer two objectives “1”, and “1a”.

Objectives one needed data collected from the allocated interventions without results from the MINI (reference). Therefore, data from a total of two hundred ninety-one (291) participants (excluding the participant with incoherent speech) was used in answering objective one.

Objective 1a needed data from both evaluations, the allocated interventions and the MINI (reference). Therefore, data from all those who were not evaluated using the MINI was excluded from answering objective two. It is only data from two hundred eighty-eight who were in addition to the allocated intervention evaluated with the MINI that was used in answering objective 1a.
Table 1. Baseline socio-demographic and clinical characteristics of 291 participants at Princess Diana Memorial Health Centre IV, Soroti District, April and May 2018

<table>
<thead>
<tr>
<th>Variable</th>
<th>Selective screening</th>
<th>Routine screening</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>Median</td>
<td>36</td>
<td>37.5</td>
</tr>
<tr>
<td></td>
<td>IQR (Q₁, Q₃)</td>
<td>12(30,42)</td>
<td>15.5(30.5,46)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>Median</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>IQR (Q₁, Q₃)</td>
<td>13(50,63)</td>
<td>10(50,60)</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td>Females. Number (%)</td>
<td>89(58.9%)</td>
<td>77(55.0%)</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td>Number (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Single</td>
<td>33(21.9%)</td>
<td>37(26.4%)</td>
<td></td>
</tr>
<tr>
<td>- Married</td>
<td>108(71.5%)</td>
<td>92(65.7%)</td>
<td></td>
</tr>
<tr>
<td>- Separated / Divorced</td>
<td>7(4.6%)</td>
<td>6(4.3%)</td>
<td></td>
</tr>
<tr>
<td>- Widowed</td>
<td>3(2.0%)</td>
<td>5(3.6%)</td>
<td></td>
</tr>
<tr>
<td><strong>Alcohol consumption</strong></td>
<td>Alcohol consumers. Number (%)</td>
<td>50(33.1%)</td>
<td>31(22.1%)</td>
</tr>
<tr>
<td><strong>Viral load</strong></td>
<td>Participants with non-suppressed viral load (VL&gt;1000copies/ul). Number (%)</td>
<td>15(11.4%)</td>
<td>14(11.4%)</td>
</tr>
<tr>
<td><strong>Suicidality</strong></td>
<td>Participants’ suicide risk. Number (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>(Current suicide risk)</strong></td>
<td>No current suicide risk</td>
<td>108(72.0%)</td>
<td>91(65.9%)</td>
</tr>
<tr>
<td></td>
<td>Low current suicide risk</td>
<td>32(21.3%)</td>
<td>35(25.4%)</td>
</tr>
<tr>
<td></td>
<td>Moderate current suicide risk</td>
<td>3(2.0%)</td>
<td>5(3.6%)</td>
</tr>
<tr>
<td></td>
<td>High Current suicide risk</td>
<td>7(4.7%)</td>
<td>7(5.1%)</td>
</tr>
</tbody>
</table>

*Missing values. 19 in selective screening arm, and 17 in the routine screening group.*

The study arms were similar overall with no significant difference between groups for almost
all potential confounders. However, alcohol consumption was not evenly distributed (p=0.036) with more consumers in the control than in the intervention arm.

4.2 Results for objective 1

To determine whether there is a difference in cases of depression detected when using routine or selective strategies among PLHIV.

Table 2. Cases of depression detected by routine or selective screening as measured by the PHQ9 among 291 participants at Princess Diana Memorial Health Centre IV, Soroti District, April and May 2018

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Depression as detected by the PHQ9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Positive</td>
</tr>
<tr>
<td>Routine screening (%)</td>
<td>34 (24.3)</td>
</tr>
<tr>
<td>Selective screening (%)</td>
<td>24 (15.9)</td>
</tr>
<tr>
<td>Total</td>
<td>58 (19.9)</td>
</tr>
</tbody>
</table>

Note: Data from all participants (291) who were screened using the allocated strategies (except one who was exempted due to incoherent speech) was used to answer the objective.

Table 3. Results from the Z-test to compare cases of depression detected by routine or selective screening as measured by the PHQ9 among 291 participants at Princess Diana Memorial Health Centre IV, Soroti District, April and May 2018

<table>
<thead>
<tr>
<th>Depression detection proportion Selective screening</th>
<th>Depression detection proportion Routine screening</th>
<th>Difference</th>
<th>95% CI</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.159</td>
<td>0.243</td>
<td>0.084</td>
<td>(-0.008, 0.176)</td>
<td>0.073</td>
</tr>
</tbody>
</table>
The prevalence of depression in routine screening arm is 0.243 while that of selective screening is 0.159. The prevalence difference between the groups is 0.084. The patients screened through routine screening strategy were 8.4% more likely to be diagnosed with major depression than those screened through selective screening strategy. This difference of 8.4% is however not statistically significant at 0.05 level of significance given that the p-value = 0.073 and confidence interval of (-0.008, 0.176) contains the null value (0).

**Is alcohol consumption confounding the results?**

Given that alcohol consumption was not evenly distributed as shown in table 1, we stratified by alcohol consumption and assessed for confounding.

**Table 4. Cases of depression detected by routine or selective screening as measured by the PHQ9 among 210 participants who do not consume alcohol at Princess Diana Memorial Health Centre IV, Soroti District, April and May 2018**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Positive</th>
<th>Negative</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine screening</td>
<td>27 (24.8)</td>
<td>82 (75.2)</td>
<td>109 (100)</td>
</tr>
<tr>
<td>Selective screening</td>
<td>18 (17.8)</td>
<td>83 (82.2)</td>
<td>101 (100)</td>
</tr>
<tr>
<td>Total</td>
<td>45 (100)</td>
<td>165 (100)</td>
<td>210 (100)</td>
</tr>
</tbody>
</table>
Table 5. Cases of depression detected by routine or selective screening as measured by the PHQ9 among 81 participants who consume alcohol at Princess Diana Memorial Health Centre IV, Soroti District, April and May 2018

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Positive</th>
<th>Negative</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine screening</td>
<td>7 (22.6)</td>
<td>24 (77.4)</td>
<td>31 (100)</td>
</tr>
<tr>
<td>Selective screening</td>
<td>6 (12.0)</td>
<td>44 (88.0)</td>
<td>50 (100)</td>
</tr>
<tr>
<td>Total</td>
<td>13 (16.1)</td>
<td>48 (84.0)</td>
<td>81 (100)</td>
</tr>
</tbody>
</table>

Crude odds ratio = 1.697 with 95% confidence interval of (0.950, 3.032)

Adjusted odds ratio = 1.644 with 95% confidence interval of (0.918, 2.942)

Percentage difference = 3.02%

Alcohol consumption did not therefore confound the outcome. Since alcohol consumption is not a confounder, we will not adjust the results for confounding.
Is there interaction at the different levels of the strata?

Table 6. Table showing results of test of homogeneity (M-H) of depression case detection by screening strategy depending on alcohol consumption

<table>
<thead>
<tr>
<th>Alcohol use</th>
<th>Odds ratio</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not consume alcohol</td>
<td>1.575</td>
<td>0.810, 3.061</td>
</tr>
<tr>
<td>Consume alcohol</td>
<td>2.139</td>
<td>0.651, 7.025</td>
</tr>
<tr>
<td>Crude</td>
<td>1.747</td>
<td>0.981, 3.111</td>
</tr>
<tr>
<td>Mantel-Hansel (M-H) combined</td>
<td>1.689</td>
<td>0.946, 3.015</td>
</tr>
</tbody>
</table>

Test of homogeneity (M-H) Chi (1) =0.19 0.661

We fail to reject the null that states that the odds ratios are homogeneous at different levels of the third variable (alcohol consumption). The association of depression case detection with screening strategy is not different, at different levels of alcohol consumption.
Table 7. Grading of cases of depression detected by routine or selective screening as measured by the PHQ9 among 291 participants at Princess Diana Memorial Health Centre IV, Soroti District, April and May 2018

<table>
<thead>
<tr>
<th>Grade of depression</th>
<th>Selective screening</th>
<th>Routine screening</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number (%)</td>
<td>Number (%)</td>
<td></td>
</tr>
<tr>
<td>No depression</td>
<td>120 (79.5)</td>
<td>97(69.3)</td>
<td>0.046</td>
</tr>
<tr>
<td>Minimal depression</td>
<td>2(1.3)</td>
<td>3(2.1)</td>
<td>0.675</td>
</tr>
<tr>
<td>Mild depression</td>
<td>5(3.3)</td>
<td>5(3.6)</td>
<td>0.889</td>
</tr>
<tr>
<td>Moderate depression</td>
<td>14(9.3)</td>
<td>28(20.0)</td>
<td>0.009</td>
</tr>
<tr>
<td>Moderately Severe depression</td>
<td>10(6.6)</td>
<td>6(4.3)</td>
<td>0.390</td>
</tr>
<tr>
<td>Severe depression</td>
<td>0(0)</td>
<td>1(0.7)</td>
<td>0.483</td>
</tr>
</tbody>
</table>

#Fischer’s exact test was used.

From the above results, the only category with a significant difference in cases of depression detected is major depressive disorder mild (MDD mild). There was a significant difference in moderate depression detected across groups.
4.3 Results for objective ‘1a’

To determine whether there is a difference between performance of selective and routine screening strategies in detection of major depressive disorder among PLHIV.

Table 8. Performance of routine versus selective screening in the detection of depression as measured by the MINI among 291 participants at Princess Diana Memorial Health Centre IV, Soroti District, April and May 2018

<table>
<thead>
<tr>
<th>Performance</th>
<th>Selective screening</th>
<th>Routine screening</th>
<th>Difference</th>
<th>95%CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>0.513</td>
<td>0.750</td>
<td>-0.237</td>
<td>0.026 - 0.449</td>
<td>0.034</td>
</tr>
<tr>
<td>Specificity</td>
<td>0.964</td>
<td>0.951</td>
<td>0.013</td>
<td>-0.067 - 0.041</td>
<td>0.637</td>
</tr>
<tr>
<td>PPV</td>
<td>0.833</td>
<td>0.844</td>
<td>-0.011</td>
<td>-0.206 - 0.184</td>
<td>0.912</td>
</tr>
<tr>
<td>NPV</td>
<td>0.849</td>
<td>0.915</td>
<td>-0.066</td>
<td>-0.148 - 0.016</td>
<td>0.124</td>
</tr>
<tr>
<td>Accuracy</td>
<td>0.847</td>
<td>0.899</td>
<td>-0.052</td>
<td>-0.128 - 0.024</td>
<td>0.187</td>
</tr>
</tbody>
</table>

When the measures of validity were compared, most of the measures were similar (no significant difference) across groups. The measures that were significantly different include the sensitivity and false negative proportion. Therefore, PLHIV who were truly depressed were 23.7% more likely to be detected as depressed by routine screening as compared to selective screening strategy. Consequently, PLHIV who were truly depressed were 23.7% more likely to be diagnosed as not depressed by selective screening as compared to routine screening strategy.
4.4 Results for objective 2.

To describe the perceptions of stakeholders on the screening strategies for depression among PLHIV.

The results are presented in two parts. First, is a description of study participants; second, is a focus on the domains which were considered/emerged from the research. Only domains found to be relevant were presented. A domain would be considered irrelevant if there was nothing in the transcript that related to it.

**Description of study participants**

Six (6) HIV health care workers participated in the study. They were selected from within the staff in the health centre. Of these 2 were male and 4 were female. Participants ranged from 29 to 48 years of age with a mean age of 35 years. All the participants were of the Iteso tribe. All interviews were conducted in English. The respondents had at least three years working experience as HIV health care workers. A total of 6 key informant interviews were conducted over a week’s period (1 per participant).

**Table 9. Demographic characteristics of 6 key informants at Princess Diana Memorial health centre iv 2018**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age: Median (min, max)</td>
<td>35.5 (30, 40)</td>
</tr>
<tr>
<td>Sex: number (%)</td>
<td></td>
</tr>
<tr>
<td>• Male</td>
<td>2(33.3%)</td>
</tr>
<tr>
<td>• Sex</td>
<td>4(66.7%)</td>
</tr>
<tr>
<td>Cadre: number (%)</td>
<td></td>
</tr>
<tr>
<td>• General practitioners</td>
<td>2(33.3%)</td>
</tr>
<tr>
<td>• Psychiatric nurses</td>
<td>2(33.3%)</td>
</tr>
<tr>
<td>• VHT</td>
<td>1(16.7%)</td>
</tr>
<tr>
<td>• Expert client</td>
<td>1(16.7%)</td>
</tr>
</tbody>
</table>
The domains

Knowledge:

Constructs that were used are (knowledge of condition / scientific rationale), and procedural knowledge.

According to the health workers, they believed that the training and mentorship provided gave them adequate knowledge to screen, diagnose and treat those found to be depressed. Some however felt that other health workers needed to have similar trainings. It was also suggested that refresher trainings be offered to help in sustaining the practice.

“......I am able to screen for depression now unlike in the past. It is easier than I initially thought......”, a key informant health worker from PDMHCIV 2018.

“......I now know what depression is and how to screen and treat it. I think further trainings would make me better at this work......”, a key informant health worker from PDMHCIV 2018.

Skills

Constructs that were applied are skills, competence, and ability.

The health workers felt that they had the skills necessary to carry out screening for depression. they believed that screening was easy and quick to do.

“......both selective and routine screening strategies are easy, except one seems to be more detailed than the other, .....”, a key informant health worker from PDMHCIV 2018.

“......it is very easy to screen for depression it takes approximately 4 to 7 minutes....”, a key informant health worker from PDMHCIV 2018.
Social / professional role and identity

The constructs that were applied are professional identity, professional role, professional boundaries, and professional confidence.

All the health workers believed that screening for depression was a part of their profession and could therefore be a part of the work. However, one felt that the role was more inclined to the field of psychiatry.

“........ I think screening for depression is a part of my profession. I however don’t know how other health workers look at it...”, a key informant health worker from PDMHCIV 2018.

“........ screening for depression is every one’s role in this health facility I just think people need to be reminded of their roles....”, a key informant VHT from PDMHCIV 2018.

Beliefs about capabilities

Constructs that were applied are self-confidence, perceived competence, and self-efficacy.

Four out of six participants felt they were competent enough to screen treat and manage depression. some felt they had the ability to teach another health worker how to screen for depression.

“..... I believe I am able to screen for depression, I can also teach other people how to screen for depression if someone needs to be trained......”, a key informant health worker from PDMHCIV 2018.

“.....It is easy to screen for depression, given an opportunity, I can definitely screen for depression...”, a key informant health worker from PDMHCIV 2018.
“......I think it is possible for me to guide a colleague on how to screen for depression with either methods .... the problem is with the MINI....”, a key informant health worker from PDMHCIV 2018.

Beliefs about Consequences

Constructs that were applied in this domain include beliefs, outcome expectancies, characteristics of outcome expectancies, and anticipated regret.

Health workers generally had positive the outcomes that come along with screening for depression. However, there was a feeling that selective screening would live out some cases of depression. There was also a concern of patients not cooperating during the screening process.

“...sometimes patients pretend, you ask them questions and they tell you a different thing and yet on the other side you see all the features....”, a key informant patient from PDMHCIV 2018.

“...for selective screening I believe there is a possibility that some patients will be left out because you select only a few... ”, a key informant health worker from PDMHCIV 2018.

“...I think managing depression will improve their health....”, a key informant VHT from PDMHCIV 2018.

Reinforcement

Constructs that were used include: rewards, incentives, and punishment.

Health workers felt that it was necessary to motivate the health workers to ensure that the practice continues. This included regular supervision, trainings, reminders, and monetary incentives where applicable.
“……we can make it a must to screen for depression in this health facility, however, we may need to be reminded by a colleague or offered refresher trainings once in a while……”, a key informant health worker from PDMHCIV 2018.

“……I think in order to continue screening, people may need to be motivated once in a while with some trainings…”, a key informant health worker from PDMHCIV 2018.

Environmental context and resources

The constructs include, resources, material resources, organisational culture or climate, and barriers and facilitators.

The health workers felt that in as much as screening for depression is possible, some situations or resources could influence the screening process.

“…. provided the health workers are present, screening for depression during busy days will be easy…”, a key informant health worker from PDMHCIV 2018.

“…you know the problem is that this health facility is small and some patients don’t want to be seen so they come with an intention of getting refills quickly……”, a key informant patient from PDMHCIV 2018.

“…if each patient is to receive a questionnaire, then primary health care funds may not be able to sustain the process…..”, a key informant health worker from PDMHCIV 2018.

Behavioural regulation

The constructs used include: self-monitoring, and breaking habit.

Health workers suggested that the health information management system be improved to capture the depression in this case by including a column for depression assessment in the HIV care cards, capturing the disease in the HIV register.
“... we can make it a must to screen, in case someone has forgotten we will remind them...”,
a key informant health worker from PDMHCIV 2018.

“...this condition should be tracked in the HIV care card and registers...it will be mandatory to screen....”, a key informant health worker from PDMHCIV 2018.

Domains of optimism, emotions, intentions were not found to be relevant in the study. These domains were not field with texts that differed from the other domains so the researcher opted to leave them out.
CHAPTER FIVE

5.0 DISCUSSION OF RESULTS

Introduction

The purpose of the study was to determine whether routine screening strategy differs from selective screening strategy in depression case detection, performance, screening time, and to describe the perceptions of stakeholders on the strategies for screening depression among PLHIV. The study was conducted on an assumption that characteristics of the participants including cases of depression were distributed equally to either the control or intervention through randomisation. The study was also based on a hypothesis that was formulated to guide the study and it was tested using the data collected.

5.1 Summary of results

Routine screening detected more cases of depression than selective screening strategy. Routine screening strategy realised a difference of 8.4% which was less than the 10% hypothesised difference in detection of major depressive disorder.

However, analysis by grade or severity of depression showed that routine screening detected a difference of 10.1% of the cases of moderate depression. Other categories were similar across groups (see table 7).

For most values of measures of validity (sensitivity, positive predictive value, and Negative predictive value.), routine screening had higher measures of validity except for specificity where selective screening had a higher measure of validity. When the values of validity were compared, all values were similar across groups except sensitivity which had a difference of 23% (see table 8).
The perception of health workers towards screening for depression among PLHIV was generally supportive of screening for depression with preference to routine screening strategy.

5.2 The difference in cases of depression detected between selective and routine screening strategy.

Screening PLHIV regardless of the signs of symptoms is more likely to detect cases of depression as compared to screening people basing on the crisis points of life. Although routine screening realised more cases of major depressive disorder as compared to selective screening, the study did not statistically demonstrate that routine screening would realise a difference of at least 10% of the cases of depression detected among PLHIV, and neither did it demonstrate that it could not bring about the difference. It is possible that a larger sample size or higher prevalence of depression could have resulted into noticing a statistically significant difference greater than 10%. In reference to table 6, routine screening was able to realise a difference in cases of moderate depression, though we can’t explain with certainty why. Perhaps routine screening is more sensitive at screening moderate states of depression.

It is also worth appreciating that selective screening detected cases of such magnitude. This could have arisen due to a number of factors. First and foremost, it is possible that the changes in behaviour of the health workers could have occurred due to the fact that they were participating in a study (Hawthorne effect). The regular supervision by the researcher could have prompted commitment to screening (61). This kind of supervision is not usual for a government facility where support supervision is once in three months. It is therefore possible that the results could have been different in case this kind of support was not offered (62). The other factor that could have influenced these competitive results is the remuneration offered
to the research assistants. This renumeration could have prompted vigilance in the screening process (63). Alternatively, if these motivation factors were not employed maybe less adherence to the screening protocol could have happened.

The findings of the study could have been affected by the fact that the attending health workers were multitasking at the point of execution of the study (64). This practice, in addition to the other competing responsibilities could have in one way or another influenced the results given that multitasking brings about reduction in concentration and productivity (Workplace Wellness, 2012).

In this study, more people who consume alcohol were randomly allocated to the selective screening arm as compared to the routine screening arm. We cannot with certainty tell how this unbalanced distribution of participants who consume alcohol could have affected the results given that the numbers of depression cases were similar across groups. However, it is possible that since the patients who consume alcohol are known to at times possess characteristic defences such as minimisation, denial, projection, and grandiosity, (66–68) perhaps such behaviour could have made it difficult for clinicians to diagnose depression in this sub group that consumes alcohol hence missing some cases of depression.

Under a well monitored environment, it is possible that selective screening can perform well. Some studies have been done to compare routine and clinical acumen/practice, these studies realised a statistical difference indicating that routine screening realised more cases of depression as compared to clinical practice (23,45). However, there is hardly any study comparing routine and selective screening approaches. We were however only able to identify one study that had tested a screening criterion similar to the one referred to as selective screening in this study. A study done by Romera et al in Spain compared systematic screening for de-
pression with clinical practice. Systematic screening was similar to selective screening in this study(22). The systematic screening considered screening people at high risk. One was considered to be at “High risk” if one fulfilled at least one of the following: history of depression, somatic symptoms without any cause, psychological comorbidities or drug abuse, or chronic pain. One found to be at high risk was evaluated using the Hospital Anxiety and Depression Scale (HADS-D) and later the MINI if the HADS-D score is 8 and above. This study never realised a statistical difference between the groups. Important to note is that this study looked at screening in high risk patients who are not specifically PLHIV. One of the possible reasons noted for this lack of difference was the failure to adhere to the study protocols.

5.3 Difference between the performance of selective and routine screening strategy.

Generally, there was no significant difference realized when most of the measures of validity were compared. Routine screening strategy had higher values of measures of validity apart from specificity and false negative proportion where selective screening had higher values. The only measures whose difference were statistically significant were the sensitivity and false negative proportion. Routine screening was able to correctly detect more cases of depression compared to selective screening.

The possible reasons as to why routine screening strategy was able to detect more cases of depression correctly are:

The difference in steps under taken during the screening process. If screening tools are used in series or sequentially, the overall sensitivity is reduced but the overall specificity increases (69). This reduction in sensitivities and increase in specificities was observed in both strategies. Considering the fact that the PHQ-2 has a sensitivity of 89.3% and specificity of 75.9% (70), while the PHQ9 has sensitivity of 91.6% and specificity of 81.2% (25), it is possible
that the overall sensitivity and specificity had to decrease (for sensitivity) and increase (for specificity) respectively. It is therefore possible that the extra step of using crisis points to select who to screen could have led to some patients with depression not being assessed using the screening tools (PHQ-9, and PHQ-2). The selection criteria (of using crisis points) worked as a “third screening tool” resulting into a lower sensitivity of 51.3% and a higher specificity of 96.4% for selective screening strategy as compared to the routine screening strategy with 75.0% and 95.1% sensitivity and specificity respectively.

Patients can be excluded for a number of possible reasons such as; in case the selection criterion is not comprehensive enough, people who do not meet the criteria but are sick may be left out for example changes such as a high appetite, increased sleep, weight gain, excessive guilt, fatigue, and others are not captured in the selection criteria.

The fact that we used the MINI as our reference enabled us to assess for performance of the strategies in detecting major depressive disorders as defined in the operational definitions. However, by using the MINI’s module of major depressive disorder as the reference tool we could not assess for the performance of the strategies in detecting the different severities of depression such as none, mild, moderate, moderately severe and severe as categorized by Dr. Spitzer and the other co-inventers of the PHQ-9.

Another possible reason is that culture influences the way patients express themselves to clinicians. This influence of culture can actually lead to a missed diagnosis (71,72). For example, it is well known that in a number of cultures in Uganda men are less likely to express physical pain or emotional symptoms / grievances except when severe. This reluctance to express such critical symptoms could lead to a false negative result.
Lastly, the limitations of humanity like errors due to loss of concentration, negligence, or forgetfulness can set in and as such lead to leaving out some patients who meet the criteria.

Consequently, a lower sensitivity and very high specificity for selective screening strategy means a relatively high false negative proportion / rate. This leaves a number of people with depression misdiagnosed as negative and therefore unattended to. On the other hand, a relatively higher sensitivity and specificity for routine screening means a low false negative proportion.

The search for studies with similar outcomes turned out fruitless and we are therefore unable to compare results.

5.4 Perceptions of the stake holders on the screening strategies for depression.

In the study, stake holders were in support of screening for depression, with preference towards routine screening as compared to selective screening. Some concerns however arose with regard to knowledge, beliefs about consequences, and environmental context and resources.

This attitude towards screening for depression is not unique to this setting as other studies have found similar findings among which are the studies done in Uganda among HIV counsellors (47), and in India among health workers (48). The findings of the study are however different from some findings of a systematic review of studies done among primary care physicians in the US where the attitudes towards screening for depression were found to be negative (49). The primary physicians raised concerns about time required to diagnose depression, and the social networks required to effectively manage it.
The health workers raised concerns in regards to possibilities of patients of depression being missed out if selective screening is to be used. This is supported by both the results of the sensitivities of the screening strategies and the overall cases of depression detected by the different strategies. However, one health worker believed that selective screening could be offering a more comprehensive consultation / interaction compared to routine screening perhaps this too is evidenced by the time spent while screening as those under selective screening were offered more time. It could be worth noting (from table 11) that the probability that consultation time for a person under the selective screening is greater than that of a person under routine screening is 0.575.

There was a concern of stigmatization, and patients (PLHIV) demand to be served quickly so as to minimize the chance of being noticed by other people. This could affect the time required to screen and in turn affect the outcomes of the health seeking behavior (73, 74). During the study, two patients leaving without notice and one patient cutting short screening time due to lack of time. Given that depression is also sometimes stigmatized, PLHIV could find it difficult to leave with both stigmatized conditions hence worsening one’s quality of life (73, 75–77).

The concern of shortage of stationery could be affected by PHC funds given that the funds are neither adequate nor regular (78, 79). However, it is possible to screen a number of patients with one patient health questionnaire if the scores are worked out in patient treatment books or forms hence minimizing the cost on stationery.

In regards to trainings and mentorship, in as much as it is essential to train, one study demonstrated that trainings alone may not be adequate in increasing case detection (20) and there-
fore could require additional support such as supervision, stationary, and other forms of motivation (44,80).

5.6 Strengths of the study

This study is among the very few that have compared screening strategies. It possesses a uniqueness of comparing the selective screening strategy against routine screening strategy. The following are some of the strengths of the study:

- In this study over 92% of the participants approached agreed to participate. This fact enhances generalizability of results to the adult population of PLHIV as selection bias due to recruitment and attrition was minimized.

5.7 Limitations of the study

Even though the research reached its aims, there were unfavorable shortcomings. These include:

- The sample size was not adequate to notice some differences.
- By using the MINI (module of major depressive disorder) as our reference tool, we were unable to measure the performance of the strategies in detecting the milder states of depression as categorized in the PHQ9 diagnosis guide.
- The study was unable to assess for the contribution of annual screening to the selective screening approach / strategy.
- We were not able to include children in the study, and therefore these results are not generalizable to them.
- The study was not able to assess the performance of the strategies in detecting varying severity of depression.
- The participants included in the qualitative research were limited and perhaps we could have missed out on some other viewpoints on the perceptions of stakeholders on screening for depression.

5.8 Trustworthiness

Credibility:
Participants were purposively sample. The participants were involved in HIV care and mental health clinic. Coding was done by two research assistants with experience in qualitative research. Both general practitioners and psychiatric nurses; an expert client; and a VHT were engaged in a prolonged interview to saturation to ensure data sufficiency. However, administrators were not interviewed and this could have led to limitations in the point of views. The findings of the qualitative research were triangulated with quantitative results at discussion.

Confirmability
The interview guide was pretested on 7 staff who were not part of the clinic. The principal investigator acted as an independent coder

Dependability
A thick description of the methodology was provided as required by the clinical epidemiology unit of the university.

Transferability
Interviews were recorded in privacy so as to ensure confidentiality. Given that the research assistants were natives of the area, it is possible that this encouraged the participants to open up during the interviews.
6.0 CHAPTER SIX

6.1 CONCLUSIONS AND RECOMMENDATIONS

6.1.1 Conclusions

The overall performances of routine, and selective screening strategies in detection of major depressive disorder are similar. However, routine screening strategy is significantly more sensitive than selective screening strategy. Therefore, screening adult PLHIV for major depressive disorder using routine screening strategy results into detection of more true positives, and less false negatives than selective screening strategy.

The health workers were found to have some knowledge about depression and thought it was necessary to screen for and manage it. However, they also held some explanations for some of the problems that could potentially interfere with their service provision. Even though some HIV health workers portrayed a sense of self-efficacy to screen for and manage depression among PLHIV, others felt like they still lacked some expertise to deal with depression. They thought that routine screening could minimize the cases of depression missed.

6.1.2 Recommendations

On the basis of the above findings of the study and the recommendations of the stake holders, we recommend the following:

To policy makers

People living with human immunodeficiency virus should be screened for depression irrespective of whether patients present with risk factors or not. This will increase the detection of cases of depression among PLHIV.
The public should be sensitized about depression and where they can seek help from. This would reduce stigmatization and increase demands for depression care services by the affected.

Health workers attending to People living with human immunodeficiency virus should be trained to screen for depression. Training will improve both knowledge and skills for screening and managing depression. This will lead to reduction in wastage of drugs and time.

The HMIS should be improved or streamlined so as to enable capturing/recording of cases of depression among PLHIV. In particular, a section should be included in the HIV care cards and HIV care register that will not only act as a record but a tracking tool to monitor improvement or progression of disease.

To the health workers
PLHIV should be health educated regularly about mental illnesses, especially depression in particular. Health education in addition to appropriate treatment will improve the general wellbeing of the patients and increase demand for care.

To the researchers
There is need to study the economics of screening and managing depression. Especially focusing on the costs, cost-effectiveness, and cost benefit of screening for depression.

There is need to explore the acceptance of results by those screened for depression.

The social desirability of screening for depression among the PLHIV and other stakeholders also needs to be studied.

There is also a gap in screening for depression among children, tools need to be validated and availed to the health workers.
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Appendices

Appendix 1: English language consent form for patients

MAKERERE UNIVERSITY COLLEGE OF HEALTH SCIENCES SCHOOL OF MEDICINE RESEARCH AND ETHICS COMMITTEE (SOM-REC)

Title of the proposed study:

A comparison of routine versus selective screening for depression strategies among People Living with HIV attending Princess Diana Memorial Health Centre IV Soroti.

Investigators:

The principal investigator is Okimat Paul School of Medicine, Clinical Epidemiology Unit.

Background and rationale for the study:

People living with HIV have been found to be at risk of developing depression. Depression has been found to worsen their wellbeing, the ability to adhere to treatment, to increase loss to follow up among others. Knowing how best to screen for depression will contribute towards the knowledge necessary in improving screening approaches. Information from this study could contribute towards improving the care received by people living with HIV (especially in regards to screening for depression) and their wellbeing.

Purpose:

This study aims to compare two strategies namely; selective, and routine screening strategy. To determine whether routine screening strategy differs from selective screening strategy in depression case detection, and to describe the perceptions of stakeholders on the strategies for screening depression among PLHIV.
Selective screening (the control) is recommended by the ministry of health while routine screening strategy (the intervention) is the strategy under experiment.

Information from this study contributes towards improving the care received by people living with HIV (especially in regards to screening for depression) and their wellbeing.

In the future, this data may be used to answer future research questions which may arise provided the data is found suitable.

**Procedures:**

If you are a patient and you agree to participate in this study, you will be randomly allocated to either routine or selective screening strategy. A clinician will ask you a number of questions about your emotions, thoughts and behaviour.

In routine screening, every patient will be evaluated by a clinician in one consultation room for depression using the Patient Health Questionnaire-2 (PHQ-2) and Patient Health Questionnaire-9 (PHQ-9).

While in selective screening only those patients who meet the MOH criteria will be evaluated by a clinician in another room for depression using the PHQ-2 and PHQ-9.

After wards all PLHIV be evaluated again using a questionnaire called Mini International Neural Psychiatric Interview (MINI) in a room dedicated to the MINI.

With your cooperation, these questions should take not more than a total of 25 minutes.

**Who will participate in the study:**

You are requested to participate in a screening for depression intervention strategy study.

You have been invited because you are either a person living with HIV attending Princess
Diana Memorial health centre iv HIV clinic or because you are a health worker caring for people living with HIV in the clinic.

Approximately 344 people living HIV and about 5 health workers will participate in the study.

**Risks/Discomforts:**

There is minimal risk in participating associated with participating in this study. If some of the questions make you feel uncomfortable you do not have to answer them. Participation is voluntary and feel free to share only what you are comfortable with sharing.

**Benefits:**

Should you choose to participate, you will get to know whether you are depressed or not and in addition you will be advised and treated in accordance to the ministry of health guidelines if found to be depressed. In addition, results from this study including your participation, may lead to better guidelines on screening and managing depression among people living with HIV.

**Confidentiality:**

By agreeing to participate in this study, you are agreeing to have questionnaire responses recorded and analysed by the research team. Your questionnaire responses will be kept in a secure a computer, an external drive and on google drive. The results of this study may be published. If the results are published, they will not bare the participants’ names. The data from this study may also be used to answer future research questions which may arise.

**Alternatives:**

If you choose not to participate you will still receive the usual services offered by the clinic.
Cost:
You will not incur any cost for participating in this study.

Compensation for participation in the study:
There is no financial compensation in this study. However, a bottle of soda (300mls) or water (500mls) will be offered as a refreshment at the end of the evaluations.

Reimbursement:
There is no reimbursement for participating in the study.

Questions:
If you have any questions regarding the study, you can contact Okimat Paul the principal investigator on 0758171033 / 0773171033.

Questions about participants rights:
If you have any questions or concerns regarding your rights as a study participant and would like to talk to someone other than the researcher(s), feel free to contact Prof. Ponsiano Ocama, chairman of Makerere University School of Medicine Research and Ethics Committee (SOMREC), on 0772421190.

Statement of voluntariness:
Participation in this study is completely voluntary. Your decision / choice to participate or not to participate in this study has no impact on your current or future relationship with Princess Diana Health Centre iv or other research studies.

Consent:
Statement of consent after understanding the study and a signature portion.

STATEMENT OF CONSENT/ASSENT
'............................................................................................... has described to me what is going to be done, the risks, the benefits involved and my rights regarding this study. I understand that my deci-
sion to participate in this study will not alter my usual medical care. In the use of this information, my identity will be concealed. I am aware that I may withdraw at any time. I understand that by signing this form, I do not waive any of my legal rights but merely indicate that I have been informed about the research study in which I am voluntarily agreeing to participate. A copy of this form will be provided to me.

<table>
<thead>
<tr>
<th>Name of participant</th>
<th>Signature of participant</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of interviewer</td>
<td>Signature of interviewer</td>
<td>Date</td>
</tr>
</tbody>
</table>
Appendix 2. Ateso language consent form for the patients

EKOMITI NOK’AINIGIC KANUTUPITONO ENGICIO K’OSOMERO LO ITUTONORERE IMURWOK NU ADEKIS, MAKERERE UNIVERSITY.

Title of the proposed study: Akou ka aingic kana ekotoi aitolot
Aputonoro naka iwaitin nu egelegela nu ejenunere ebe akwamakinos itunganana yen edeka eseny awomisio.

Investigators: Nuk’angicak
Lo ingarekinit aingic na nes Ejakait Paul Okimat lo ebunit k’osomero no itutonorere imurwok nuka adekis k’oMakerere University, Kampala.

Background and rationale to the study: Alibunet k’aitogogorio nak’angicio kana.
Itunga lu edekasi eseny etapit akwamakite awomisio awate kec adolore adoketait na imiki kes atupakite amukian kwa ebeitor, kiyatakin do ariebo amunaar.
Angicun eipone no ejenunere katipet itunga lu ekwamakina awomisio akaulo na adumun eseny nges ebuni aitidisiar atiokisio kwape kangin alimor kokuju naarai epatanuni aruruk aingarakin adekan kes eroko adek a’emunaara.

Purpose: Alosikinet k’aingic kana
Aingic na elosi aitirian iwaitin iyarei nujjilibunere itunga nu akwamakinos awomisio akaulo nak’aedakakin eseny.
Ewai losodit erai no kwape kwana itosomai erionget noka angaleu. Koisomae kano ijijiliuno adekak esenty nu elosi aingit (PHQ-2 and PHQ-9) kotupitete aiwadikaeta nu itolomunit erionget ngol. Ewai lo iyareit, nges lo’ijaikenere itunga kere aingiseta (PHQ-2 and PHQ-9), mere bobo aseunun idiope idiopen kotupitete aiwadikaeta kwa itijenaritete kokuju.
Ko ngaren acepak emina oni itisom akiro lu abongokin angiceta ace lo lominetete.

**Procedure: Nu Ebeit Atupakin**

Ejaasi iwaitin iyarei nu elosio aitosoma kanu aseun itunga nu edekasi eseny nu elo sete abongonokin aingiseta (PHQ-2 and PHQ-9).

Ewai losodit nesi lo ingisere itunga kere lu edekasi eseny komam aise ikur k’obaale.

Ewai lokiyareit nesi no ingisere itunga lu edekasi eseny nu bobo ijiliunitai kotupitete ain-apeta nu itolomut erionget loka angaleu.

Kedautu adekak abongonokin aingiseta ngun itacaunitai kokuju, ijaikino bobo kes kere abongonokin aingiseta en eyaraiti (MINI).

Arai irai ijo emusawo, ingisio ijo kanu ajenun nuiwomit ijo ka nu ikamunitos aijiliuniuno naka itunga nu ekwamakina awomisio awate kec, kede iwaitin ice nu ebeitor aijiliuniuna itunga kwape kangun katipet.

Arai kisomai kemorikikina, aticepak mam oni kingetakini idakikan 25 da kodauna abongonokin aingiseta nu.

**Who will participate in this study? Ingai bo ebuni ajaun aingic na?**

Eseunitai itunga kere nu edekasi eseny kodumuninete amukian k’aicorate k’adekis naka Princess Diana Memorial Health Centre IV HIV Clinic ajaun angic na.

Kosodi bobo, imusawon nu iswamaete adekisi na alimor kokuju da eseunitai ajaun aingic na.

**Risks/Discomforts: Ainigosio ka aitukiranata**

Benefits: Ajokisio

Angicio na kingarakini ijo ajenun eipone no ejaatatar awomisio kon – arai ekwamakina noi, karai esiposi.

Etupakini, epodori adekes aiyatakin aijaikin ijo amukian k’aiicoreta kotupitete eipone no adumunere ejautene kon.

Irikakini, nu isisiauno ka aingic kana elosio aibwaikin oisomae kanu aitojokar eidare ka eipone no imukere itunga nu edekasi eseny.

Confidentiality: Aiyeya

Kwape icamunia ijo alomar angicio na, kilosio ajaikin ijo aingiseta k’aiyeya. Emamei bobo ice tunga alosio alimonokin ebe abu ijo kobongonok aingiseta eipone lo arai eipone je.

Epaikinetete ngun kere eraasi nuka aiyeya.

Mam ekiror kon ibwaikino toma oripooti no itolomuno k’edaun aingic na.

Ko ngaren acepak emina oni itisom akiro lu abongokin angiceta ace lo lominetete.

Alternative: Karai mam ijo ijaun angicio na

Adekak nu mam ejaunos angicio na epaikinetete kesi edumununet agangat k’adekis kana kwape lem sek.

Cost;

Mam ijo ilemuni isirigin kanu alomar angicio na.

Compensation for participation in the study; Igaraman

Iyinakin ijo a soda (300mls) aria a kipi (500mls) akaulo na iwanyun emuron.

Reimbursement: Atacio

Mam ijo kilosio atacakin isirigin.
Questions; Questions about participants rights: Aingiseta; Aigiseta nu ikamunitos apedoriosio kon

Arai ejaasi aingiseta nu ikoto ijo kitacaunai, kingit Ejakait Paul Okimatl. Ipedoei ainomakin nes k’osimu ke 0758 171 033/ 0773 171 033.

Arai mam ijo imonikina ace akiro nu ikamunitos apedorosio kon k’angicio kana, ipedori bobo ijo aingitun Prof. Ponsiano Ocama, lo erai apolon eicolong no aingic ka ainapeta nu etupitai engicio k’oso mero no itutonorere imurwok nu adekis k’oMakerere University. Esimu ke erai 0772 421 190.

Statement of voluntariness; Consent/Assent: Aitutuket naka acamanar

Kedaun aiticainkin ijo alosikinet naka angicio kana, abu ijo elo pet/alo pet bon kocam ajaikin toma aingic na. Mam abuikitai jo nepecepe da.

Statement of consent/assent: Aitutuket

Adau Ejekait/Ajakait ………………………………………………………………………aitetemonokin eong nu elosio aswam k’aingic kana ebeit aitolot k’adekis nak’oPrincess Diana Memorial Health Centre IV. Ajenu eong atiokisio k’ajokisio nu adumuni eong. Ketacaikin eong apedoriosio ka da. Ajeni bobo eong ebe ajaun aingic na mam ijulakini aipone lo adamununa eong amukian k’aicoreta k’adekis kana. Kosodi mam ekiror ka itolomunio odio repooti, epaikini eong ajaun angicio na erai aiyeya. Ajeni eong ebe apedori eong ainyekin abongonokin aigiseta adio pak kere arai k’ekotokin ekatau. Acamunit bobo eong ebe eong aisomanar kede angicak arai akaseunetna kosodi mam elemari apedorosio ka nu eitunganane. Irikakini ajeni eong ebe alosi eong da adumun ekopi nok’afomu kana.

Ekiror Aidokokin Akan Apaarasia
Ekiror Aidokokin Akan Apaarasia
Appendix 3. English language consent form for the health workers

MAKERERE UNIVERSITY COLLEGE OF HEALTH SCIENCES

SCHOOL OF MEDICINE RESEARCH AND ETHICS COMMITTEE (SOM-REC)

Title of the proposed study:
A comparison of routine versus selective screening for depression strategies among People Living with HIV attending Princess Diana Memorial Health Centre IV Soroti.

Investigators:
The principal investigator is Okimat Paul School of Medicine, Clinical Epidemiology Unit.

Background and rationale for the study:
People living with HIV have been found to be at risk of developing depression. Depression has been found to worsen their wellbeing, the ability to adhere to treatment, to increase loss to follow up among others. Knowing how best to screen for depression will contribute towards the knowledge necessary in improving screening approaches. Information from this study could contribute towards improving the care received by people living with HIV (especially in regards to screening for depression) and their wellbeing.

Purpose:
This study aims to compare two strategies namely; selective, and routine screening strategy. To determine whether routine screening strategy differs from selective screening strategy in depression case detection, and to describe the perceptions of stakeholders (health workers) on the strategies for screening depression among PLHIV. Routine screening is the experimental arm while selective screening (standard of care) is the control.
Procedures:
If you agree to participate, a trained research assistant will ask you some questions to find out your views about screening for depression, and the screening strategies. This will be a key informant interview in which you be asked about questions in a number of areas concerning the screening for depression and the screening strategies.

Who will participate in the study:
Approximately 344 people living HIV and about 5 health workers will participate in the study.

Risks/Discomforts:
There is minimal risk in participating associated with participating in this study. If some of the questions make you feel uncomfortable you do not have to answer them. Participation is voluntary and feel free to share only what you are comfortable with sharing.

Benefits:
Should you choose to participate as a health worker, the knowledge you will provide will be helpful in identifying how to best screen for depression.

Confidentiality:
By agreeing to participate in this study, you are agreeing to have questionnaire responses recorded and analysed by the research team. Your questionnaire responses will be kept in a secure a computer, an external drive and on google drive. The results of this study may be published. If the results are published, they will not bare the participants’ names

Alternatives:
If you choose not to participate you will still receive reserve your rights and duties as a health worker (civil servant). Participation is voluntary.
Cost:
You will not incur any cost for participating in this study.

Compensation for participation in the study:
A bottle of soda (300mls) or water (500mls) will be offered as a refreshment during the interview. In addition, twelve thousand Uganda shillings only (Ugshs 12,000/=) will be offered for time spent during the interview.

Reimbursement:
There is no reimbursement for participating in the study.

Questions:
If you have any questions regarding the study, you can contact Okimat Paul the principal investigator on 0758171033 / 0773171033.

Questions about participants rights:
If you have any questions or concerns regarding your rights as a study participant and would like to talk to someone other than the researcher(s), feel free to contact Prof. Ponsiano Ocama, chairman of Makerere University School of Medicine Research and Ethics Committee (SOMREC), on 0772421190.

Statement of voluntariness:
Participation in this study is completely voluntary. Your decision / choice to participate or not to participate in this study has no impact on your current or future relationship with Princess Diana Health Centre iv or other research studies.

Consent:
Statement of consent after understanding the study and a signature portion.
STATEMENT OF CONSENT/ASSENT

........................................................................... has described to me what is going to be done, the risks, the benefits involved and my rights regarding this study. I understand that my decision to participate in this study will not alter my usual medical care. In the use of this information, my identity will be concealed. I am aware that I may withdraw at any time. I understand that by signing this form, I do not waive any of my legal rights but merely indicate that I have been informed about the research study in which I am voluntarily agreeing to participate. A copy of this form will be provided to me.

Name ..........................Signature of participant .................Date ......................

Name........................Signatureofinterviewer ...............Date .................
### Appendix 4. Quality assurance screening checklist

<table>
<thead>
<tr>
<th>Crisis points of life</th>
<th>Write/indicate reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death of a significant other</td>
<td></td>
</tr>
<tr>
<td>Introduction to medication</td>
<td></td>
</tr>
<tr>
<td>Newly diagnosed with HIV</td>
<td></td>
</tr>
<tr>
<td>Disclosure of HIV status</td>
<td></td>
</tr>
<tr>
<td>Occurrence of any physical illness</td>
<td></td>
</tr>
<tr>
<td>Recognition of new symptom/ Progression of disease</td>
<td></td>
</tr>
<tr>
<td>Hospitalisation</td>
<td></td>
</tr>
<tr>
<td>Diagnosis of AIDS</td>
<td></td>
</tr>
<tr>
<td>Major life changes eg; loss of a job, child birth, loss of a job, and end of a relationship</td>
<td></td>
</tr>
<tr>
<td>Necessity of making end of life; Permanency planning decision</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 5. English language PHQ-2

PATIENT HEALTH QUESTIONNAIRE-2 (PHQ-2)
Developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke and colleagues, with an educational grant from Pfizer Inc. No permission required to reproduce, translate, display or distribute.

Over the last two weeks, how often have you been bothered by any of the following problems? (Use “✓” to indicate your answer)

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Several Days</th>
<th>More than half the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Little interest or pleasure in doing things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Feeling down, depressed, or hopeless</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
## Appendix 6. Ateso language PHQ-2

**PATIENT HEALTH QUESTIONNAIRE-2 (PHQ-2)**
*Aingiseta nu aibunget 9 nu ingisio nu adekak (PHQ-2)*

'osabitiniyarei nu atuboros, isuguikinaioawomisioirwanaadik’oborokanuimaritaik’okwap? Okweta (✔️) na itodunit nu etakanakinetiijo.

<table>
<thead>
<tr>
<th></th>
<th>Mam cut isomasi</th>
<th>Isomasi apaarasia ace</th>
<th>Atapitnoiai-somauinkonye mere nginpaaran</th>
<th>Isomasi nginpaaran</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mam etau ekoto aswam aswomisinei</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Ipupi erono, ngin bore kere iteijo ebe emame iajokis</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
# Appendix 7. Ateso language PHQ-9

## PATIENT HEALTH QUESTIONNAIRE – 9 (PHQ-9)

Aingiseta nu aibunget 9 nu ingisio nu adekak (PHQ-9)

K’osabitin iyarei nu atuboros, isuguikina ijo awomisio irwana adi k’oboro kanu imaritai k’okwap?

Okweta ( ) na itodunit nu etakanakinete ijo.

<table>
<thead>
<tr>
<th>Aingiset</th>
<th>Mam cut isomasi</th>
<th>Isomasi apaarasia ace</th>
<th>Atapit noi aisomauin konye mere ngn paaran</th>
<th>Isomasi ngin paaran</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mam etau ekoto aswam aswomisinei</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Ipupi erono, ngin bore kere itei ijo ebe emamei ajokis</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Emamete ajo kwere, acepak ejaasi ajo nu edepara</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Ipupi apasono, enonko akuwan</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Edite atau no ekoto ainyam, arai inyami adepar noi</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Aipup erono ebe kipiko ijo aijar n’akwap kana, arai baat ebe ijo ijesu adoketait na ekale kon kwap</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. Amamut kasipokite awomisio arai isioni apapulai; arai iseseni e television</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. Awanyutu itunga ijo ilosi bon kiyapi motimoti, kinererinitoi bon. Arai baat ilosi ijo taitai, nen kicak, karaida emame eplan alosit ngina</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9. Awomowom ebe kedolit ijo atwaare kakwap kana, arai baat ekot etau aimu sungun k’edio pone kere</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Amakesin imorikikitai anyoun kokuju + +

Amakesin imorikikitai kere

Arai ilimorit ijo adio atiokiso kere kokuju, opone bani k’itotolikitos atiokisio ngun ijo kowaitin nuka aswam kon, aidara iboro nuk’ore kon, arai bo aupa k’a’aiswamanara ka nuce tunga?

Mam itotolikit □ □ Itotolik □ □ Itotoliki □ □ Itotolikit □ □ noi

81
Appendix 8. English language PHQ-9

PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)
Developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke and colleagues, with an educational grant from Pfizer Inc. No permission required to reproduce, translate, display or distribute.

Over the last two weeks, how often have you been bothered by any of the following problems?
(Use “✓” to indicate your answer)

<table>
<thead>
<tr>
<th>Question</th>
<th>Not at all</th>
<th>Several days</th>
<th>More than half the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Little interest or pleasure in doing things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Feeling down, depressed, or hopeless</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Trouble falling or staying asleep, or sleeping too much</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Feeling tired or having little energy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Poor appetite or overeating</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Feeling bad about yourself or that you are a failure or have let yourself or your family down</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. Trouble concentrating on things, such as reading the newspaper or watching television</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. Moving or speaking so slowly that other people could have noticed? Or the opposite being so fidgety or restless that you have been moving around a lot more than usual</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9. Thoughts that you would be better off dead or of hurting yourself in someway</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

| Column total                | +            | +            |                         |

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

<table>
<thead>
<tr>
<th>Not difficult tall</th>
<th>Somewhat difficult</th>
<th>Very difficult</th>
<th>Extremely difficult</th>
</tr>
</thead>
</table>

Guide for diagnosis and management of depression based on PHQ-9 tools

<table>
<thead>
<tr>
<th>PHQ-9 score</th>
<th>Provisional diagnosis</th>
<th>Treatment recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-9</td>
<td>Minimal symptoms</td>
<td>Support, educate to call if worse, return in a month</td>
</tr>
<tr>
<td>10-14</td>
<td>Major depression, mild</td>
<td>Antidepressant or Psychotherapy</td>
</tr>
<tr>
<td>15-19</td>
<td>Major depression, moderately severe</td>
<td>Antidepressant or Psychotherapy</td>
</tr>
<tr>
<td>&gt;20</td>
<td>Major depression, severe</td>
<td>Antidepressant or Psychotherapy</td>
</tr>
</tbody>
</table>
### Appendix 9. The biodata form

<table>
<thead>
<tr>
<th><strong>Name</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Study number</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Viral load</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Alcohol use/drinking</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Smoking</strong>&lt;br&gt;(if smokes how many cigarettes a day)</td>
<td></td>
</tr>
<tr>
<td><strong>Consultation starting time.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Consultation ending time.</strong></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 10. Interview guide

INTERVIEW GUIDE ON THE PERCEPTIONS OF HEALTH WORKERS ON THE SCREENING STRATEGIES.

Introduction key components:

a. Thank you
b. Your name
c. Purpose
d. Confidentiality
e. Duration
f. How interview will be conducted
g. Opportunity for questions
h. Signature of consent

I thank you for sparing some of your precious time to meet with me today. My name is __________________________ and I request to discuss with you about your experiences participating in the screening for depression intervention strategy study. Specifically, as one of the objectives of the overall study is to capture views and lessons that can be used in future interventions.

The interview should take less than 30 minutes. I will be recording the discussion because I don’t want to miss any of your comments. Although I will be noting down as we discuss, I can’t possibly write fast enough to get it all down. Since we’re on tape, please be sure to speak up so that we don’t miss your comments.

Could you be having any questions about what I have just said?

Please take some time to sign the consent form before we can proceed.
Guiding questions

1) What do you understand by screening for depression?

2) What were the strategies that were used?

3) What are your feelings and thoughts about the two screening strategies?

4) How do you think the screening activity was received by the people?

5) Which strategies would you prefer to work with and why?

6) What were some of the challenges that you experienced during the process of screening for depression?

7) What worked well during the process?

8) How did you overcome the challenges?

9) What effect if any do you feel screening for depression had on the patients and health workers?

10) What recommendations as a health worker do you have to share or offer to policy makers?

Closing key remarks

• Additional comments

• Next steps

• Thank you

Is there anything you would like to share or add that we have not discussed?

I will be analysing the information from you and the other participants and may consult you in case of any clarifications. You will be given a feedback as soon as the work is done.

Thank you for your precious time.
Appendix 11. Depression care card

<table>
<thead>
<tr>
<th>HIV CLINIC- PDM HC IV DEPRESSION CARE CARD</th>
<th>AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME:</td>
<td>SEX</td>
</tr>
<tr>
<td>PT CLINIC</td>
<td>ADDRESS</td>
</tr>
</tbody>
</table>

**CONTACT**

<table>
<thead>
<tr>
<th>DATE</th>
<th>PHQ2</th>
<th>PHQ9</th>
<th>GRADE</th>
<th>TREATMENT</th>
<th>COMMENT</th>
<th>SIGN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Appendix 12. M.I.N.I.

M.I.N.I.

MINI INTERNATIONAL NEUROPSYCHIATRIC INTERVIEW

English Version 5.0.0

DSM-IV

University of South Florida - Tampa

Hôpital de la Salpêtrière - Paris

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DISCLAIMER

Our aim is to assist in the assessment and tracking of patients with greater efficiency and accuracy. Before action is taken on any data collected and processed by this program, it should be reviewed and interpreted by a licensed clinician.

This program is not designed or intended to be used in the place of a full medical and psychiatric evaluation by a qualified licensed physician – psychiatrist. It is intended only as a tool to facilitate accurate data collection and processing of symptoms elicited by trained personnel.

M.I.N.I. 5.0.0 (July 1, 2006)
<table>
<thead>
<tr>
<th>MODULES</th>
<th>TIME FRAME</th>
<th>MEETS CRITERIA</th>
<th>DSM-IV</th>
<th>ICD-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>A MAJOR DEPRESSIVE EPISODE</td>
<td>Current (2 weeks)</td>
<td>□</td>
<td>296.20-296.26 Single</td>
<td>F32.x</td>
</tr>
<tr>
<td></td>
<td>Recurrent</td>
<td>□</td>
<td>296.30-296.36 Recurrent</td>
<td>F33.x</td>
</tr>
<tr>
<td>MDE WITH MELANCHOLIC FEATURES</td>
<td>Current (2 weeks)</td>
<td>□</td>
<td>296.20-296.26 Single</td>
<td>F32.x</td>
</tr>
<tr>
<td></td>
<td>Optional</td>
<td></td>
<td>296.30-296.36 Recurrent</td>
<td>F33.x</td>
</tr>
<tr>
<td>B DYSTHYMIA</td>
<td>Current (Past 2 years)</td>
<td>□</td>
<td>300.4</td>
<td>F34.1</td>
</tr>
<tr>
<td>C SUICIDALITY</td>
<td>Current (Past Month)</td>
<td>□</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Risk: □ Low □ Medium □ High</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D MANIC EPISODE</td>
<td>Current</td>
<td>□</td>
<td>296.00-296.06</td>
<td>F30.x-F31.9</td>
</tr>
<tr>
<td></td>
<td>Past</td>
<td>□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HYPOMANIC EPISODE</td>
<td>Current</td>
<td>□</td>
<td>296.80-296.89</td>
<td>F31.8-F31.9/F34.0</td>
</tr>
<tr>
<td></td>
<td>Past</td>
<td>□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E PANIC DISORDER</td>
<td>Current (Past Month)</td>
<td>□</td>
<td>300.01/300.21</td>
<td>F40.01-F41.0</td>
</tr>
<tr>
<td></td>
<td>Lifetime</td>
<td>□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F AGORAPHOBIA</td>
<td>Current</td>
<td>□</td>
<td>300.22</td>
<td>F40.00</td>
</tr>
<tr>
<td>G SOCIAL PHOBIA (Social Anxiety Disorder)</td>
<td>Current (Past Month)</td>
<td>□</td>
<td>300.23</td>
<td>F40.1</td>
</tr>
<tr>
<td>H OBSESSIVE-COMPULSIVE DISORDER</td>
<td>Current (Past Month)</td>
<td>□</td>
<td>300.3</td>
<td>F42.8</td>
</tr>
<tr>
<td>I POSTTRAUMATIC STRESS DISORDER</td>
<td>Current (Past Month)</td>
<td>□</td>
<td>309.81</td>
<td>F43.1</td>
</tr>
<tr>
<td>J ALCOHOL DEPENDENCE</td>
<td>Past 12 Months</td>
<td>□</td>
<td>303.9</td>
<td>F10.2x</td>
</tr>
<tr>
<td>ALCOHOL ABUSE</td>
<td>Past 12 Months</td>
<td>□</td>
<td>305.00</td>
<td>F10.1</td>
</tr>
<tr>
<td>K SUBSTANCE DEPENDENCE (Non-alcohol)</td>
<td>Past 12 Months</td>
<td>□</td>
<td>304.00-90/305.20-.90</td>
<td>F11.1-F19.1</td>
</tr>
<tr>
<td>SUBSTANCE ABUSE (Non-alcohol)</td>
<td>Past 12 Months</td>
<td>□</td>
<td>304.00-90/305.20-.90</td>
<td>F11.1-F19.1</td>
</tr>
<tr>
<td>L PSYCHOTIC DISORDERS</td>
<td>Lifetime</td>
<td>□</td>
<td>295.10-295.90/297.1/297.3/293.81/293.82/293.89/298.8/298.9</td>
<td>F20.xx-F29</td>
</tr>
<tr>
<td></td>
<td>Current</td>
<td>□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOOD DISORDER WITH PSYCHOTIC FEATURES</td>
<td>Lifetime</td>
<td>□</td>
<td>296.24/296.34/296.44</td>
<td>F32.3/F33.3/</td>
</tr>
<tr>
<td></td>
<td>Current</td>
<td>□</td>
<td>296.24/296.34/296.44</td>
<td>F30.2/F31.2/F31.5/F31.8/F31.9/F39</td>
</tr>
<tr>
<td>M ANOREXIA NERVOSA</td>
<td>Current (Past 3 Months)</td>
<td>□</td>
<td>307.1</td>
<td>F50.0</td>
</tr>
<tr>
<td>N BULIMIA NERVOSA</td>
<td>Current (Past 3 Months)</td>
<td>□</td>
<td>307.51</td>
<td>F50.2</td>
</tr>
<tr>
<td>ANOREXIA NERVOSA, BINGE EATING/PURGING TYPE</td>
<td>Current</td>
<td>□</td>
<td>307.1</td>
<td>F50.0</td>
</tr>
</tbody>
</table>
O  GENERALIZED ANXIETY DISORDER  
  Current (Past 6 Months)  □  300.02  F41.1  □

P  ANTISOCIAL PERSONALITY DISORDER  
  Optional  □  301.7  F60.2  □

Which problem troubles you the most? Indicate your response by checking the appropriate check box(es).
The M.I.N.I. was designed as a brief structured interview for the major Axis I psychiatric disorders in DSM-IV and ICD-10. Validation and reliability studies have been done comparing the M.I.N.I. to the SCID-P for DSM-III-R and the CIDI (a structured interview developed by the World Health Organization for lay interviewers for ICD-10). The results of these studies show that the M.I.N.I. has acceptably high validation and reliability scores, but can be administered in a much shorter period of time (mean 18.7 ± 11.6 minutes, median 15 minutes) than the above referenced instruments. It can be used by clinicians, after a brief training session. Lay interviewers require more extensive training.

**INTERVIEW:**

In order to keep the interview as brief as possible, inform the patient that you will conduct a clinical interview that is more structured than usual, with very precise questions about psychological problems which require a yes or no answer.

**GENERAL FORMAT:**

The M.I.N.I. is divided into **modules** identified by letters, each corresponding to a diagnostic category.

- At the beginning of each diagnostic module (except for psychotic disorders module), screening question(s) corresponding to the main criteria of the disorder are presented in a **gray box**.
- At the end of each module, diagnostic box(es) permit the clinician to indicate whether diagnostic criteria are met.

**CONVENTIONS:**

*Sentences written in « normal font »* should be read exactly as written to the patient in order to standardize the assessment of diagnostic criteria.

*Sentences written in « CAPITALS »* should not be read to the patient. They are instructions for the interviewer to assist in the scoring of the diagnostic algorithms.

*Sentences written in « bold »* indicate the time frame being investigated. The interviewer should read them as often as necessary. Only symptoms occurring during the time frame indicated should be considered in scoring the responses.

*Answers with an arrow above them (единиця)* indicate that one of the criteria necessary for the diagnosis(es) is not met. In this case, the interviewer should go to the end of the module, circle « NO » in all the diagnostic boxes and move to the next module.

When terms are separated by a *slash (/)* the interviewer should read only those symptoms known to be present in the patient (for example, question H6).

*Phrases in (parentheses)* are clinical examples of the symptom. These may be read to the patient to clarify the question.

**RATING INSTRUCTIONS:**

All questions must be rated. The rating is done at the right of each question by circling either Yes or No. Clinical judgment by the rater should be used in coding the responses. The rater should ask for examples when necessary, to ensure accurate coding. The patient should be encouraged to ask for clarification on any question that is not absolutely clear.

The clinician should be sure that each dimension of the question is taken into account by the patient (for example, time frame, frequency, severity, and/or alternatives). Symptoms better accounted for by an organic cause or by the use of alcohol or drugs should not be coded positive in the M.I.N.I. The M.I.N.I. Plus has questions that investigate these issues.

For any questions, suggestions, need for a training session, or information about updates of the M.I.N.I., please contact:

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F. 75651 PARIS, FRANCE
tel : +33 (0) 1 42 16 16 59; fax : +33 (0) 1 45 85 28 00
e-mail : hergueta@ext.jussieu.fr
**MAJOR DEPRESSIVE EPISODE**

(Ì MEANS: GO TO THE DIAGNOSTIC BOXES, CIRCLE NO IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE)

<table>
<thead>
<tr>
<th>A1</th>
<th>Have you been consistently depressed or down, most of the day, nearly every day, for the past two weeks?</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A2</td>
<td>In the past two weeks, have you been much less interested in most things or much less able to enjoy the things you used to enjoy most of the time?</td>
<td>NO</td>
<td>YES</td>
</tr>
</tbody>
</table>

**IS A1 OR A2 CODED YES?**

<table>
<thead>
<tr>
<th>A3</th>
<th>Over the past two weeks, when you felt depressed or uninterested:</th>
</tr>
</thead>
</table>
| a  | Was your appetite decreased or increased nearly every day? Did your weight decrease or increase without trying intentionally (i.e., by ±5% of body weight or ±8 lbs. or ±3.5 kgs., for a 160 lb./70 kg. person in a month)?  
IF YES TO EITHER, CODE YES. |
| b  | Did you have trouble sleeping nearly every night (difficulty falling asleep, waking up in the middle of the night, early morning wakening or sleeping excessively)? |
| c  | Did you talk or move more slowly than normal or were you fidgety, restless or having trouble sitting still almost every day? |
| d  | Did you feel tired or without energy almost every day? |
| e  | Did you feel worthless or guilty almost every day? |
| f  | Did you have difficulty concentrating or making decisions almost every day? |
| g  | Did you repeatedly consider hurting yourself, feel suicidal, or wish that you were dead? |

ARE 5 OR MORE ANSWERS (A1-A3) CODED YES?

**NO**

**YES * **

**MAJOR DEPRESSIVE EPISODE, CURRENT**

IF PATIENT HAS CURRENT MAJOR DEPRESSIVE EPISODE CONTINUE TO A4, OTHERWISE MOVE TO MODULE B:

<table>
<thead>
<tr>
<th>A4</th>
<th>a</th>
<th>During your lifetime, did you have other episodes of two weeks or more when you felt depressed or uninterested in most things, and had most of the problems we just talked about?</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>NO</td>
<td>YES</td>
</tr>
</tbody>
</table>

**MAJOR DEPRESSIVE EPISODE, RECURRENT**

* If patient has Major Depressive Episode, Current, use this information in coding the corresponding questions on page 5 (A6d, A6e).
MAJOR DEPRESSIVE EPISODE WITH MELANCHOLIC FEATURES (optional)

( MEANS: GO TO THE DIAGNOSTIC BOX, CIRCLE NO, AND MOVE TO THE NEXT MODULE)

IF THE PATIENT CODES POSITIVE FOR A CURRENT MAJOR DEPRESSIVE EPISODE (A3 = YES), EXPLORE THE FOLLOWING:

<table>
<thead>
<tr>
<th>A5</th>
<th>a</th>
<th>During the most severe period of the current depressive episode, did you lose almost completely your ability to enjoy nearly everything?</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
</table>
|    | b | During the most severe period of the current depressive episode, did you lose your ability to respond to things that previously gave you pleasure, or cheered you up?  
**IF NO:** When something good happens does it fail to make you feel better, even temporarily? |
|    |    | **IS EITHER A5a OR A5b CODED YES?** |
|    |    | **€** | NO | YES |

<table>
<thead>
<tr>
<th>A6</th>
<th><strong>Over the past two-week period, when you felt depressed and uninterested:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Did you feel depressed in a way that is different from the kind of feeling you experience when someone close to you dies?</td>
</tr>
<tr>
<td>b</td>
<td>Did you feel regularly worse in the morning, almost every day?</td>
</tr>
<tr>
<td>c</td>
<td>Did you wake up at least 2 hours before the usual time of awakening and have difficulty getting back to sleep, almost every day?</td>
</tr>
<tr>
<td>d</td>
<td><strong>IS A3c CODED YES (PSYCHOMOTOR RETARDATION OR AGITATION)?</strong></td>
</tr>
<tr>
<td>e</td>
<td><strong>IS A3a CODED YES FOR ANOREXIA OR WEIGHT LOSS?</strong></td>
</tr>
<tr>
<td>f</td>
<td>Did you feel excessive guilt or guilt out of proportion to the reality of the situation?</td>
</tr>
</tbody>
</table>

**ARE 3 OR MORE A6 ANSWERS CODED YES?**

**Major Depressive Episode with Melancholic Features Current**
**A. DYSTHYMIA**

({ means: go to the diagnostic box, circle NO, and move to the next module})

If patient's symptoms currently meet criteria for major depressive episode, do not explore this module.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B1</strong></td>
<td>Have you felt sad, low or depressed most of the time for the last two years?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>B2</strong></td>
<td>Was this period interrupted by your feeling OK for two months or more?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>B3</strong></td>
<td>During this period of feeling depressed most of the time:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a</td>
<td>Did your appetite change significantly?</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>b</td>
<td>Did you have trouble sleeping or sleep excessively?</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>c</td>
<td>Did you feel tired or without energy?</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>d</td>
<td>Did you lose your self-confidence?</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>e</td>
<td>Did you have trouble concentrating or making decisions?</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>f</td>
<td>Did you feel hopeless?</td>
<td></td>
<td>YES</td>
</tr>
</tbody>
</table>

Are 2 or more B3 answers coded YES?  

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B4</strong></td>
<td>Did the symptoms of depression cause you significant distress or impair your ability to function at work, socially, or in some other important way?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
B. SUICIDALITY

In the past month did you:

C1 Suffer any accident?
   IF NO TO C1, SKIP TO C2; IF YES, ASK C1a:
   C1a Plan or intend to hurt yourself in that accident either passively or actively?
   IF NO TO C1a, SKIP TO C2; IF YES, ASK C1b:
   C1b Did you intend to die as a result of this accident?
   IF NO TO C1a, C1b, SKIP TO C2; IF YES, ASK C1c:
   C1c Did you intend to die as a result of this accident?

C2 Think that you would be better off dead or wish you were dead?
C3 Want to harm yourself or to hurt or to injure yourself?
C4 Think about suicide?

IF YES, ASK ABOUT THE INTENSITY AND FREQUENCY OF THE SUICIDAL IDEATION:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occasionally</td>
<td>Mild</td>
</tr>
<tr>
<td>Often</td>
<td>Moderate</td>
</tr>
<tr>
<td>Very often</td>
<td>Severe</td>
</tr>
</tbody>
</table>

Can you control these impulses and state that you will not act on them while in this program?

Only score 8 points if response is NO.

C5 Have a suicide plan?
C6 Take any active steps to prepare to injure yourself or to prepare for a suicide attempt in which you expected or intended to die?
C7 Deliberately injure yourself without intending to kill yourself?
C8 Attempt suicide?
   Hoped to be rescued / survive
   Expected / intended to die

In your lifetime:

C9 Did you ever make a suicide attempt?

IS AT LEAST 1 OF THE ABOVE (EXCEPT C1) CODED YES?

IF YES, ADD THE TOTAL NUMBER OF POINTS FOR THE ANSWERS (C1-C9) CHECKED ‘YES’ AND SPECIFY THE LEVEL OF SUICIDE RISK AS INDICATED IN THE DIAGNOSTIC BOX:

MAKE ANY ADDITIONAL COMMENTS ABOUT YOUR ASSESSMENT OF THIS PATIENT’S CURRENT AND NEAR FUTURE SUICIDE RISK IN THE SPACE BELOW: