CLINICIANS' KNOWLEDGE, ATTITUDES AND SELF EFFICACY IN MANAGING DEPRESSION AMONG PEOPLE LIVING WITH HIV/AIDS IN DAR ES SALAAM, TANZANIA

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CLINICIANS KNOWLEDGE, ATTITUDES AND SELF EFFICACY IN MANAGING DEPRESSION AMONG PEOPLE LIVING WITH HIV/AIDS IN DAR ES SALAAM, TANZANIA

By

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A dissertation Submitted in (partial) Fulfillment of the Requirements for the Degree of Master of Medicine (Psychiatry) of Muhimbili University of Health and Allied Sciences

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CERTIFICATION

The undersigned certify that they have read and hereby recommend for examination of the dissertation entitled *Clinicians' Knowledge, Attitudes and Self efficacy in Recognizing and Treating Depression In Public and Private MDH Supported HIV and AIDS Care and Treatment Clinics In Dar es salaam, Tanzania,* in fulfillment of the requirement for the degree of Master of Medicine (Psychiatry) of Muhimbili University of Health and Allied Sciences.

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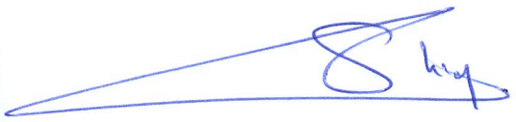
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I, Samuel Lazaro Likindikoki, declare that this dissertation is my own original work and that has not been presented and will not be presented to any other university for a similar or any other degree award.



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DEDICATIONS

To my dearest wife Agnes and my lovely son Losinyari-Prince

To my Mum-Agnes, Dad-Lazaro and my sisters Pamela, Viola, Flora and Harriett

ABSTRACT

Background: People living with HIV/AIDS (PLHA) are significantly more distressed than the normal population, yet psychiatric disorders are commonly under-detected in HIV care settings. Some evidence shows that a high prevalence of mental health co-morbidities, particularly major depressive disorder, occurs in PLHA accessing care at primary health care levels. Depression is a prevalent and disabling, yet potentially treatable illness. Challenges posed by mental health co morbidities to many clinicians include their recognition and diagnosis. Indeed studies show that knowledge, attitudes towards addressing psychological health concerns and ineffective training are important barriers in managing depression among PLHA. Studies also show that simple screening tools, some that have been validated in the proposed study area, have the utility in assisting non-specialized health care providers in assessing for depression in the primary health care context. Identifying issues affecting Health care provider s abilities to diagnose and treat depression in persons living with HIV AIDS is crucial to informing current HIV and AIDS management paradigms.

Objective: To ascertain clinicians knowledge, attitudes, perceived self efficacy and associated determinants in recognition and treatment of depression in PLHA attending HIV/AIDS care and treatment clinics (CTCs) in Dar es Salaam

Study site and design: A descriptive cross-sectional study was conducted between November 2009 and April 2010 in Dar es Salaam. It involved 50 private and public CTCs supported by Muhimbili University, Dar es salaam City health department and Harvard School of Public Health collaboration program (MDH).

Method: A self administered previously used researcher modified questionnaire was distributed to 109 eligible clinicians who work with MDH supported CTCs in Dar es Salaam. Clinicians knowledge in diagnosis and treatment of depression, attitudes attributed to patients as well as perceived barriers and self efficacy in the recognition and treatment of depression were assessed. Data analysis was done using univariate and multivariate statistical analysis

with significant level set at when $p<0.005$.

Results: Of the 109 clinicians with known eligibility, 84 (78%) returned the questionnaire. Of those who returned the forms, 38 (55.8%) were males, 50 (59.5%) were based in public health facilities and most were non physician clinicians 52 (62.7%). Among them 95%, 91.7%, 72.6% and 42% reported exposure to training on ART, adherence counseling, management of mental disorders and psychosocial issues related to HIV respectively. Majority reported correct knowledge on recognition 84 (63.7%) while a third reported correct knowledge in treatment of depression 84 (32.32%). Female clinicians reported higher knowledge on core symptoms for diagnosis of depression 36 (66.96%) than male clinicians 46 (61.56%) $p<0.003$ and physician clinicians were observed to have higher knowledge on treatment of depression 31 (41%) than non physician clinicians 52 (27%) $p<0.005$. Clinicians own attitudes to manage depression was more negative (mean score 1.96, SD 0.90) than those they attributed to patient (mean score 2.14, SD 0.78). Generally clinicians perceived many barriers to recognition and treatment of depression scoring a mean (SD) in policy and guideline 1.89 (1.15) and clinical setting 1.34 (1.1). While clinicians reported perceived self efficacy to be high (mean score 2.87, SD 0.07) it did not vary significantly with attitudes, knowledge or site and individual factors. However self motivation to treat depression was significantly associated with higher perceived self efficacy ($p<0.001$).

Conclusion and recommendations: The recognition and treatment of depression in PLHA remains a challenge for clinicians in CTCs settings. Clinicians negative attitudes, perceived barriers and lack of adequate knowledge in recognition and treatment of depression impede the efforts to address depression in PLHA attending CTCs. Interventions to increase recognition and treatment of depression will need to focus on strategies that enhance clinicians motivation to do so, in-service trainings and use of users friendly tools. These findings are crucial to informing the current gap in addressing common mental problems faced by PLHA attending CTCs.

ABBREVIATIONS

AD	Antidepressant Drug
AIDS	Acquired Immuno-Deficiency Syndrome
AMO	Assistant Medical Officer
ART	Antiretroviral therapy
AUDIT	Alcohol Use Disorder Identification Test
BDI	Beck Depression Inventory
CES-D	Center for Epidemiologic Studies Depression Scale
CIDI	Composite International Diagnostic Interview
CIS-R	Clinical Interview Schedule revised
CNS	Central Nervous System
CO	Clinical Officer
CRPC	Committee on Research and Publications
EPDS	Edinburgh Postnatal Depression Scale
GP	General Practitioner
HAART	Highly active antiretroviral therapy
HANDS	Hospital Anxiety and Depression Scale
HIV	Human Immuno-deficiency Virus
HR	Hazard Ratio
HSCL-25	Hopkins Symptom Checklist-25
ICD-10	International Classification of Disease version 10
IDD	Inventory to Diagnose Depression
IDI	In depth Interview
MD	Medical Doctor

MDH	MUHAS-Dar es Salaam City Health Department and Harvard School of Public Health collaboration
MINI	Mini International Neuropsychiatric Interview
MMed	Master of Medicine
MMed	Master of Medicine
NACP	National AIDS Control Program
NIMR	National Institute for Medical Research
NK	Natural Killer cell
PEPFAR	Presidents Emergency Plan For AIDS Relief
PHQ-9	Patient Health Questionnaire - 9
PLHA	Persons living with HIV and AIDS
PMTCT	Prevention of Mother to Child Transmission
PTSD	Post traumatic Stress Disorder
RA	Research Assistant
SPSS	Statistical Package for the Social Sciences
UNAIDS	The United Nations Joint Programme on HIV/AIDS

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1.0 INTRODUCTION AND LITERATURE REVIEW

1.1 INTRODUCTION

In Tanzania, Persons in Living with HIV and AIDS (PLHA) are treated in formally accredited centers called HIV and AIDS Care and Treatment Clinics (CTCs). The Muhimbili University of Health and Allied Sciences, Dar es salaam City and Harvard School of Public Health collaborative HIV and AIDS Care and Treatment Programme (MDH) supports CTCs services in 22 private and 28 public health services facilities in Dar es Salaam City. Various clinician cadres of health care providers are involved in the management PLHA in CTCs including physician (medical officers (MD)) and non-physician (assistant medical officers (AMOs), and clinical officers (COs)) clinicians.

Common mental disorders in the general outpatient population are high (19%) as assessed in rural setting of Tanzania (1). Mbatia did a study in urban Tanzania using the Depression Attitudes Questionnaire (DAQ) to ascertain status of knowledge, attitudes and practice pertaining to depression among primary health care providers (n=14). This study found that the majority held positive attitudes towards treatment of depression, prognosis and their own involvement in the treatment of depressive patients (2). However, a study evaluating knowledge, attitudes, and practice of health care providers towards PLHA in Tanzania, showed that providers expressed at least one negative attitude towards PLHAs. Among identified discriminatory practices, was denial of services and substandard treatments Yet another study in an urban context in Tanzania showed high self and enacted stigma among hospitalized persons with severe mental disorders (3). In the national HIV and AIDS treatment guideline, a comprehensive psychosocial component is well elaborated however it is not very clear if a specific training package which addresses recognition and treatment of depression and other mental disorders among PLHA will also be required to increase health care providers capacity.

1.2 BACKGROUND

1.2.1 Magnitude of depression among PLHA

Persons with the human immuno-deficiency virus (HIV) disease are significantly more distressed than the normal population, yet psychiatric disorders are commonly under-detected in HIV care and treatment settings (4, 5, 6). Depression in people living with HIV and AIDS (PLHA) is not inevitable, despite the renewed hope generated by new drug therapies. However PLHA with symptomatic acquired immuno-deficiency syndrome (AIDS) are more likely to suffer from depressive episodes resulting from failed hopes and renewed apprehension about disease progression (7). The prevalence of depression in persons with HIV disease, its diagnosis, psychopharmacologic treatments, and the use of psychotherapy pose challenges for many clinicians. Differential diagnoses for depression in HIV disease include, major depression, bipolar disorder, adjustment disorder, bereavement, as well as secondary depressive syndromes arising from HIV encephalopathy, other acute and opportunistic central nervous system (CNS) infections, CNS neoplasm s, substance abuse and medications such as interferon, Sulphonamides, Isoniazid and Efavirenz (8). Despite these challenges, several studies have measured the magnitude of depression in PLHA.

Numerous studies, particularly in the USA, show high rates of depression in PLHA. A recent review, notes that rates of depression in PLHA seemingly range from 1% to 48% worldwide and that rates are generally higher than in populations without HIV disease (7). Much of the variation in observed rates of depression may be due to differences in sample size, duration of measured depressive symptoms (e.g. one week, one month or lifetime experiences), types of population sub-groups surveyed including by age and recruitment locality (for example community versus facility based recruitment with rates being generally higher in the latter) and characteristics of target populations surveyed (such as homosexual males or substance abusers, with rates generally higher in the latter). Furthermore, differences in measures used to assess depression may result in variations in rates. For example, in a national representative sample of PLHA receiving care in the USA, rates of depression measured with a symptom checklist or screening tool were higher at 36% than when a diagnostic tool was used that

derived a lower rate of 22% in the same population (9). Depression symptoms checklists (screening tools) while brief and easy to use in busy clinical settings tend to generally provide higher prevalence estimates than more cumbersome diagnostic measures. More recently the Patient Health Questionnaire (PHQ-9), a nine-item screening tool that includes measures for both occurrence of depressive symptoms and related behavioral impairments secondary to depressive symptoms follows more closely diagnostic rules and is intended to generate more approximate depression diagnoses (10). The Swahili version of the tool has been demonstrated to be valid in the East African setting (11, 12)

There is some evidence that depression occurs with other mental health co-morbidities in PLHA at primary levels of care, and that it is rarely recognized. A cross-sectional study, based in the USA examined the prevalence of three stress related disorders in 210 PLHA receiving primary health care and showed prevalence of 34%, 38% and 43% for post traumatic stress disorder, depression and acute stress disorder respectively (4). There is also some evidence that the prevalence of depression increases with age in PLHA receiving treatment and that psychiatric disorders tend to run a chronic course. In the USA, Kilbourne (13) examined the prevalence of HIV, general medical, and psychiatric co-morbidities by age in 881 PLHA, on HAART and showed that 46% had significant depressive symptoms (> or = 10 on 10-item Center for Epidemiologic Studies Depression Scale[CES-D]) and 21% reported at-risk drinking (> or = 8 on Alcohol Use Disorder Identification Test [AUDIT]). General medical and psychiatric co-morbidities constituted a higher disease burden than HIV co-morbidities for participants aged 50 years and above compared to younger participants. The substantial prevalence of these "non-HIV" co-morbidities suggested an important role for general medical and mental health management of HIV-infected patients. A similar suggestion was made by Olley (14) after follow up of a South African cohort of 65 persons with recently diagnosed HIV over a six month period. The study showed that 56% of patients receiving treatment had at least one psychiatric disorder at baseline, and 48% at six months follow-up. Depression and Post-Traumatic Stress Disorder (PTSD) were the most prevalent disorders occurring at rates of 34.9% and 14.8% respectively at baseline and 26% and 20% respectively at follow-up.

As noted in the South African study reported above, similar high rates of depression as

documented in more developed contexts have been reported amongst PLHA receiving care in middle and low income country settings. In a Brazilian study that recruited 386 patients receiving their first anti retroviral viral (ARV) prescription in public AIDS centers, the Hospital Anxiety and Depression Scale (HANDS) was used to screen for depression and generalized anxiety disorder. The authors showed a 35.8% and 21.8% prevalence of moderate to severe anxiety and depression respectively (15).

In the sub-Saharan Africa context, Monahon (11) showed in 347 PLHA in Kenya recruited from community support groups a 34% prevalence of any depressive disorder measured using the PHQ-9. In out-patients at a primary care facility offering screening services for HIV in Zimbabwe, Sebit (16) recruited a convenience sample of 200 men and women and showed a 71.3% prevalence of psychiatric co-morbidity in those screening positive compared to 44.3% in those screening negative. The commonest psychiatric symptoms/signs ($P<0.05$) in this study were emotional withdrawal, depressed mood, suspiciousness, apparent sadness, reduced sleep and suicidal thoughts (especially among women). Adewuya (17) in Nigeria compared rates of psychiatric co-morbidity in HIV-positive subjects (n=88) and HIV-negative healthy controls (n=87) using a diagnostic tool and found significantly higher rates of 59.1% compared to 19.5% respectively. Subjects with HIV infection were almost 4 times more likely than healthy controls to have a diagnosis of both affective (OR=3.58, 95% CI=1.44-8.94) and anxiety disorders (OR=3.57, 95% CI=1.65-7.72). A cross-sectional study among 465 individuals enrolled into HIV care and treatment services near Cape Town in South Africa used the Mini International Neuropsychiatric Interview (MINI) to assess for prevalence of psychiatric disorders. Overall, the prevalence of depression, Post traumatic Stress disorder (PTSD) and alcohol dependence/abuse was 14% (n = 62), 5% (n = 24), and 7% (n = 35), respectively (18). In a recent cross sectional survey, 220 PLHA attending treatment for HIV and AIDS at a rural clinic in Tanzania were screened using the Clinical Interview Schedule Revised (CIS-R) to derive International Classification of Disease version 10 (ICD-10) diagnoses of mental disorders; 20% were shown to have mental disorders. The most frequent diagnosis was mixed anxiety and depressive disorder (13%) moderate or severe depression occurred in 3% (1). Finally, in South Africa and Tanzania rates of depressive morbidity in pregnant HIV positive

women recruited from settings providing care for prevention of vertical transmission of HIV have been shown to range between 41% - 43 % as assessed using the Edinburgh Postnatal Depression Scale (EPDS) and the Hopkins Symptom Checklist-25 (HSCL-25) respectively (19, 20).

In general, the prevalence of depression in PHLA appears to be high across diverse socio-economic and cultural contexts; depressive symptoms present early often following a diagnosis of HIV infection, they tend to persist over time, and rates of psychiatry co-morbidities tend to increase with age for PLHA on treatment. These findings suggest need for provider knowledge and skills for both recognition and treatment of depression in the HIV and AIDS care and treatment contexts. Komiti (21) in a study of 322 PLHA of mean age 41.4 years, with a depression prevalence of 22%, also assessed the ability of non-mental health medical practitioners in Australia to detect depressive symptoms. Patients were recruited from four general practice clinics specializing in HIV medicine and from an infectious diseases clinic. The study showed moderate agreement between clinician s assessments for depression and results of a self-report measure to detect depression, the Inventory to Diagnose Depression (IDD).

1.2.2 Impact of Depressive morbidity on HIV and AIDS

The importance of recognition of depression in PLHA accessing care is perhaps made imperative by number of studies which show consistent associations between depression and progression of HIV disease and impacts of depression on the abilities of PLHA to adhere to medical recommendations that can have positive effects on quality of life and longevity. These studies are reviewed in the below sections

1.2.3 Depressive disorders and progression of HIV and AIDS

By themselves, immunological and virological markers of HIV progression have not been systematically associated with depression in cross sectional (22, 23) and most longitudinal studies (19, 22, 24). However, Leserman (25) in a follow-up study of gay men with HIV disease reported independent associations between more severe depression and immunological markers of disease progression, specifically declines in CD8+ T cells and CD56+ and CD16+

NK cell subsets. However, there are fairly consistent findings of associations between depressive co-morbidity and poor HIV disease clinical outcomes (WHO clinical stage progression) and increased mortality in longitudinal studies of homosexual males (26, 27) and pregnant women with HIV disease (19). The latter study analyzed longitudinal data from 996 recruited Tanzanian HIV positive pregnant women followed up over 6-8 years. Almost half (57%) of the HIV positive women had symptoms comparable with depression at least once during the follow up period. Controlling for socio demographic variables, psychosocial support and clinical condition at enrolment, depression was associated with an increased risk of disease progression (HIV clinical stages III/IV) (HR) = 1.61, 95% CI 1.28 to 2.03).

In a recent review Benton (28) provides further evidence that suggests the presence of depressive disorder is an important mediator of HIV disease progression. The complexity of the relationship between depression and HIV disease progression is perhaps demonstrated by Rabkin (58) who showed that as HAART availability increased in the USA, a significant decline occurred in the rates of depressive disorder in patients receiving Highly Active Antiretroviral Therapy (HAART). The decline in depressive morbidity, however, better correlated with physical health improvements rather than immunological markers of improved HIV disease outcomes, suggesting impacts of decreased stress as worrying physical symptoms improved in persons with some vulnerability to depressive morbidity.

1.2.4 Depressive disorder and adherence to medical recommendations

Depression may impact on HIV disease progression indirectly through influence on adherence to medical recommendations. Adherence to HAART is imperative for good outcomes in the treatment of HIV and AIDS. Adherence to drug treatments is the second strongest predicator of stage progression and mortality in PLHA receiving care after CD4 count (29). In a USA based study of 1,827 female and 3,246 male drug users receiving HAART for more than 2 months, poor adherence (<95% for at least two prescribed ARV drugs) was associated with female gender and presence of depression. Receiving mental health care in females and being on regular antidepressant medication in males were both associated with better adherence to HAART.

In a chart review of the records of 3,359 PLHA receiving treatment in the USA identified 42% that were depressed and 15% that were using anti-depressant medication (30). Depression was associated with poorer ARV medication adherence and viral load suppression. Patients who took their antidepressant medications (defined by pharmacy refills) had viral suppression control similar to that of non depressed PLHA. These findings supported previous chart review study that showed associations between depression and poor ART adherence and better adherence when depression was recognized and treated (31). No study could be found that assessed the effects of recognition and treatment of depression on HIV disease outcomes.

Limited studies have been conducted that systematically assessed associations between depression and poor antiretroviral therapy (ART) adherence in sub-Saharan African settings. The few available studies show findings similar to those observed in more developed contexts. In Ethiopia, among 400 PLHA receiving ART recruited and followed up over a three month period, a study showed that patients who were not depressed were twice as likely to be adherent than those who were depressed (OR, 2.13, 95%CI, 1.18, 3.81) (32). In Sub Saharan Africa (SSA) contexts, structural barriers to accessing health care services make adherence to scheduled clinic appointments are an important area to address in order to better understand medication adherence. Adherence to clinical appointments is pivotal both for access to anti-retroviral medications as well as adequate monitoring of the treatment of HIV disease. Deribe (33) in Ethiopia conducted an unmatched case control study to compare PLHA who had missed two or more clinical appointments (i.e. had not been seen for the last 2 months) and controls were individuals who had been on ART for at least 1 year and were rated as excellent clinic visits adherers by providers. Of 1,270 patients who started ART, 915 (72.0%) were active ART users and 355 (28.0%) had missed two or more clinical appointments. The latter comprised 173 (13.6%) defaulters, 101 (8.0%) who transferred out, 75 (5.9%) who died, and 6 (0.5%) who restarted ART. Only 38.4% of the defaulters could be traced and negative affects though not systematically investigated are suggested by four of the psychosocial reasons for defaulting that included loss of hope in medication, mental illness, belief in the effectiveness of holy water and lack of food and money for transport.

1.2.5 Other effects of depression on HIV disease

In general while diminished libido is associated with depression in both women and men, research findings on the effects of depression on risky sexual behaviors in PLHA remain inconclusive, with some studies showing lower levels of risk and others reporting increased risk behavior. Depression is widely recognized to be a major cause of impaired work performance, missed work days and general disease burden. In a follow-up study of 141 men with AIDS reviewed twice yearly for three years, the major predictors of unemployment or partial employment in order of influence were financial considerations (disability benefits), mental disorders (past or present diagnosis of depression or dysthymia), medical status (cognitive neuropsychological conditions) and low education (7). Most men unemployed at baseline did not return to work despite stabilized health. Other studies have found similar findings of low return to permanent paid employment in PLHA medically able to work who had suffered a depressive episode (34, 35

1.2. 6 Recognition of Depression

Recognition of depression in HIV and AIDS care and treatment settings: There is some indication that for a significant proportion of PLHA in treatment, the diagnosis of depression is often either missed, or significant depressive symptoms normalized by attending clinicians, as they may be perceived to be a natural reaction to the diagnosis of a life threatening illness. Several studies have explored the utility of simple screening tools in primary care settings for the recognition of depression and or assessment of depression treatment outcomes by non-mental health care specialized health care providers in both developed (36, 37) and developing countries (11, 38, 39, 40).

Levine (36) demonstrated the feasibility and utility of offering the Beck Depression Inventory (BDI), a screening tool to detect depressive symptomatology in HIV positive women in antenatal care setting in the USA; more than half (57%) of women that screened positive for depression received treatment in the prenatal period. Similarly, Kaaya et al., (39, 40) demonstrated that nurse midwives could be trained to administer a validated and adapted version of the Hopkins Symptom Checklist (8 items) for screening for depressive morbidity in

both HIV positive and HIV status naïve pregnant women attending antenatal care at primary health care levels in Tanzania.

However, there is some evidence of lack of access to concomitant mental health treatments despite recognition of depression, in primary care settings. In a study of clients of 21 of 102 General Practitioners (GPs) in an English district, 45.9 % of all patients registered were screened during a three month study. Mental health disorders were detected in 13.3 % of all attendees, the commonest problem being depression (17.7%). Despite 16.3% of those with mental health disorders being identified by the GPs as having service needs that district services could not meet, only 4.4% were referred for specialized psychiatric care (41). Similar difficulties in accessing treatment for recognized depression in primary care has been reported in the context of HIV care and treatment settings. In a USA based study where prevalence of depression was 38% in PLHA, 43% with at least one mental health disorder reported receiving no concurrent mental health treatment (4).

Another USA based study that determined the socio demographic and service delivery correlates of depression under-diagnosis in a national probability sample of HIV-infected persons in care, recruited 1,140 with available medical records data (42). Depression under diagnosis was defined as diagnosed major depressive disorder based on the survey s Composite International Diagnostic Interview (CIDI) findings and no recorded depression diagnosis in medical records. Recruited patients were interviewed with the (CIDI) to establish depression diagnosis; patients medical records data were also extracted. Four hundred and forty eight (37%) had CIDI-defined major depression, and of these, two hundred and three (45%) did not have a diagnosis of depression documented in their medical records. Factors associated with under-diagnosis of depression included having less than a high school education, having Medicare compared with private health insurance and having less than three outpatient visits compared with three or more out-patient visits. These observations suggest the need for better understanding of the barriers to recognition and treatment of depression by non-mental health specialized clinician providers at primary levels of care.

Recognition of depression in general primary care settings: Shao (43) recruited 375 clinicians working at health centre level in the USA, to compare knowledge and attitudes about

depression among physicians (defined as generalists), Internists, Obstetricians-Gynecologists (both cadres defined as non-generalists), and a reference group of psychiatrists. They hypothesized that among the non-psychiatrists, generalist physicians would have more favorable attitudes and greater knowledge about depression than non-generalists. Eighty-two percent of the clinicians working in university-affiliated medical centers responded to 33-item survey questionnaires assessing knowledge and three attitudinal dimensions: attitudes attributed by physicians to patients; physicians' confidence in managing depression (self-efficacy); and physicians' psychosocial orientation. Less than a fifth (14%) of study participants had advanced psychosocial training. As was hypothesized, compared with non-generalists, generalists were more confident in prescribing antidepressants (62% vs 25%), more likely to report that treating depression is rewarding (71% vs 39%), and less likely to refer to a psychiatrist (58% vs 79%). Generalist classification, increased experience, and higher levels of psychosocial training were associated with more favorable attitudes. Knowledge scores were significantly higher for psychiatrists than for non-generalists and generalists. Among non-psychiatrists, correct responses for knowledge items were: treatment efficacy (61%), treatment duration (59%), > or = 5 symptoms to meet DSM-III-R criteria for diagnosis of depression (52%), and prevalence of depression (30%). Among those with incorrect responses, both non-generalists and generalists overestimated the prevalence of depression (52%) and underestimated the efficacy of drug therapy (30%).

Richards (44) determined the effects of prior general practice training in mental health and practice location on General Practitioner (GP) attitudes toward depression and self-confidence in assessing and treating depressed patients attending 52 of 123 Australian divisions of general practice, responding to an invitation to study participation. Four hundred and twenty (69%) of a representative sample of GPs in these practices responded to an anonymous questionnaire that focused on current clinical practice, perceived barriers to care of depressed patients and doctors' self-efficacy for assessing and treating depressed patients. The results showed GPs who had undertaken mental health education and training more often used non-pharmacological treatments; while in general male GPs and those working in rural compared to urban settings more often prescribed medication for depression. GPs without mental health

training more often identified incomplete knowledge about depression as a barrier to its effective management. Urban-based GPs and those with prior mental health training were more confident in the use of non-pharmacological treatments; whilst females overall had more positive attitudes than males, female GPs unexposed to mental health training were least confident in non-pharmacological treatments. The authors concluded that exposure to in service mental health training amongst GPs resulted in more positive attitudes toward depressed patients and confidence in their ability to offer treatment.

Gallo (45) did a study in USA to assess self reported knowledge, attitudes and behaviors of practicing community family physicians regarding identification and management of depression in late life. They found that half of the physicians reported to refer depressed old patients to a psychiatrist. Half of them reported to have self confidence in managing depression. Most physicians were knowledgeable about recognizing and treatment of depression. They conclude that managing depression in late life is still a challenge among physicians.

A similar study done in Bahrain evaluated the diagnosis and management of depression among the elderly in primary care. They used a self administered questionnaire to physicians. They found that, regarding screening for depression, 10.6% (n=14) of clinicians were routinely screening for depression, 76% (n=101) were screening on an occasional basis and 9.8% (n=13) had never screened for depression. They further found that, 29.5% (n=39) of physicians referred persons with suspected depression cases immediately once they were identified, 55.3% (n=96) did not feel confident in treating depression in late life. They concluded that, screening for depression in late life in primary care is not sufficient leading to low detection rate of cases. They identified lack of training, short consultation time, and the absence of clear guidelines to be barriers to proper diagnosis. (46)

Sagduyu (47) did a study in Turkey to learn more about general practitioners knowledge attitudes and social distance to depression. They found that, GPs with less social distance held more positive attitudes towards depression.

In the USA, Williams et al (48), examined primary care physicians approach to recognition and management of depression. They also determined the effects of physicians specialty and

degree of capitation on barriers to care for three common depressive disorders. They administered questionnaires to 3,375 randomly selected primary care physicians, and showed primary care physicians reported recognition and evaluation practices related to their most recent case as follows; recognition by routine questioning or screening (9%), diagnosis based on the formal criteria (33.7%) or medical causes of depression (84.1%). They concluded that, a substantial proportional of primary care physicians reported diagnostic and treatment approaches that were consistent with high quality care.

1.2.7 Management of Depression in the context of HIV and AIDS

Depression is a prevalent, disabling, yet potentially treatable illness commonly co-morbid with HIV/AIDS. A review of double-blind placebo-controlled trials and open label studies suggest that PLHA who are depressed respond positively to medical treatment of depression in the same way as physically healthy depressed patients (49, 50). Antidepressant medications shown to be efficacious in this regard include (Imipramine, Sertralazine, Fluoxetine, Nefazodone, Citalopram, Bupropion, Mirtazaone and Venlafaxine). Because of the high frequency of depression co morbid with HIV, and the association of depression with important self-care behaviors, identification of efficacious treatments for depression has the potential to improve both overall quality of life and, potentially, health outcomes. (49).

Few studies have examined the effectiveness of psychotherapeutic interventions in PLHA with depressive disorder. Belfour (51) randomized PLHA attending an HIV clinic in Canada for at least 6 months and prior to initiation of HAART to a four session psycho-education intervention (N=30), designed to promote psychological readiness and treatment adherence, or a control condition where standard care within a multi-disciplinary team of providers was received (N=33). Four weeks after baseline measures were collected, patients in the intervention arm scored significantly higher in mean readiness to begin treatment, and amongst those depressed at baseline (n=27), those in the intervention arm (n=15) had significantly lower depression scores than control arm participants.

In a recent review of 21 stress management interventions, PLHA were offered as 6-20 sessions (mode 10) 9/21 had a follow-up period of 3 months or more. Most interventions were

delivered as group interventions and were based theoretically on Lazarus and Folkman s transactional model of stress and coping in which cognitive and behavioral interventions techniques were designed to modify participant s strategies to effectively self manage stress. Ten of 21 studies assessed depression as an outcome and found significant reductions in depressive symptoms in participants in the stress management intervention compared to the control arm (52).

Most of the studies however, were based in developed country contexts, focused on gay men, employed brief follow-up periods and not all of them had depression as a primary outcome. There is some evidence that psychotherapeutic interventions may be efficacious for the management of depression in the African context. Bolton (53), in a high HIV prevalence community in South-Western Uganda conducted a randomized controlled group interpersonal psychotherapy intervention amongst consenting persons with depression-like illnesses. The intervention comprised 90 minute weekly group sessions for 16 weeks facilitated by trained local care providers. Outcomes including scores on a validated screen for depressive symptoms (38) were assessed at six months follow up and showed mean reduction in baseline depression scores in intervention compared to control participants of 17.5% (n=107 of 116 consenting) versus 3.6%(n= 117 of 132 consenting) ($p<0.001$). Rates of depression post intervention in the two arms were 6.5% and 54.7% ($p<0.001$) respectively; these results remaining statistically significant in an intention-to-treat analysis.

1.3. CONCEPTUAL FRAME WORK

This study will use Bandura s social cognitive theory to describe three of the four main determinants of behavior described by the theory (54) 1) Self efficacy (beliefs about one s ability to perform a behavior); where the clinician s perceived self efficacy to recognize and treat depression in patients with HIV and AIDS will be determined. 2) Outcome expectancies (beliefs concerning the anticipated outcome of performing the behavior); the attitude attributed by the clinicians to the patients in recognizing and treating depression, attitudes being the outcome expectation. 3) Impediments or barriers (to perform a behavior) where we will learn more about clinicians perceived barriers to managing depression amongst patients with HIV and AIDS. 4) Proximal goals (related to the behavior). Of these determinants, self efficacy occupies a pivotal role in predicting behavior. Efficacy beliefs influence the acquisition of knowledge on which skills are founded, regulate motivation by determining proximal goals and the commitment to achieve those goals, and influence the perceived outcomes expected from the behavior.

2.0 STATEMENT OF THE PROBLEM

In Tanzania as is the case for the rest of SSA, HIV and AIDS is highly prevalent with rates estimated at between 5% and 10% (55). Many studies show high prevalence of co morbid psychiatric disorders in PLHA in prevention of mother to child transmission (PMTCT) settings or in those receiving treatment, depression being the most prevalent. Depression has been associated with more rapid clinical progression of HIV disease, reduced adherence to medication, reduced quality of life and higher mortality. Studies elsewhere show that psychotherapy, psychopharmacology or both are effective treatments for depression in PLHA. National treatment guidelines for HIV and AIDS in Tanzania recommend both recognition and treatment of depression; however the question is whether available treatment options are offered to PLHA receiving care. Knowledge of existing barriers to the recognition and treatment of depression among PLHA receiving care and treatment will be crucial to informing current comprehensive management paradigms and influencing pragmatic actions in policy guidelines and training of health care providers to incorporate the psychosocial component in their HIV and AIDS management practices.

3.0 RATIONALE

Depression is the most common co-morbid condition among PLHA and has potentially severe life debilitating consequences. This makes it imperative for attending clinicians at CTCs to have the necessary knowledge and skills for early recognition and treatment of depression. The proposed study among clinician participants intends to assess the gap in knowledge on clinician s ability to recognize and treat depression in PLHA accessing CTCs.

4.0 STUDY OBJECTIVES

4.1 Main objective

To determine clinicians knowledge, attitudes, self efficacy and associated determinants in recognition and treatment of depression in PLHA at CTCS supported by MDH in Dar es salaam

4.2 Specific objectives

1. To determine the level of clinicians knowledge of core depressive symptoms, clinical syndromes and treatment of depression.
2. To determine the attitudes of clinicians towards patients with depressive symptoms and to treating depression
3. To assess clinicians confidence in their abilities (perceived self efficacy) to recognize and treat depression
4. To determine the association between clinicians knowledge, attitudes and level of perceived self efficacy to recognize and treat depression in PLHA
5. To describe clinicians perceived barriers and facilitators to recognizing and treating depression in PLHA.

5.0 RESEARCH QUESTIONS:

To what extent do clinicians at MDH supported CTCs in the Dar es Salaam Region feel confident in their ability to (self efficacy) recognize and treat co-morbid depression in PLHA. What factors influence their perceived self-efficacy in these regards? Level of professional training? Exposure to in-service trainings? Type of health service in which they work (private versus public), their gender? Attitudes or knowledge?

- What are the attitudes of clinicians towards patients with depressive symptoms and to treating depression in patients with HIV and AIDS?
- What is the level of knowledge of clinicians of core symptoms of depression and related syndromes in patients with HIV and AIDS?
- What is the level of knowledge amongst clinicians about treatment of depression in patients with HIV and AIDS?
- Is there an association between clinicians knowledge, attitudes and perceived self efficacy to recognize and treat depression patients with HIV and AIDS?
- What are the facilitators and barriers that influence clinicians abilities to manage depression in patients with HIV and AIDS?

7.0 METHODOLOGY

7.1 Description of the study stetting

The study was conducted in Dar es Salaam City CTCs. Dar es Salaam is the largest commercial city in Tanzania with an estimated population of about 4,000,000 people. Most of the CTCs in Dar es Salaam are supervised by MUHAS-Dar es salaam City Health Department and Harvard School of Public Health MDH collaboration which is a USA Government funded programme under the Presidents Emergency Plan for AIDS Relief (PEPFAR). MDH supports HIV and AIDS Care and Treatment Services in 22 private and 28 public health services facilities and each clinic is served by one to six clinicians.

7.2 Study design

A descriptive cross-sectional, mixed data collection methods study was conducted between November 2009 and April 2010. A formative phase collected information from key informants on experience using the survey tool during its piloting as well as comparing and contrasting experience of clinicians cadres on barriers and facilitators to recognition and treatment of depression. This was followed by a quantitative survey.

7.3 Study population

Clinicians who work in all MDH supported CTCs in Dar es Salaam. These were from 21 hospital-based and 29 health center or dispensary-based CTCs.

7.3.1. Inclusion criteria Qualitative

Inclusion criteria for participants in the in depth interviews based in three district hospital CTCs and one health centre. Five clinicians who were able to provide time and willing to participate in the interview selected after informed consent process.

7.3 2. Inclusion and exclusion criteria Quantitative survey

Inclusion: Clinicians

- With either a medical degree with or without a postgraduate degree in medicine (Physician clinicians)

- With either an advance diploma in medicine (AMO) or diploma in medicine (CO) - (non physician clinicians)
- Who worked in Dar es Salaam MDH supervised CTC
- Who consented to participate in the study

Exclusion: Clinicians
- Who did not consent to participate
- Who do not work directly as prescribers in CTCs

7.4 Sample Size Estimation

A convenient sample of all clinicians working in MDH supported CTCs from both private and public sectors present at the time of data collection were eligible and recruited to participate in the study. During the data collection period there were 109 practicing clinicians in the proposed study sites. In this study the level of significance of variance was 0.05 and the considered sample size for this study was 109.

7.5 Sampling procedures and data collection

7.5.1 Formative pilot phase

Qualitative: Five clinicians representing physician- clinicians (3 MDs, one male and two females) and Assistant Medical Officer (2 AMOs, one male and one female) who showed willingness were selected to participate in depth interviews. The qualitative component in addition to collecting information on clinicians experience with the survey tool explored and compared and contrasted clinicians responses to questions of the barriers and facilitators to recognition and treatment of depression. Clinicians perceived barriers to treatment of clinical significant emotional distress were the main theme and it was used together with survey pilot to inform the questions in the quantitative survey

Quantitative: During the formative phase we piloted the clinicians survey tool amongst randomly selected 7 physician-clinicians and 10 non physician-clinicians that were not based in CTCs. After the consent process, participants were asked to fill in the survey tool and comment in writing or verbally on any areas of concern, when filled questionnaires were picked up by the investigator or by research assistants.

7.5.2 Study survey phase

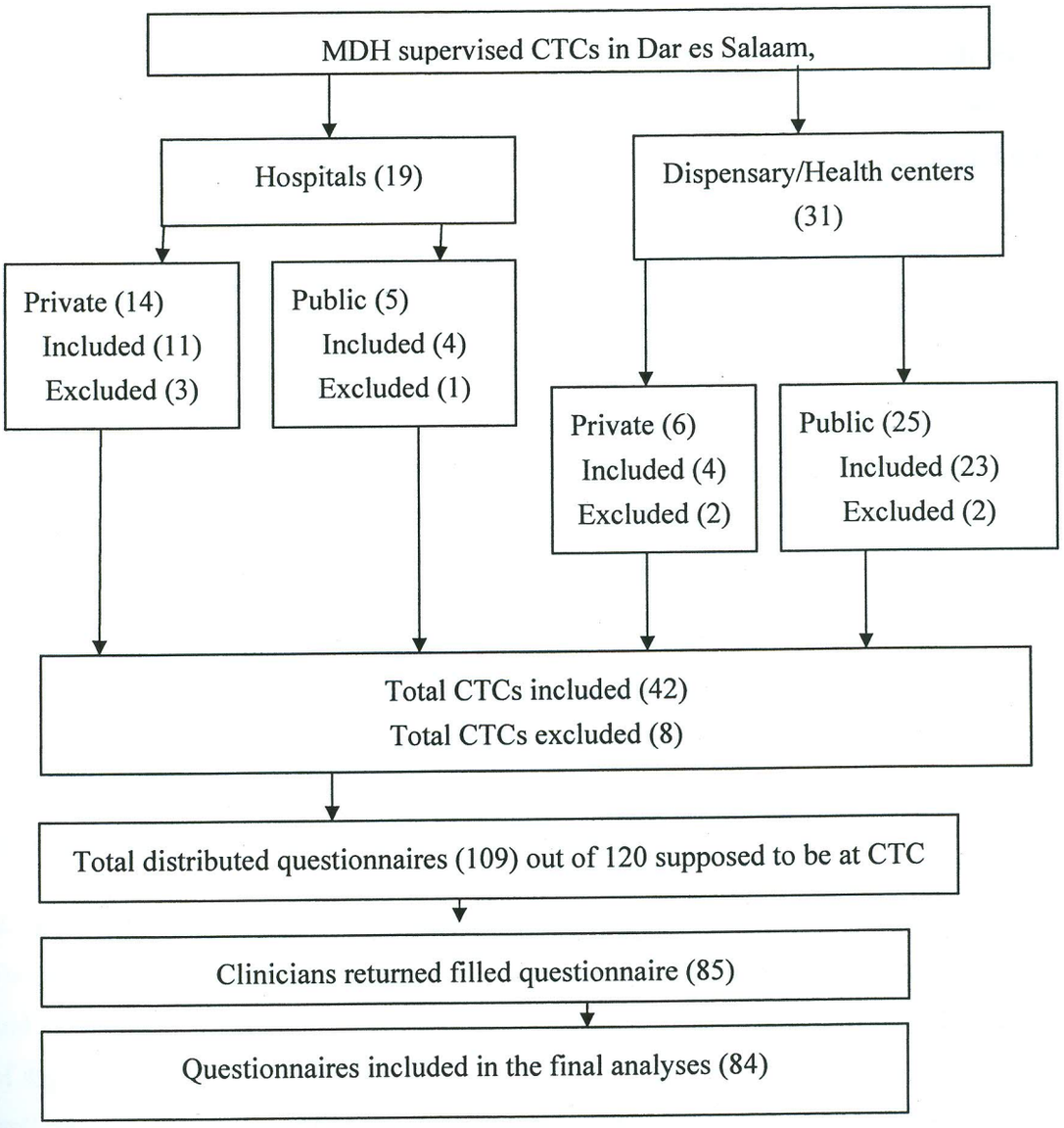
Fifty MDH supervised CTCs in Dar es Salaam were visited, including hospitals (n=21) and health center/dispensaries (n=29). We verbally informed facility executive officers about the aims of the study and formally requested to approach their employees for participation in the study. With the help of the site manager, we counted the number of clinicians at each site and distributed the same number of envelopes containing the informed consent forms and survey tools. The data was collected for period of four months.

Among the 50 CTCs, 14 of 19 hospitals visited were private and 5 were public and amongst dispensaries or health centers visited, 25 were public and only 5 were private. Only 42 (84.0%) health facilities were included in the survey, 8 CTCs were excluded due to administrative difficulties (2 public health facilities), closure of the facilities (1 private and 1 public health facility), refusal to participate (2 private health facilities) and either clinicians were too busy or not Swahili speakers (2 private health facilities).

List of all clinicians working within recruited public and private MDH supported CTCs was obtained from the MDH management. After acquiring written permission to approach clinicians, structured self administered questionnaires were distributed to clinicians in the mapped sites in Dar es Salaam.

CTC site managers were requested in two separate MDH routine meetings to inform all the clinicians in their sites about the study and their support solicited for the distribution of informed consent letters and the survey tools. Research assistants scheduled appointments for visits to each site and for pickup of filled forms. Filled forms were collected during each visit and extra consent forms and survey tools were provided for those who had misplaced or had not received them when first distributed. Subsequent telephone calls to CTC site managers were made for them to remind clinicians during clinic meetings to fill the questionnaire in sites where response rates were noted to be poor during scheduled RA questionnaire pick up visits.

Figure 1. Sampling Procedure and Data Collection quantitative survey



7.6 Study Instruments

7.6.1 Qualitative

An unstructured interview guide was used to explore clinicians experiences with the survey tool with three informants was well as perceived barriers and facilitators to recognition and treatment of significant emotional distress. The in-depth interviews were conducted after the informants had filled the clinicians survey tool.

7.6.2 Quantitative

The quantitative part of this study used a self administered questionnaire. The tool previously used by Shao et al (1997) was adapted and modified by researcher using the qualitative as well as quantitative information from pilot testing of the tool. Additional questions were added to the tools to ensure it addressed local concerns given the variability in clinician training. Measures included:

i. Sociodemographic characteristics

The first part of the questionnaire assessed individual clinicians characteristics including age, sex and questions on level of professional training and exposure to training on psychosocial aspects of HIV care and treatment this included ART, adherence counseling and psychosocial trainings, and training in the management of mental disorders. Finally this part also assessed the types of health facilities in which clinicians worked.

ii. Level of Knowledge on recognition and treatment of depression

To assess levels of knowledge, clinicians were asked to respond to 30 items about diagnosis and treatment of depression. Nineteen items measured levels of knowledge for the recognition of depression including symptoms of depression and core symptoms required for diagnosis as well as exclusions. The Shao et al (1997) tool asked participants to mention as many as possible symptoms that were needed to meet Diagnostic and Statistical Manual for diagnosis version III (DSM III) criteria for depression. We modified the question by requiring clinicians to indicate symptoms that would meet the International Classifications of Diseases version 10 (ICD 10) criteria for depression and clinicians were required to tick whether each symptom

listed was true, false or if they did not know. ICD 10 criterion for depression was preferred because it is the illness/disease classification system used in the local setting. Eleven items assessed levels of knowledge on treatment of depression, including common antidepressants drugs (AD) [5 items], ADs with fewer side effects [2 items], ADs interactions with anti retroviral drugs (ARVs) [1 item], duration of satisfactory treatment of depression and AD treatment [1 item]. And the rest of questions assessed knowledge base on index of suspicious for treating depression [2 items]. This section had 11 items that were similar to those in the adapted tool. Changes were made on types of medication, asking only for those which were relevant and commonly available in the local setting. Extra questions were added to measure knowledge on the drug interactions between ARVs and ADs to suit a CTC setting.

iii. Clinicians' attitudes

This part of the questionnaire collected information on clinician s attitudes attributed to patients about recognition and treatment of depression using items from the tool previously used by Shao et al (1997). Study participants were asked to rate on a 5-point Likert scale the extent to which they agreed or disagreed to 10 opinion statement. Those statements included injunctive norms for example patients exaggerate symptoms, as well as subjective norms such as I prefer to treat physical problems first then before addressing psychosocial concerns,

iv. Self efficacy

To measure clinicians self efficacy to recognize and treat depression, clinicians were asked to indicate the extent to which they agree , disagree and neither agree or disagree on the following five items. I am confident that I will be able to make a diagnosis of a depressive episode , I am confident that I will be able to communicate the diagnosis of depression with my patients , I am confident that I will be able to discuss with my patients drugs used to treat depression and what improvement are to be expected , I am confident that I will be able to discuss with my patients potential side effects of AD , I am confident that I will be able to discuss with my patients potential ADs and ARVs interactions and how to address them in their treatment .

v. Barriers and facilitators

The survey tools asked clinicians items that seemed to be barriers and facilitators to recognizing and treating depression. The clinicians were to indicate to what extent they agreed , disagreed or neither agreed or disagreed to seven items: Presence of clear policy on diagnosing and treating depression ; presence of clear guidelines on diagnosing and treating depression ; adequate psychosocial training and orientation ; a well set clinic structure that allows for diagnosis and treatment of depression ; a clear depression care and treatment system ; enough self motivation and enough time that allows for diagnosis and treatment of depression . Item five a clear care and treatment system was removed because it was found to correlate highly with item four a well set clinic structure .

7.7 Pilot Testing of the quantitative instruments

The English version of the tool was translated to Swahili by experienced doctors who work in a mental health setting. The Swahili version was independently back translated to English. A translation panel meeting reviewed both English versions and used a review and discussion of discrepancies between the two to finalize the Swahili version in a manner that ensured items used retained the same meaning as in the original English version. The instrument was pilot tested in one phase. A convenient sample of 20 non CTC clinicians at the three Dar es Salaam municipal hospitals were provided with the questionnaire to fill, among these 17 filled and returned the questionnaires. They were also requested to identify items they found difficult to understand and items which required more clarity. Pilot testing was also used to estimate clinicians response rate and to examine items for sufficient response variability.

On average participant used 45 minutes to complete the questionnaire. However, research assistants reported long wait times for clinicians to find time to do so. This information informed a strategy to distribute forms through site managers, utilization of reminders cues and giving specific times for picking up filled forms during the main study. Preliminary assessment of responses also explored questions that were ambiguous and internal consistency of various scales as a measure of reliability. Questions about duration of training, years spent in basic clinical training and questions which lead to multiple responses were rephrased to add

clarity, reduced ambiguity and ensure they captured the desired responses. The internal reliability of the knowledge, attitudes and self efficacy scales were assessed. Factor analysis was used to explore constructs within these scales from a statistical point of view and no items were reduced on the basis of results of the analysis of scale psychometric properties.

7.8 Recruiting and Training of Research Assistants

Four research assistants (RAs) were recruited, orientated to the study protocol, tools and familiarized with the data collection methods including participants recruitment through consenting process. Three of the RAs were intern medical trainees and one was a social scientist. Each RA was trained for two days prior to being involved in the data collection procedures.

7.9 Data analysis

7.9.1 Qualitative interviews

The analysis of the qualitative data began as soon as data was collected by reading through the transcripts and coding the data by making segment of text into themes that are of interest that addressed barriers and facilitators to recognition and treatment of depression. Data was summarized by manual coding and analysis. Findings of the qualitative was used to generate questions that was useful in further refining items in the survey tool addressing barriers and facilitators.

7.9.2 Outcome measure (Self efficacy)

To respond to the objective three which address an outcome measure (dependent variable), the scale for measuring perceived self efficacy (5 items) was assessed for internal consistency (reliability) using Cronbach s alpha and construct validity using factor analysis. Factor analysis performed on the 5 items used principle component analysis with varimax rotation to extract components statistically emerging with Eigen values of more than 1 for interpretation of the underlying construct given items that clustered within the component. Items with component matrix rotation scores of 0.4 or higher in all the constructs were considered relevant for describing dimensions of perceived self efficacy and items with less that 0.4 were

disregarded. The psychometric properties of the five items assessing self efficacy are summarized in table 1. Factor analysis resulted in one component with Eigen value of 2.78 that cumulatively explained 55.7% of the total variance in the five items, suggesting a coherent construct emerged of perceived self efficacy. The five items were summed and a mean score computed such that higher scores on the perceived self efficacy scale indicated higher self efficacy. The scales mean score and standard deviation (SD) was 2.87 (0.67) with a range from 0-4. The items were statistically reliable as internal consistency was good as shown by Cronbach s alpha estimates of 0.78. Univariate variations in mean self efficacy scores with individual, site factor as well as knowledge and attitudes were explored. Student s T test and F estimates were used to determine significance of variations with categorical and continuous independent variables respectively. The perceived self efficacy scale was not normally distributed hence it was used in multivariate analysis as a dichotomized variable. Scores above the mean were considered higher perceived self efficacy and scores below mean were considered lower self efficacy.

7.9.2 Predictors of interest

Sociodemographic and site factor characteristics: In preparation of demographic measures for analysis, sex was dichotomized as male and female, clinicians level of professional training was combined to form two categories (physician-clinicians and non physician-clinicians), responses to exposure to different trainings were dichotomized as yes or no, as were personal experiences (measure of social distance) with depressive illness occurrence amongst friends, relatives or the self. Two site factors were measured including whether the clinician was based in a public/private type of facility or in at a Hospital/health centre or dispensary level of care.

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Table 1. Factors analysis of the perceived self efficacy towards recognition and treatment of depression (N=73)

Self efficacy [1]	Items Loadings [2]	mean (SD)[3]
Factor 1: Clinicians perceived self efficacy in the recognition and treatment of depression construct; Explain 55.7% of variance (5 items). EV 2.78		
I am confident that I will be able to discuss with my patients potential side effects of antidepressants	0.83	2.69 (0.98)
I am confident that I will be able to discuss with my patients drugs used to treat depression and what improvements are to be expected and when	0.0.83	2.79 (0.91)
I am confident that I will be able to communicate diagnosis of depression with my patients	0.72	3.16 (0.72)
I am confident that I will be able to discuss with my patients potential antidepressant /antiretroviral interactions and how to address them in their treatment	0.71	2.42 (1.23)
I am confident that I will be able to make a diagnosis of a depressive episode	0.64	3.23 (0.57)

1. Cronbach s alpha 0.78
2. Extraction method: principal components analyses with no rotation
3. Overall scale mean (SD) 2.87 (0.67)

Knowledge: To respond to the first objective to determine level of knowledge for diagnosis and treatment of depression ; for all the knowledge items (n=30), correct responses were coded 1 and incorrect responses 0 during data entry. Sum scores were computed for the total knowledge scale (0-100) and for such scale that included level of knowledge for recognition of depression (0-100) and for treatment of depression (0-100). Mean scores for level of knowledge and 95% Confidence intervals were reported. Furthermore items in the subscales scored were also analyzed using analysis of variance (ANOVA) and F estimates with related p values reported.

Attitudes: To respond to objective two to determine the attitudes of clinicians towards

recognition and treatment of depression . The scale items used to measure attitudes (10 items) were assessed for internal consistency (reliability test) using Cronbach s alpha and construct validity using factor analysis. Factor analysis was conducted using principal component analysis with varimax rotation to extract the components statistically emergent with Eigen values of more than 1 for interpretation of underlying constructs. Items with component matrix rotation scores above 0.4 in all the constructs were considered relevant for describing dimension of attitudes towards recognizing and treating depression and those below 0.4 were disregarded. The mean scores of the constructs as well as pattern of distribution were examined as was their utility as continuous or categorical variables in subsequent analyses.

Psychometric properties are summarized in table 2. Scale analysis for all ten items revealed acceptable internal consistency (Cronbach s alpha = 0.53). Items were scored from 0-4 with the high score indicate more positive attitudes. Reliability analysis showed one item had low correlation with the total item score and was removed. Two items; treating depression is an aspect of practicing medicine that I find rewarding and I have ability to treat depression stood alone in principal components analysis measures of willingness to treat depression and self efficacy respectively. The later was endorsed by anti image correlation matrices which showed that a measure of sampling adequacy (MSA) was 0.513 which is above 0.5. Then it was retained as an individual variable in subsequent analyses; while the latter was discarded as it correlated highly with several self efficacy scale items and was considered redundant. The resulting seven attitude items had adequate internal consistency with Cronbach s alpha 0.55. Principal component analysis of the seven items extracted two components with Eigen Values (EV) greater than one, which cumulatively explained 48% of variance. The emergent constructs were theoretically meaningful. The first construct described clinicians injunctive norms clinicians attitudes towards the on recognition and treatment of depression that were attributed to patients. The second construct described subjective norms - clinicians own attitudes on recognition and treatment of depression. The internal consistency for injunctive and subjective norms was both fair with internal consistence of alpha 0.55 and 0.52 respectively.

Table 2. Factor analysis of the items measuring attitudes toward recognition and treatment of depression (N=84)

Attitude Items [1]	Item Loadings[2]	Mean (SD) [3]
Factor 1: Injunctive norms: Attitudes attributed by clinicians to patients on receptiveness to diagnosis and treatment of depression construct; Explain 24.9% of variance (3 items). EV 1.74		
Patients with depression may have persistent physical symptoms	0.53	3.38(0.85)
Most patients are receptive to a diagnosis of depression	0.75	2.11(91.12)
Most patients are receptive to taking ADs	0.80	2.43(1.21)
Factor II: Subjective norms: Clinicians attitudes on diagnosis and treatment of depression construct; Explain 23.28% of variance (4 items). Eigen value 1.63		
Typically depressed patients exaggerate symptoms	0.47	1.38(1.06)
Prefer to refer non suicidal depressive patients to a psychiatrist	0.60	1.32(1.37)
Assigning a diagnosis of depression in stigmatizing	0.67	2.88(1.44)
Priority should be to treat medical problems first then psychosocial problems	0.79	2.24(1.65)

1. Cronbach s alpha 0.55,
2. Extraction method principal components analyses, rotation method varimax with Kaiser normalization
3. The mean (SD) for factor 1: 2.14(0.78) and factor 2: 1.95(0.90)

The injunctive norms subscale mean score (SD) was 2.63 (0.77) and the score range was 0-4 and for subjective norms the subscale mean score (SD) was 1.95 (0.89) with a score range of 0-4. Attitudes were not normally distributed hence used as a categorical variable in multivariate analyses. Scores above the mean were categorized as positive attitudes and scores at and below the mean more negative attitudes.

Perceived barriers and facilitators: The scale for measuring perceived barriers and facilitators (7 items) were assessed for internal consistency (reliability) using Cronbach s alpha and construct validity using factor analysis. Factor analysis used on theses scales used principal component analysis with varimax rotation to extract the component that statistically emerged from the scale with Eigen value of more than 1 for interpretation of constructs. Items with component matrix rotation scores of more than 0.4 in all emergent constructs were considered relevant for describing dimensions of barriers and facilitators for recognizing and treating depression while those below 0.4 were disregarded. The mean scores of the constructs as well as pattern of distribution were examined as was their utility as continuous or categorical variables in further analysis. Psychometric properties are summarized in table 3. Principal Component analysis demonstrated that items on the scale explained 77.8% of variance in the perceived barriers and facilitators. Two constructs were factored out with Eigen value of more than 1 and item factors scored more than 0.4. One item was removed as it was observed to highly correlate with another item measuring the clinic structure and set up. The first component described a policy and guidelines construct while the second described a clinic setting construct; the two representing dimensions of the barriers and facilitators for recognition and treatment of depression scale. Higher mean scores on these subscales reflected less perceived barriers. The policy/guideline subscales was internally consistent (Cronbach s alpha 0.77) and had a mean score (SD) of 1.89 (1.15) with a score range of 0-4. The clinical setting subscale was equally internally consistent (Cronbach s alpha 0.87) with a mean scores (SD) of 1.34 (1.1) and range in scores of 0-4.

Table 3. Factor analysis of the items measuring perceived barriers and facilitators toward recognition and treatment of depression (N=84)

Perceived barriers and facilitator item [1]	Item Loading[2]	Mean +/- SD [3]
Factor 1: Policy and guidelines on diagnosis and treatment of depression construct; Explain 18.9% of variance (2 items). EV 1.14		1.89 (0.15)
There is clear policy that direct detection and treatment of depression	0.86	1.92(1.21)
There is clear clinical guidelines that direct detection and treatment depression	0.91	1.86(1.27)
Factor II: Clinical setting to allow diagnosis and treatment of depress construct; Explain 58.9%of variance (4 items) EV 3.53		1.34 (0.11)
Adequate psychosocial training and orientation	0.74	1.45(1.23)
Well set clinic structure that allows recognition and treatment of depression	0.80	1.48(1.29)
Having enough self motivation that allows recognition and treatment depression	0.85	1.14(1.18)
There is enough time that allows recognition and treatment of depression	0.89	1.29(1.22)

1. Factor II Cronbach s alpha 0.89
2. Extraction method Principal components analyses, rotation method varimax with Kaiser normalization

7.10 Data management

Soon after data collection, all questionnaires were checked for completeness. The responses to all the questions were checked and any inconsistencies were noted and corrected. Data entry, cleaning was done using SPSS for Windows. The analysis was done using SPSS (version 12) for Windows.

7.11 Statistical analysis

Univariate analysis: Cross tabulations and chi square estimates were used to determine variations in self efficacy scores by risk factors or potential predictors. These included selected individual factors, site factors, knowledge on both recognition and treatment of depression, and attitudes (injunctive and subjective norms). Strengths of associations were assessed using odds ratios (OR) that are reported with their related 95% confidence intervals (95% CI); p values are used to determine significance of variances and are also reported. Associations between clinicians knowledge, attitudes and selected individual and site factors were also determined using comparisons of means, with F score estimates and related p-values reported to assess the significance of variance. Clinicians individual experience with depression, motivated to treat depression, knowledge on recognition, knowledge on treatment and injunctive norms were identified to be included in the multivariate analysis using a predictor selection criteria of those with variances at p values less than 0.25.

Multivariate analysis: A backwards logistic regression method was used to determine the strengths of associations of the outcome measure (self efficacy) and potential predicators identified in univariate analyses. A stepwise method was used because the study design did not allow for causality to be inferred and also this was not the main focus of this exploratory study aimed at both informing interventions and generating questions for future research. Statistical significant was considered when p-values were less than 0.05.

7.12 Ethical considerations

Ethical and research clearance to conduct the study was sought from MUHAS University Research and Publications Committee (CRPC). Dar es Salaam City Health Department Municipal Medical Officers for health granted us permission to access all the CTCs in Dar es

Salaam. The MDH management also granted permission to access the CTCs under their supervision by a written letter of introduction. All participants were informed about the purpose of the study and requested to participate in the study with the written consent. No emotional or physical harm was anticipated to the research participants. All participants were informed about the purpose of the study and requested their participation by to filling in the written consent form. It was made clear at all times that participation was voluntary and that they were free to either accept or refuse to participate. It was also made clear that at that time they were free to withdraw their participation from the study and that they are free not to answer any question if they wished not to do so.

Clinicians were also assured of confidentiality through anonymity on the questionnaire would not bearing their or site s identifying information. Each data collection form instead identified participants by a unique identification number assuring that information provided could not be linked to the participant, by the research team.

Each clinic site included in these analysis provided permission for clinicians to be approached by the study team. Data was collected anonymously with no names documented on the forms or in the study register. Participants were informed about the study in two ways. Firstly on overview of the study was provided to them by the site managers after permission had been provided to access potential study participants. Secondly RAs approached clinicians to provide additional information about the study aims and information on how consenting and what participation would entails.

Finally, the consent and survey forms were distributed by RA and site managers and a date scheduled for pick up of the forms.

8.0 RESULTS

8.1 Qualitative phase

This section focuses on barriers and facilitators to recognition and treatment of depression in HIV clinics settings. Participants mentioned several barriers and facilitators which fall under inadequate clinicians communication skills, clinic set up and lack of essential antidepressants, inadequate clinician time spent for each patient as a result of congested clinics and in-service training for psychosocial issues.

8.1 1 Inadequate clinicians communication skills

Clinicians reported that relatives and patients being less expressive about depressive distress were perceived as barriers in the recognition and treatment of depression; the following respondents explain;

> *"we try to talk to them but most of the time they are not expressive* Male MD

> *"... you know because our patients, you may say that there is an issue of caretakers, because we can't get the enough information about the patient "Male MD*

From above the respondents suggest that, inability of patients and relatives from whatever reasons to express depressive distress if a barrier to recognize and hence treat depression in CTCs.

8.1.2 Clinic set up and unavailability of antidepressants

Overall clinic set up and unavailability of antidepressants medications were perceived to be barriers in the recognition and especially treatment of depression; this is exemplified by responses from the clinicians;

> *"So even if we had an ability of diagnosing ...at the end of the day we find out that we don't have medications for that particular diagnosed disease" Male MD"*

The respondents seem to suggest that the current clinic set up especially the lack of antidepressants is a barrier to treat depression.

8.1 3 Clinicians inadequate time

Clinicians having inadequate time came up as one of the barrier in a busy CTCs setting to recognize and treat depression

> *"Most of the obstacle that we are facing is overcrowding of patients. You may find that a person is in hurry, and a patient comes with typical presentation and symptoms, but because there is only one doctor and there is along queue waiting for that doctor". Female MD*

Above respondent from different sex and level of education agree that, the current CTC setting has a lot of patient and hence heavy load for clinicians to be able to focus on giving attention to psychosocial issues. And this was widely perceived to be a barrier to recognition and treatment of psychosocial issues.

8.1 4 Guidelines and other directive tools

Having guidelines for direction was perceived by some clinicians to be a barrier. The following clinician elaborates

> *"I mean emotion problems we could have general directives so that even in such circumstances where we diagnose them prior to developing the disease eeenh we can help them while preparing them to be referred to the respective mental health departments "Male MD*

However not all viewed guidelines to be a barrier

> *'I have got my guideline, guideline say that, I will do that. Only' Female MD*

> *" It is that ... let us say ... I use the National Guideline together with a small knowledge of psychiatry I got during basic training ... therefore I sometimes have confidence"* Female AMO

8.1 5 Inadequate knowledge and training

In service training was identified as a facilitator to recognize and treat depression

> *"The first thing to do could be..... to train all health care provider at all levels from*

doctors to other personals first, to see how to help those who present with obvious signs and symptoms of health problems "Male MD

From above interview responses, they indicate that lack of regular in service trainings get rid of clinicians knowledge and skills for recognizing and treating psychosocial issues.

8.2 Quantitative phase

8.2.1 Sociodemographic features of the sample group

Out of 109 eligible clinicians recruited and approached for the consent process, only 85 (78.0%) filled and returned the questionnaires. One participant returned an incomplete filled questionnaire and was not included in these analyses. Of the 84 (77.1% coverage) clinicians, as summarized in Table 4, 46 (56.09%) were males, 50 (59.5%) were based in public and 34 (40.5%) in private health facilities. Half of the clinicians worked at the hospital level and remaining worked at a health centre or dispensary levels. Most clinicians participating in the study were non physician- clinicians 52 (62.7%); a higher proportion (95.2%) of all clinicians reporting exposure to training on ART (n=80), adherence counseling (91.7%; n=77), and management of mental disorders (72.6%; n=61), than psychosocial issues related to HIV (42%; n=34). Thirty (36%) clinicians reported the experience of a family member or a friend being diagnosed with depression, while 10 (12%) of the clinicians reported having ever experiencing symptoms of depression of whom only 1 (1.2%) reported seeking treatment for depression (See Table 4)

8.2 2 Clinicians knowledge about recognition and treatment of depression

Descriptive analyses shows that the majority of clinicians (n=84, mean percent score 63.78% SD 8.28) had correct knowledge on core depressive symptoms, diagnosis exclusion and duration criteria for recognition of depression. However, only about a third had correct knowledge (n=84, mean percent score 32.31%, SD 17.30) on the management of depression using antidepressants drugs. Percent correct responses to individual knowledge items are summarized in Table 5.

Table 4. Distribution of clinicians individual characteristics and related site factors amongst clinicians working in CTCs in Dar es Salaam (N=84)

Item	N	(%)
Sex		
Male	46	56.1
Female	36	43.9
Total	82	100
Level of Training		
Phys-Clinicians	31	37.3
Non Phys- Clinicians	52	62.7
Total	83	100
Exposure: Psychosocial training		
Yes	34	42
No	47	58
Total	81	100
Exposure : Mental health training		
Yes	61	72.6
No	23	27.4
Total	84	100
Relative/Family Ever had symptoms of depression		
Yes	30	36.1
No	53	63.9
Total	83	100
Clinician Ever had symptoms of depression		
Yes	10	11.9
No	74	88.4
Total	84	100
Centre type		
Public	50	59.5
Private	34	40.5
Total	84	100
Centre level		
Hospital	42	50
H. Centre/Dispensary	42	50
Total	84	100

Table 5. Clinicians % correct responses to knowledge items for recognition and treatment of depression

Item	*N*	*Percent correct responses*
Knowledge on core depressive symptoms duration, and exclusion criteria for diagnosis of depression		***63.7***
A person is having a lowered mood varied from day to day, and is often unresponsive to circumstance	*77*	91.7
A person does NOT have a loss of interest or pleasure in activities that are normally enjoyable	57	67.9
A person is having reduced energy leading to increased fatigability and diminished activities	60	71.4
A person most of the time retains the ability to concentrate and pay attention	66	78.6
A person's self esteem and self confidence is not affected at all	71	84.5
It is common to have ideas of guilty and have a sense of worthlessness	71	84.5
Other common symptoms include bleak and pessimistic views about future	82	97.6
Sometimes may present with features of ideas or acts of self harm or suicide	84	100
At times a person may wake up 2 hours or more before the usual time	64	76.2
A person may present with diminished appetite	80	95.2
A person may present with diminished appetite must be present	14	16.2
A person does have a loss of interested or pleasure in activities that are normally enjoyable must be present	82	97.6
A person is having a lowered mood varied from day to day, and is often unresponsive to circumstance must present	80	95.2
It is common to have ideas of being guilty and have sense of worthlessness	5	6.0
Dementia and mental retardation	48	57.1
Easy fatigability due to advanced HIV disease	34	40.5

Item	*N*	*Percent correct responses*
How many unique symptoms of depression should be present to clinically diagnose a depressive episode according to ICD-10?	15	17.9
The following other criteria must also be met for diagnosis of major Depression	4	4.8
The following duration in weeks of relevant emotional symptoms is used to diagnose major Depression	24	28.6
Clinicians' Knowledge on management of depression		**32.2**
Chlorpromazine is a common AD	20	23.8
Amitriptyline is a common AD	75	89.3
Venlafaxine is a common AD	16	19.0
Imipramine is a common AD	42	50.0
Fluoxetine is a common AD	32	38.1
Fluoxetine has less Side Effect	26	31.0
Amitriptyline has less Side Effect	12	14.3
Do you know of any interaction between ARV and antidepressants? C	8	9.5
In HIV Care and treatment Clinics (CTC) settings the prevalence of depression is the same as that in other general medical practices	-	0.0
In treating depressive episodes, after resolution of symptoms antidepressants should be continued for at least how many months?	24	28.6
In clinical trials, about one third of patients with major depression respond to placebo. The following percentage of patients responds to antidepressants	3	3.6
Overall knowledge for the recognition and treatment of depression		47%

In univariate analyses as summarized in Table 6, clinicians levels of knowledge on core symptoms for the recognition of depression were significantly associated with sex; mean scores being significantly higher among female (mean score 66.96%, SD 7.82) than male clinicians (mean percent score 61.56, SD 7.84; $p<0.003$). Clinicians levels of knowledge on treatment of depression were significantly associated with level of professional training; with

more knowledge of treatment among physician-clinicians (mean score 64.01, SD 9.71) compared to non physician-clinicians (mean score 63.46%, SD 7.25; $p<0.001$). Individual factors such as the duration since completion of basic clinical training, exposure to psychosocial training, exposure to mental health training, social distance to depression or its symptoms (either in friend, family member or self) were not significantly associated with clinicians level of knowledge both for the recognition or treatment of depression (See Table 6).

8.2.3 Attitudes

The mean scores (SD) on the clinicians attitudes towards recognition and treatment in the two subscales measuring injunctive norms (attitudes clinicians attributed to patients), 2.14 (0.78) and subjective norms (clinicians own attitudes) 1.96 (0.90), showed that clinicians had more negative individual attitudes towards recognition and treatment of depression than those they attributed to their patients. These findings are summarized in Table 7.

Table 6. Association between clinicians level of knowledge and some individual and centre factors in the recognition and treatment of depression

Item	N (%)	Clinicians knowledge of				
		Symptoms		Treatment		
		mean(SD)	F(df);*p-val	mean(SD)	F(df)	p-val
Sex						
Male	46	61.6 (7.8)	9.62 (1); <0.01	0.35 (0.18)	1.66 (1); 0.20	
Female	36	67.0 (7.8)		0.30 (0.16)		
Total	82	64.0 (8.2)		0.33 (0.17)		
Level of Training						
Phys-Clinicians	31	64.0 (9.7)	0.09 (1); 0.77	0.41 (0.15)	13.44 (1); <0.01	
Non Phys- Clinicians	52	63.5 (7.3)		0.27 (0.17)		
Total	83	63.7 (8.2)		0.32 (0.17)		
Exposure: Psychosocial training						
Yes	34	63.3 (9.7)	0.08 (1); 0.78	0.33 (0.17)	0.33 (1); 0.57	
No	47	63.8 (7.2)		0.31 (0.18)		
Total	81	63.6 (8.8)		0.32 (0.18)		
Exposure : Mental health training						
Yes	61	64.0 (8.4)	0.18 (1); 0.67	0.34 (0.16)	1.02 (1); 0.32	
No	23	63.2 (8.0)		0.29 (0.19)		
Total	84	63.8 (8.2)		0.32 (0.17)		
Relative/Family Ever had symptoms of depression						
Yes	30	63.9 (9.6)	0.01 (1); 0.91	0.37 (0.13)	2.73 (1); 0.10	
No	53	63.7 (7.5)		0.30 (0.19)		
Total	83	63.7 (8.3)		0.33 (0.17)		

Item	N (%)	Clinicians knowledge of				
		Symptoms		Treatment		
		mean(SD)	F(df);*p-val	mean(SD)	F(df)	p-val
Clinician Ever had symptoms of depression						
Yes	10	66.3 (7.1)	1.08 (1); 0.30	0.39 (0.12)	1.73 (1); 0.19	
No	74	63.4 (8.4)		0.31 (0.18)		
Total	84	63.8 (8.2)		0.32 (0.17)		
Centre type						
Public	50	63.9 (7.7)	0.02(1); 0.88	0.31 (0.18)	1.36 (1); 0.25	
Private	34	63.6 (9.1)		0.35 (0.16)		
Total	84	63.8 (8.2)		0.32 (0.17)		
Centre level						
Hospital	42	63.3 (8.9)	0.31(1); 0.58	0.36 (0.15)	3.24 (1); 0.08	
H. Centre/Dispensary	42	64.3 (7.6)		0.29 (0.19)		
Total	84	63.8 (8.2)		0.320.17)		

***P value for ANOVA**

Most clinicians 87.7% agree that patients with depression may have persistent physical symptoms. However, relatively fewer agreed moderately or strongly that patient would be receptive to taking antidepressant medication (62.8%) and receiving diagnosis (48.4%) and about a third felt that assigning depression diagnosis was stigmatizing. Most clinicians (65.4%) moderately or strongly agreed that typical depressed patients exaggerate symptoms and also moderately or strongly agreed that they preferred to refer non suicidal depressed patients to a psychiatrist (65.5%). (See table 7)

Table 7. Clinicians attitudes about recognition and treatment of depression

	Mean (SD)[a]	Responses				
		Agree strongly	Moderate agree	Neither agree or disagree	Moderate disagree	Disagree strongly
		N (%)	N (%)	N (%)	N (%)	N (%)
Injunctive norms	2.14(0.78)	-	-	-	-	-
Patients with depression may have persistent physical symptoms	3.38(0.85)	46 (54.8)	30(55.7)	2 (2.4)	6 (7.1)	0 (%)
Most patients are receptive to diagnosis of depression	2.11(0.91)	4 (4.8)	37(44.0)	15 (17.9)	20 (2.38)	8 (9.5)
Most patients are receptive taking ADs	2.43(1.21)	15 (17.9)	36(44.9)	8 (9.5)	20 (23.8)	5 (6.0)
Subjective norms	1.95(0.90)	-	-	-	-	-
Typical depressed patients exaggerate symptoms	1.38(1.06)	16 (19.0)	39(46.4)	12 (14.3)	15 (17.9)	2 (2.4)
Prefer to refer non suicidal depressive patients to a psychiatrist	1.32(1.37)	31 (36.9)	24(28.6)	9 (10.7)	11 (13.1)	9 (10.7)
Assigning diagnosis of depression in stigmatizing	2.88(1.44)	6 (7.1)	17(20.2)	5 (6.0)	9 (10.7)	47 (56.0)
Priority is to treat medical problems first then psychosocial problems	2.24(1.65)	19 (22.6)	16(19.0)	7 (8.3)	10 (11.9)	32 (38.1)

8.2.4 Perceived barriers

Generally clinicians perceived many barriers to recognition and treatment of depression, as outlined in Table 8. These included those perceived to occur at a policy and guideline level with mean (SD) on the relevant subscale of 1.89, (1.15) and those occurring at the clinical setting level (mean (SD) score on relevant subscale 1.34 (1.1)).

Assessment of specific items revealed most clinicians did not agree that there was a clear policy (67%) or guidelines (67%) for recognition and management of depression in their facilities. Furthermore while almost 42% agreed there was sufficient time for recognition and treatment of depression, 75% did not perceive they had sufficient psychosocial training and orientation to do so, 76% felt the clinic structure did not allow for recognition and treatment of depression and a large majority (78.6%) did not perceived they had sufficient self motivation to recognize and treat depression. (See Table 8)

Table 8. Clinicians perceive barriers to the recognition and treatment of depression

Items measuring barriers and facilitators	**Responses**				
	Agree strongly	Mod - agree	Neither agree or disagree	Mod - disagree	Disagree strongly
	n (%)	n (%)	n (%)	n (%)	n (%)
Policy and guidelines mean (SD) 1.89 (1.15)	-	-	-	-	-
There is clear policy that direct detection and treatment of depression	7 (8.3)	21 (25.0)	30 (35.7)	10 (11.9)	16 (19.0)
There is clear clinical guidelines that direct detection and treatment of depression	8 (9.5)	20 (23.8)	26 (31.0)	12 (14.3)	18 (21.4)
Clinical setting mean (SD) 1.34 (1.1)	-	-	-	-	-
Adequate psychosocial training and orientation	3 (3.6)	18 (21.4)	18 (21.4)	20 (23.8)	25 (29.8)
Well set clinic structure that allows recognition and treatment of depression	6 (7.1)	13 (15.5)	23 (27.4)	15 (17.9)	27 (32.1)
Having enough self motivation that allows recognition and treatment of depression	3 (3.6)	7 (8.3)	26 (31)	11 (13.1)	29 (34.5)
There is enough time that allows recognition and treatment of depression	19(22.6)	16(19.0)	7 (8.3)	9 (11.9)	32 (38.1)

8.2.5 Self efficacy

Overall self efficacy to recognize and treat depression showed a mean (SD) score of 2.87 (0.07). As summarized in Table 9, overall 53.6% of clinicians reported relatively higher self efficacy. Clinicians reported self efficacy to recognize and treat depression did not vary significantly by any of the site factors and most of the assessed individual clinician characteristics including level of medical training or in-service exposure to mental health and psychosocial continuing education training.

Table 9. Associations between individual characteristics, site factors and selected risk factors of interest and clinicians perceived self efficacy to the recognize and treat depression

	Self efficacy			
	Lower n (%)	Higher n (%)	Chi sq	p-value[1]
Overall rates	38 (45.2)	45 (53.6)	--	--
Individual and Site factors				
Sex				
Male	21 (46.7)	24 (53.3)	0.04	0.27
Female	16 (44.4)	20 (55.6)		
Level of professional training				
Physician-clinician	14 (46.7)	16 (53.3)	0.05	0.83
Non physician-clinician	23 (44.2)	29 (55.8)		
Exposed to psychosocial training				
Yes	11 (33.3)	22 (66.7)	3.09	0.11
No	25 (53.2)	22 (46.8)		
Exposed to training in recognition and treatment of mental disorders			0.07	0.81
Yes	28 (46.7)	32 (53.3)		
No	10 (43.5)	13 (56.5)		
Rewarding to treat depression				
Yes	17 (32.1)	36 (67.9)	13.55	<0.001
No	21 (75.0)	7 (25.0)		

	Self efficacy			
	Lower n (%)	Higher n (%)	Chi sq	p-value[1]
Centre type				
Private	16 (47.1)	18 (52.9)	0.08	1.00
Public	22 (44.9)	27 (55.1)		
Centre level				
Hospital	16 (39.0)	25 (61.0)	1.49	0.27
Health Centre/Dispensary	22 (52.4)	20 (47.6)		
Selected risk factors of interest	**Lower Mean (SD)[2]**	**Higher Mean (SD)**	**F score**	**p-value**
Attitudes towards depression recognition and treatment				
Injunctive norms (Attitude)	2.59 (0.83)	2.67 (0.74)	0.25	0.62
Subjective norms (Attitudes)	1.95 (0.92)	1.93 (0.89)	0.005	0.94
Knowledge levels for				
Symptoms for diagnosis of depression	64.68 (8.2)	63.04(8.36)	0.81	0.37
Treatment of depression	29.66 15.05)	34.55(19.05)	1.63	0.21

[1] p-value two tailed; [2] SD= standard deviation

Furthermore, the risk factors of interest, level of knowledge and attitudes towards recognition and treatment of depression did not appear to influence clinician s perceived ability to recognize and treat the condition. However, clinicians who perceived it to be rewarding to treat depression reported significantly higher self efficacy (Chi square 13.55, $p<0.001$).

Table 10 below summarizes results of multivariate analyses. Self efficacy to recognize and treat depression was regressed on identified risk factors (risk factors with p values <0.25) in a logistic regression main effects model. Three items were significantly associated with self efficacy at this level in univariate analysis. They included knowledge of treatment of depression with higher mean knowledge scores associated with high self efficacy at $p=0.21$; reporting it was rewarding to treat persons with depression with 67.9% of affirmative

responders having higher self efficacy compared to only 25.0% of those that that did not find treating depression rewarding ($p<0.01$). Finally 66.7% of clinicians reporting exposure to psychosocial training reported higher self efficacy to diagnosis and treat depression compared to only 46.8% of those with no exposure to such training ($p=0.11$).

Table 10. Predictors of clinicians perceived level of self efficacy in the recognition and treatment of depression

Variable	B (SE)[1]	Wald (df)	p-value	95% CI for expo (B)		
				Expo (B)[2]	Lower	Upper
Rewarding to treat depression	1.43 (0.52)	7.16 (1)	<0.01	4.17	1.51	11.49
Exposure to psychosocial training	0.01 (0.01)	0.96 (1)	0.36	1.65	0.61	4.47
Knowledge on management of depression	0.01 (0.01)	0.83 (1)	0.33	1.01	0.99	1.04
Constant	-1.31 (0.61)	4.52 (1)	0.03	0.43		

[1] SE=standard error

[2] B = odds ratio

In a main effects logistic regression model the results of which are summarized in Table 10, only feeling it was rewarding to treat depression was significantly associated with higher self efficacy, increasing by almost four times the likelihood of this response after adjusting for the other risk factors. No interaction effects between the risk factors were found on further analysis.

9.0 DISCUSSION

This study is the first of its kind conducted in Tanzania that attempts to provide empirical evidence on knowledge and attitudes towards recognition and treatment of depression amongst non mental health specialized physician and non-physician clinicians. This study also tried to determine the factors which were associated with clinicians perceived self efficacy to recognize and treat depression. The focus on CTC settings is informed by high rates of depression in these clinical contexts. This study may provide some indication of the extent to which mental health care is integrated in HIV and AIDS care and treatment contexts. Given that prevalence of depression in PLHA is twice the rate the general population, having clinicians who are knowledgeable and have positive attitudes towards recognizing and treating depression in CTCs is crucial for not only reducing distress amongst PLHA, but also for improving quality of care by addressing a condition that would increase self management abilities amongst PLHA such as those related to adhering to medical recommendations.

9.1 Knowledge

Clinicians had a fair overall knowledge score, with a larger proportion correctly responding to items assessing knowledge for the recognition and diagnosis of depression (63.7%) than items assessing depression treatment knowledge (32.2%). Of the factors associated with levels of knowledge explored sex and type of clinician cadre were the only independent variables that showed significant variation in levels of knowledge. For knowledge of symptoms of depression and criterion for diagnosis, female clinicians had significantly higher levels of such knowledge than males; physician clinicians compared to non-physician clinicians showed higher levels of knowledge on treatment of depression. It is difficult to explain the sex differences in knowledge of symptoms of depression in this population of clinicians, with the available data, however a study done in USA by Feldman (63) demonstrate that female family physicians, those living in larger communities, and physicians with 3 or more years of training are most likely to have positive attitudes toward guidelines and this is perhaps an observation warranting further study

The findings also suggest that while many clinicians may be able to recognize the presence of depression in a PLHA, much fewer may know how best to manage patients for resolution of symptoms of depression. It is possible that some of the barriers to recognition and treatment of depression reported by clinicians such as lack of environments conducive for managing depression including time constraints, the necessary privacy as well as lack of availability of antidepressant medications may result in less practice and hence use of learnt knowledge resulting in attrition. This may have contributed to the much lower scores in knowledge for treatment of depression. However, the results also showed that physician clinicians had higher knowledge on treatment of depression than non-physician clinicians, suggesting possible differences in basic training exposures for these two cadres. This is further supported by the lack of influence of exposure to in-service psychosocial or mental health trainings on the levels of knowledge on treatment of depression in these analyses.

The study findings of higher knowledge for the recognition and treatment of depression are consistent with the observation from another study amongst primary health care workers in Dar es Salaam (2) which found that, two thirds of a small sample (N=14) of primary care providers (clinicians and nurses) felt they had little difficulty in differencing normal unhappiness from clinical depressive disorder that required treatment. Gallo (45) in the USA explored family physicians ability to recognize and treat depression in the elderly and found similar high rates of recognition of depression. In contrast to our findings, in this study physicians had high scores on correct knowledge on the use of antidepressants. Most physicians were aware of recommended first and second line medication for treatment of depression, more than 79% correctly identified four weeks as an adequate period for trial of antidepressants and 73% were aware of a maintenance treatment period for at least 4 to 9 months for persons who had recovered from a first depressive episode. In this study between 50.0% to 89.3% were aware of Imipramine and Amitriptyline respectively, which are first line treatments for depression in Tanzania and 38.1% were aware of Fluoxetine, a second line drug treatment for depression. However, only 28.6% correctly knew that a maintenance treatment period of at least 6 months was required after resolution of depressive symptoms.

Our finding that knowledge on recognition and treatment of depression did not vary with different training exposures is also affirmed by two studies. One of the study by King (60) done in Northern London by which assessed the effectiveness of teaching general practitioners skills in brief cognitive behavior. A training package of four half days on brief cognitive behavior therapy was instituted as an intervention package. They found that, Doctors' knowledge of depression and attitudes towards its treatment showed no major difference between intervention and control groups after 6 months and hence the training had no discernible impact on patients' outcomes. Second study was a systematic literature review and meta-analysis done by Cepoiu (61) on recognition of depression by non-psychiatric physicians. They found a summary sensitivity, specificity, and OR of recognition using the random effects model were: 36.4% (95% CI: 27.9 44.8), 83.7% (95% CI: 77.5 90.0), and 4.0 (95% CI: 3.2 4.9), respectively. They concluded that the accuracy of depression recognition by non-psychiatrist physicians is low and further recommended development standardized methods of documenting non-psychiatric physicians recognition of depression

However another study done in Oregon USA (62) showed different findings, although it used different methods. They performed a randomized controlled trial involving 49 primary care physicians to determine the effect of the Depression Education Program on their knowledge of depression and their behavior toward depressed patients in Oregon, USA They found that more intervention physicians than control physicians asked about stresses at home, and they also scored higher on the Participatory Decision-Making scale. During the office visits of one of the standardized patients, more intervention physicians asked about at least 5 criteria for major depression (82% and 38%, P = .006), discussed the possibility of depression (96% and 65%, P = .049), scheduled a return visit within 2 weeks (67% and 33%, P = .004), and scored higher than control physicians on the Patient Satisfaction scale (40.3 and 35.5, P = .014). They concluded that the Depression Education Program changed physicians behavior and may be an important component in the efforts to improve the care of depressed patients.

9.2 Attitudes

According to the results of this study, the mean values of the clinicians attitudes to the recognition and treatment of depression in PLHA are moderate to low for both the injunctive norms (mean 2.14, SD 0.78) and the subjective norms (mean 1.96, SD 0.90)

Most clinicians 87.7% agreed that patients with depression may have persistent physical symptoms. However, relatively fewer agreed moderately or strongly that patient would be receptive to taking antidepressant medication (62.8%) and receiving diagnosis (48.4%) and about a third felt that assigning depression diagnosis was stigmatizing.

Most clinicians (65.4%) moderately or strongly agreed typical depressed patients exaggerate symptoms and also moderately or strongly agreed that they prefer to refer non suicidal patients to a psychiatrist (65.5%).

This result is consistent with the literature data which points out that; clinicians have negative attitudes towards patients with mental disorders. This is evidenced by the survey done in Turkey (47) which aimed to learn more about GPs knowledge, attitudes and social distance towards depression. Although they used different opinion statements to measure attitudes and social distance they found that 80% of physicians think that depression is the psychological state of being sad, 47% psychologically weak and 47% consider it not as a disease but as a state that everybody may have from time to time.

In the study done in USA (45) pointed out the there was more disagreement among physicians regarding whether a psychiatric diagnosis is stigmatizing, and whether it is necessary to rule out a physical illness before considering a diagnosis of depression.

Another study in Tanzania (2) found that two thirds of health care worker in Dar es Salaam participated in the study held negative attitudes as they believed that becoming depressed is a way that people with poor stamina deal with life difficulties.

As observed from this study, clinician s attitudes especially clinicians own attitudes attributed as opposed to those they attribute to patients are negative when it recognizing and treating depression. This suggests that there is an element of clinicians disengagement to

PLHA who present with co morbid depressive disorder. The same observation was made by a study done in Bahrain (46) which examined physicians attitudes and practice in managing depression in geriatric. They found that, thirty nine (29.7%) physician s referred the cases of depression immediately once they were identified. Although the end target patients were different from this study, both measured clinicians attitudes in recognizing and managing depression. Also the outcome measure of the Bahrain study was clinician practice and this study was self efficacy.

There were however some positive elements of attitudes especially on the clinicians subjective norms. Our study found that, most clinicians (89.7%) agreed that patients with depression may have persistent physical symptoms and that about half (48.4%) agreed that most patients are receptive to diagnoses of depression.

Similarly, the study done in Taiwan (56) which assessed self reported knowledge, attitudes and practice of non-psychiatrist physicians in the recognition and treatment of depression found that, the majority of physicians held a strong sense of responsibility in managing depression.

Respect for patients was mentioned to be an attribute for clinician to recognize depression as observed by the study done in Washington DC (57) which examined association between attributes of primary care providers and care for depression, from patients perspective. They found that providers who had more respect for patients were more likely to ask about depression.

9.3 Perceived barriers

Generally clinicians perceived many barriers to recognition and treatment of depression scoring a mean (SD) in policy and guideline 1.89, SD1.15 and clinical setting 1.34 (1.1) subscales. Assessment of specific items revealed most clinicians did not agree that there was a clear policy (67%) or guidelines (67%) for recognition and management of depression in their facilities. Furthermore while almost 42% agreed there was sufficient time for recognition and treatment of depression, 75% did not perceive they had sufficient psychosocial training and orientation to do so, 76% felt the clinic structure did not allow for recognition and treatment of

depression and most of clinicians (78.6%) reported to have self motivation to recognize and treat depression.

HIV care and treatment clinics are well equipped with National HIV and AIDS treatment guidelines that are being used as reference for overall management of HIV related disorders including depression. There is a national guidelines used in CTC that contains the guidelines for recognition and treatment of depression in PLHA. It might be speculated that the guideline for recognition and treatment of depression is not readily accessible or not a user friendly manner for clinicians to utilize.

Our study looked at guideline as barrier and facilitator in the recognition and treatment of depression. The finding of is similar to the Freldman (63) in the USA study in that despite the presence of guideline still clinicians are unaware of its existence and hence mention as a barrier In this survey they looked at awareness of clinical practice guidelines on depression among family physicians. The respondents were questioned about awareness of guidelines for depression in primary care knowledge of the diagnosis and treatment of depression; and general attitudes about guidelines. They further found that only 33.6% were aware of the existence of the guidelines on depression 1 year after publication. And also Respondents are generally knowledgeable about the diagnosis and treatment of depression. This finding is also corroborated by a study done in Bahrain (46) which identified that lack of guidelines was reported and 86.4% of clinicians wished to have such guideline for management of depression, 82.6 felt there were a lack of training on identification and management of depression and 57.6% reported not to have enough time during consultation to discuss any psychosocial issues. However, the Bahrain study focused in elderly people while our study focuses on PLHA. Another study in USA (48) reported barriers to physicians, organizational barriers such as time for an adequate history and patients barriers were common. Contrary to our findings, a study done in USA (45) found that time was least mentioned as a barrier to recognition and treatment of depression.

Our study found that 75% of clinicians reported not to have psychosocial training and orientation to recognize and treat depression. This finding corroborate with a review article by Hodges (64) about improving the psychiatric knowledge, skills, and attitudes of primary care

physicians. The authors reviewed the literature on mental health education for primary care physicians and made recommendations for the design of educational programs and research. They concluded that an extensive literature published over five decades identified a strong need for ongoing mental health training for primary care physicians. However, there are organizational and attitudinal issues that may be equally or more important for educators to consider than the selection of educational methods.

9.4 Self efficacy

Overall self efficacy to recognize and treat depression showed a mean score of 2.87, (SD 0.07, range score 0-4). Clinicians level of self efficacy did not vary with cadres and clinicians reporting higher and lower self efficacy did not vary significantly in the mean scores on the attitudes or knowledge subscales. Clinicians who were willing to treat depression were significantly found to have higher perceived self efficacy ($p<0.000$).

Our study findings are similar to other studies which found relatively higher levels of clinicians self efficacy in recognition and treatment of depression. In the study done in Tanzania (2) showed that 92% of health care workers in primary care levels felt comfortable dealing with depression. the same finding was observed in a study in USA (45) found similar findings that, 93%. of physicians felt comfortable in their ability to prescribe antidepressants.

However there is a contradictory finding between reported self efficiency in treating depression and the knowledge in treating depression. While clinicians expressed higher perceived self efficacy in treatment of depression, their knowledge aspect on treatment of depression in relatively lower. This calls a study which will look at the actual practice in recognizing and treating depression and not to bank on the reported perceived self efficacy alone.

10. STUDY LIMITATIONS

Despite of these limitations, the proposed protocol was able to provide empirical evidence on clinician s knowledge, attitudes and self efficacy in managing depression in the study area. This study used convenient sample of all clinicians at all Dar es Salaam CTCs during the time when this study was conducted. This was because of time and financial constraints we had in doing this study. While screening for depressive disorders in patient participants would have been ideal to prospectively assess clinicians abilities in the recognition and management of depression, the time resources required for this study exceeded time available for data collection under the MMed Program. Furthermore, study grants provided for the MMed thesis were limited hence financial resources dictate limiting the study to a cross sectional design to be done in Dar es salaam with a convenient sample size while involving clinician participants alone. This study is based on self reported attitudes, knowledge and perceived barrier and outcome measures as perceived self efficacy and therefore it could not observe the clinicians actual practices or review on the patients files or prescriptions. In this study because of the time constraint clinicians had when filling out the survey tool, it is unknown to what extent it influenced their responses. This study confined clinicians who work in the CTC and therefore could not be generalized to clinicians working at the primary care level. This is because most probable clinicians at CT C might have enjoyed a lot training compare to those at primary health care

11.0 CONCLUSION

Recognition and treatment of depression in HIV clinics remain a challenge for clinicians. These findings are curial to informing the current gap in addressing common mental disorders faced by PLHA attending clinics. There is a lack of adequate correct levels of knowledge among clinicians in the recognition and especially treatment of depression in PLHA. This lack of knowledge impedes the efforts to integrate holistic approach to address the psychosocial needs of PLHA attending HIV clinics. Generally, clinicians attitudes to recognize and treat depression was on moderate to lower side which might pose a danger for clinicians engagement in responding to psychosocial needs on PLHA. Lastly, the perceived barriers as relates to policy and guideline as well as clinical settings were substantially reported, thus a call for a better way to address them.

12.0 RECOMMENDATIONS

Ministry of Health and Social Welfare together with HIV care and treatment programs should introduce a short tailored in service training on treatment of depression especially to clinicians working in the CTCs

Ministry of Health and Social Welfare through National AIDS Control Program (NACP) should develop user s friendly algorithms that translate policy and guidelines aim at recognition and treatment of depression

Clinical settings in CTC should be improved in terms of time allowable to attend to patient especially with depression to be able to provide quality wholistic approach of care to PLHA.

Similar study should be replicated in a bigger sample size involving non CTC clinicians and other carders who are involved in recognition and treatment of depression and using practice behavior as and outcome measure

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