Stigma: A Contributing Factor to Depressive Symptoms in People with HIV Seeking Treatment at Gondar University Hospital

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Abstract

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Introduction: Depression is the one of the most common mental health disorders that people with HIV experience, with some figures placing rates of depression among people with HIV as high as 50%. HIV related stigma has been associated with depressive symptoms in studies outside of Ethiopia. These studies have also shown that depressive symptoms and stigma lead to poor engagement to care and ultimately, poor health outcomes. This cross sectional study was conducted to evaluate the relationship between stigma of HIV/AIDS and depressive symptoms in Gondar, Ethiopia.

Methods: Patients receiving routine antiretroviral treatment (ART) at Gondar University Hospital ART clinic were recruited to participate in the study. We interviewed 55 patients who presented for routine HIV care during the study period. We evaluated depressive symptoms and stigma of HIV/AIDS using standardized measures. Multiple regression was used to assess the relationship between depressive symptoms and HIV related stigma and gender.

Results: Females made up 63.6% of study participants and males made up 36.4%. A large proportion of participants either had a 7-12 grade education (41.8%) or did not have any formal education (25%). The majority of participants (78%) reported experiencing stigma lately. Sixty percent of participants reported depressive symptoms ranging in severity from mild to moderately severe. We found that higher levels of HIV-related stigma were significantly associated with higher levels of depressive symptoms (β = 0.464, p $\leq$ 0.001). However, gender was not associated with depressive symptoms (β = -0.027, p > 0.05).

Conclusion: In this study, the experience of HIV-related stigma was associated with higher risk of depressive symptoms among HIV infected adults seeking care in Northern Ethiopia. Identifying opportunities to reduce stigma may be important in improving ART adherence and engagement to care in general. Programs offering support to individuals with HIV should evaluate the experience of stigma and screen for depressive symptoms in order to provide additional support to at-risk patients.

Introduction

HIV/AIDS Background

As of 2010, an estimated 1.2 million Ethiopians were HIV positive, reflecting an overall prevalence of 2.4% (1, 2). This is considered a low level generalized epidemic (3). However, the prevalence of HIV/AIDS is variable in different regions of the country. The HIV prevalence in adults' age 15 to 49 in urban areas is 7.7% and 0.9% in rural areas (2). Additionally, prevalence of HIV among women (2.9%) is greater than that of men (1.9%).

Ethiopia is divided into 12 regions and the Amhara region of Ethiopia is one of the hardest hit with the HIV epidemic. The prevalence of HIV in the Amhara region is 2.9%, a figure 21% higher than that of the national average (4). This region has a large urban (9.8%) rural (1.4%) difference in prevalence. Additionally, the Amhara region of Ethiopia has the highest number of people living with HIV/AIDS at 379,096 (2). In 2011, Gondar City, located in the North Gondar Zone of the Amhara Region, had a population of 227,100 (5). Although the general Gondar City HIV rate is not reported, an urban antenatal clinic in the city had a 10.3% HIV prevalence (6). This suggests Gondar City is one of the urban cities that are highly affected by HIV/AIDS.

Since the mid-2000's, the Ethiopian government has strived to achieve universal access to HIV/AIDS prevention, care & support, and treatment (3). In Ethiopia, free ART programs started in 2005 and the government was able to expand treatment reach through decentralization (7). Although the country has achieved significant progress in the provision of free HIV services, engagement in HIV/AIDS care still remains a challenge. Between 2005 and

2008, there was 10-fold increase in the number of people tested for HIV (8). However, immediate linkage to care for those who tested positive was only 61% (8) . Even if patients are linked to care, there is still attrition for those who don't immediately initiate ART. It is estimated that 25% of patients are lost to follow up before starting on ART treatment (9). In the three years between 2005 and 2008, there was a 48% increase in the number of people who were started on ART (8). However, up to a quarter of these individuals were subsequently lost to follow up (8, 9).

Engagement to care remains a major obstacle for HIV care and treatment services in Ethiopia. Researchers have recognized this and have identified factors associated with poor engagement to care and late presentation to HIV/AIDS care. Some identified factors associated with poor engagement to care and late presentation to HIV/AIDS care include: non-disclosure about HIV status, HIV stigma, perceived ART side effects (10), and mental illness (11).

Depression and HIV/AIDS

Depression is one of the most common mental health disorders people with HIV experience (12). A research investigation that included eight developing and developed countries found that depressive symptoms were the second most common symptoms seen in HIV/AIDS patients (13). A meta-analysis looking at the relationship between HIV infection and risk of depressive disorders found that living with HIV posed a great risk of having major depressive disorder (14). This is reflected in studies that found high prevalence of depressive symptoms among HIV/AIDS patients in various parts of the world (Albania (63%), Jamaica (43%), Colombia (44%), Norway (66%), Puerto Rico (57%), Taiwan (35%), USA (56%), Uganda (47%), and Kenya (34%) (15-19)). Another study in an ART unit located in Southwest Ethiopia

found that 55.8% of the participants were depressed at the start of a prospective cohort study (20).

Depression can occur at multiple time points along the HIV/AIDS care continuum: at the time of becoming aware of one's diagnosis, during engagement in HIV medical care, while remaining in care, when starting ART, and while staying adherent to ART (21). A longitudinal research in the U.S. among pre-ART patients found that depression was negatively associated disease progression (22). A cross-sectional study investigating the effect of psychological factors on ART uptake, in a reference HIV/AIDS institution located in Madrid, found that depression was highly associated with poor adherence (23). In addition, a study looking at correlates of ART adherence in 5 African countries (Kenya, Uganda, Zambia, Nigeria, and Rwanda) found that high depression scores were negatively associated with adherence and a study in Southwest Ethiopia found that patients who were not depressed were two times more likely to be adherent to ART than those who were depressed (20, 24).

Depression is a major issue in HIV/AIDS care because it is highly prevalent in PLWHA and because it negatively affects engagement to care. Depression among those who are HIV positive can often be unrecognized (25). If recognized, treatment for depression is frequently not initiated, and even if treatment is initiated, depression may not be successfully treated (25). While approximately 83% of PLWHA experiencing depression in the U.S. are not receiving any treatment (25), rates of treatment in developing countries are likely to be significantly lower (26).

Ethiopia is struggling to meet the basic health care needs of those who are HIV positive. Only 5% people (age 15-49) in the general population have received counseling and testing

services for HIV, ART access for those who need it is at a low 13%, and only 8% of pregnant women with HIV receive ARV prophylaxis (3, 6). Furthermore, the mental health care system is under-resourced (27) and often not viewed as a priority in the management of HIV (28). There are only .02 psychiatrists and .03 psychiatric nurses per 100,000 people in Ethiopia, all of the psychiatrists reside in the capital city and only 1.7% of the country's expenditure on health goes to mental health care (11, 27). In addition, 83% of all expenditure on mental health goes to the only mental health hospital in the country located in the capital city (27). Identifying factors associated with depression in PLWHA is a crucial step towards developing a plan to address this major issue in low resource communities in Ethiopia.

Stigma and HIV/AIDS

Researchers have identified stigma of HIV/AIDS as one of the major factors associated with depression and other psychosocial problems (29). Research relating depression and stigma is limited in Ethiopia. In Ethiopia, stigma has been related to late presentation to HIV/AIDS care (10), poor linkage to and retention in HIV/AIDS care (8), poor ART adherence (30), as well as VCT uptake (31).

The definition of stigma dates back to the 1960s where Goffman defines it as a 'spoiled identity' of persons with an undesirable conditions (32). Stigma occurs in various chronic illness such as HIV/AID and the effects of stigma are strikingly similar across different health conditions and cultures (33). Researchers have found that stigma experienced by individuals with various health conditions is correlated with depression (34). The process through which stigma comes to negatively affect a person's mental health status has been defined (35).

Individuals with a stigmatizing condition are aware of the stereotypes associated with their illness (36). That is, they know how other people view them and what characteristics they attribute to them because of their illness. This is called perceived stigma (35). Over time, if individuals with a stigmatizing illness become excluded from social activities because of their status, they may start to agree with the negative stereotypes associated with the condition (37). This process is referred to as internalized stigma (37) and can lead to psychosocial distress (34).

Specific objects of this study

Depression is both highly prevalent in patients with HIV and has negative effects on engagement in care and long term health outcomes. One of the factors associated with depression among PLWHA is stigma associated with this condition. In the present study, we sought to understand the relationship between depressive symptoms and stigma in the Ethiopian setting. Specifically, we wanted to know if stigma predicts depressive symptoms in people with HIV seeking treatment at Gondar University Hospital ART Clinic.

The specific question we are asking is, are PLWHA who experience high levels of stigma related to HIV more likely to experience high levels of depressive symptoms? Given existing evidence linking depressive symptoms and stigma in other settings, we hypothesize that patients who report high levels of stigma at Gondar University Hospital ART Clinic will also report high levels of depressive symptoms.

Methods

Study Design

The current investigation was cross-sectional and it was conducted among patients receiving ART treatment at Gondar University Hospital. This was a quantitative study looking at the association between depression and stigma of HIV/AIDS.

Ethical Consideration

This study was approved by the University of Washington and the Gondar University ethical review boards. All participants provided verbal informed consent.

Study Setting

Gondar University Hospital (GUH) is located in the town of Gondar in the Amhara Regional State of Ethiopia. GUH a premier teaching hospital and is the referral hospital for the region. With the support of the International Training and Education Center on Health (I-TECH), the hospital opened the area's first ART clinic, which began offering ART services in March, 2002. Since its inception, 8,117 patients have been enrolled in HIV care and support programs and 5,391 have been enrolled in ART. There are currently 3,276 patients receiving ART (38).

Inclusion/Exclusion Criteria

The target population for the current study was patients receiving ART treatment at GUH ART clinic. The inclusion criteria were that patients had to be receiving ART treatment and have a routine appointment during the research period (September 19, 2011 – November 21, 2011). Participants also had to be over the age of 18. Patients who were under 18 or those who have not started taking ART were excluded.

Sampling Strategy and Recruitment

The sample was comprised of people who are living with HIV and on ART coming for their routine appointment at Gondar University Hospital ART clinic. Researchers used a convenience sample for this study. Patients who had a routine appointment in the duration of the study period were approached by someone who has regular contact with the patients' course of treatment (ART clinic nurses). Those involved directly in participant recruitment were not involved in the actual data collection. There were 6 ART nurses and theses nurses rotated to the ART clinic on a weekly basis. Thus, at a given week, there were 3 nurses in the ART clinic recruiting patients to participate in the study.

Typically, ART nurses did their routine follow up with the patient and prescribed medication and/or a CD4 count test. Then they asked patients if they were interested in participating in a study designed to measure depression and stigma. Potential participants were told their participation in the study would be entirely voluntary and that they could withdraw from the study procedure at any time. Patients were also informed that their participation or non-participation would not affect the treatment they receive. They were informed that participation in the study involved being part of a recorded interview. Participants were made aware that there would be no follow-up to the study, and that after a one time interview, their participation in the study was complete.

Patients who were interested in the research were introduced to the researcher/interviewer for further information and an oral consent procedure. The researcher further explained that the study was being conducted to better understand the hardships PLWHA in the Amhara region face. Investigator explained that factors associated with

depression among PLWHA such as stigma was going to be examined. Participants were also informed that results from the current investigation will be an important step towards developing future research and interventions that achieve better treatment outcomes for patients living with HIV/AIDS. Participants also knew that they would not directly benefit from this research. Researcher then asked participants to consent to the interview. Participants who were not willing to participate were thanked for their willingness to hear about the study. Those who were willing to participate were interviewed. In cases where participants were not willing to participate because they were nervous about the interview being recorded, the audio recorder was not used.

Data Collection Strategy

Data were collected in a one on one interview in participants' native language (Amharic). For most participants, interviews were recorded and the researcher also marked participant responses on a paper copy of the interview questionnaire. Interviews were conducted in an office adjacent to the ART clinic. Participants were informed that the interview can take up to one hour. Interviews took anywhere from 20 minutes to 1 hour; time of interview depended on the length of participant answers.

Description of Key Variables and Measures

Depression. Depression was measured using the nine item Patient Health Questionnaire (PHQ-9) depressive symptoms scale. This is one of the most widely used scales across cultures and has been used in Ethiopia to measure depression in populations such as college students who witnessed gender based violence growing up (39) and women in college who experienced

gender based violence (40). The instrument was translated to Amharic by a medical translator in Seattle. Then it was back translated to ensure that the content was retained. The same scaling was preserved in the translation process. The PHQ-9 is a Likert scale with the following response options: 0 = not at all, 1 = several days, 2 = more than half the days, and 3 = nearly every day. Participants were asked a question (i.e. over the past 2 weeks, how often have you had little interest or pleasure in doing things) and prompted to respond using the scale. The recall period for each question was two weeks. The PHQ-9 has a 0-27 scoring system where a respondent's scores are added to give a total score to help determine depressive symptom severity as: minimal (1-4), mild (5-9), moderate (10-14), moderately severe (15-19), and severe depressive symptoms (20-27). A rule of thumb for good internal consistency is Cronbach's α of 0.7 or higher (41). Cronbach's α in a study that validated the PHQ-9 in a Sub-Saharan setting was 0.78 (19).

Stigma. Stigma was measured using 4 items from the Stigma Scale for Chronic Illness (SSCI) (35). The SSCI is a general measure and it was specified to HIV with the following statement: 'How often have the following statements regarding your HIV infection been true for you lately?' Researchers picked two questions to assess perceived stigma ('Because of my illness, some people avoided me', 'Some people acted as though it was my fault I have this') and two questions to assess internalized stigma ('Because of my illness, I felt left out of things', 'I felt embarrassed about my illness'). The recall time frame used for these items was 'lately'. Participants were prompted to respond using one of five responses (never, rarely, sometimes, often, and always). The stigma measure was translated to Amharic with the same scaling system.

The 4 items used come from a lengthier, 24 item scale, and these four items were taken as a standalone construct for the purposes of the current study. The four items have been used and validated among people with HIV in the United States, with a reported 0.84 Cronbach's alpha (42).

Socio-demographics. Socio-demographic information such as religion, source of income, drug and alcohol use, gender, and marital status were collected.

Data Management Procedures

Given the high rates of illiteracy in the Gondar region, we audiotaped interviews and the researcher recorded responses on questionnaire forms. The researcher listened to all recorded interviews afterwards and compared it to the completed questionnaires for accuracy. Identifying information, aside from the voice recording, was not collected and quantitative data were entered into SPSS. Recordings are kept on a password protected computer in an encrypted file. Recorded interviews will be destroyed upon completion of the necessary manuscripts (final destruction date December 22, 2013).

Sample Size

We used G power (Seattle, 5/18/2011) to estimate sample size (43, 44). With power set at 80% and a two-sided significance level (alpha) of 0.05, we needed a sample size of 55 to detect an effect size (f^2) of 0.15 (defined as a medium effect size (45)).

Data Analysis Plan

We analyzed participant responses to the PHQ-9 and stigma scale questions, and the socio-demographic questions with quantitative data analysis software (SPSS). We also provided

descriptive information on the socio-demographic variables collected. We used a multiple regression to assess the relationship between our dependent variable—depressive symptoms—and two independent variables—HIV related stigma and gender.

Results

Socio-demographic and clinical information

Fifty eight participants were approached and three did not want to participate in the study. A total of 55 adults living with HIV/AIDS participated in the study (Table 1). Participant ages ranged from 18 to 60 (mean 34.68 (SD 8.72). The majority of participants had between a 7th and 12th grade education level (41.8%); the next highly endorsed education category was those who didn't have any formal education at 25%. A large portion of participants were either married (38%) or divorced/separated (23.6%). Nearly all participants reported that they didn't drink alcohol (90.9%) or chew chat (a stimulant drug used in Ethiopia; 96.4%). All participants were Ethiopian Orthodox (87.3%) or Muslim (12.7%). All participants were on ART and 37 were able to provide a recent CD4 count (average CD4+ count was 336.5. Participants in the study had lived with HIV an average of 4.59 years. The average stigma score for participants was 7.2 while the average score for depressive symptoms was 6.6.

Quantitative findings

Cronbach's α for the four item stigma scale used in the current study was 0.68. Most participants had experienced some form of stigma recently (78%).

Cronbach's α for the PHQ-9 scale in this study was 0.73. The level of depressive symptoms participants experienced was as follows: 40% minimal, 29.09% mild, 20% moderate and 10.91% moderately severe. Overall people with more severe depressive symptoms had higher levels of stigma. We categorized the PHQ-9 responses into minimal, mild, moderate, and

moderately severe depressive symptoms and illustrated these categorical variables with the mean stigma score in Figure 1.

There was a significant relationship between stigma and depressive symptoms $F(1,52)=7.5$, $p \leq 0.001$. We found that higher levels of HIV-related stigma were significantly correlated with higher levels of depressive symptoms (standardized estimate: $\beta = 0.464$, 95% CI [0.26, 0.93], $p \leq 0.001$). The interpretation of this standardized coefficient is that for every standard deviation increase in HIV-related stigma, there was a 0.472 standard deviation increase in depressive symptoms. The model showed an average weighted effect size of 0.287 (a medium to large effect size (45)) with a standard error of 4.4 and an R Squared value of 0.22.

Given that more women than men participated in the study, we conducted a binomial test to determine if the percentages of men and women recruited were significantly different than the expected 50%-50% ratio. There were more female participants (N=35, 63.6%) than male participants (N=20, 36.4%), and this occurrence was not outside the range of the expected 50%-50% ratio ($p = 0.059$). But with a p-value close to significance, we decided to control for gender in the regression analysis by adding it as an independent variable. Gender did not have a statistically significant effect on depressive symptoms (Standardized estimate $\beta = -0.027$, 95% CI [-2.88, 2.33], $p > 0.05$).

Qualitative findings

Although stigma and depressive symptoms were measured using Likert scale items in which participants had to pick a numbered category to respond, most participants shared qualitative narratives about their experience living with HIV. Since interviews were recorded, participants' responses were translated and transcribed. A scatter plot of average stigma scores

over depressive symptom averages revealed that there were people with low stigma that had high depressive symptoms (see Figure 2). Furthermore, the Cronbach's Alpha for the stigma scale was 0.68, which was lower than the conventional 0.70 cutoff. For these reasons, the investigators decided to look at the qualitative responses of participants to better understand stigma.

The qualitative responses were analyzed manually. The investigators read and reviewed the transcripts, identifying concepts and ideas that emerged and reoccurred in the responses during the interview. Four themes emerged in participants' qualitative responses to the stigma questions.

A major theme that emerged among participants' responses is that many participants described experiencing stigma upon first hearing about their diagnosis. Some felt that their experiences have become more positive.

A 32 year old male said, *"People didn't avoid me. But there was a time that I avoided people because I thought my close friends and family would stigmatize me. But when they found out, they were very nice to me and loved me more. So I don't avoid people anymore. I did it when I first found out."*

When asked if others avoided her, a 34 year old female explained that, *"HIV is almost in every home, so people don't stigmatize anymore."*

On the other hand, some participants stated that they didn't experience stigma because they hid their status from most people. In these circumstances, only a spouse or some nuclear family members knew participants' status.

When asked if people had avoided her lately because of her HIV status, a 32 year old female described regularly traveling 180 km to get her HIV medication because she didn't want people in her town to find out her HIV status. She responded as follows— *"No one knows my status so they can't avoid me. Only my husband knows my status. We are still together and he is supportive. We were both negative when we got married, and then 12 years later, I became positive. When I found out, I was very shocked and wanted to do a lot of things, but he calmed me down and said you will live like everybody else. We use condoms now."*

One 18 year old female who moved because she could no longer bare the stigmatization in the community she used to live in said, *"Before, people in my class used to avoid me. The reason I moved here is because of the difficulties I faced at school. Now, no one knows my condition at school. Only my uncle knows now and he is supportive."*

Some participants reported never feeling stigmatized because they did not look sick or because they were properly cared for when they disclosed their status to family and friends.

When asked if she felt left out of things because of her HIV status, a 38 year old female responded, *"No I don't feel this way. I don't have writing on my head that says she is HIV positive, I'm not bedridden, and I leave my house and work and eat like everybody else."*

A 52 year old female gave the following response when ask if she felt out of things because of her HIV status—*I think about not socializing with people, but then everyone is the same these days. So there is no reason to feel left out. This is something time brought and it is everyone's problem. I'm old, and I see this disease in children and even*

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they are happy. So I have no reason to feel left out. The only thing I feel is that I may not have money tomorrow and being below my friends might make me feel left out of things.

Lastly, it is important to note that some participants reported experiencing severe stigma recently. A 35 year old man who is still affected by stigma responded as follows when asked if people still avoided him due to his illness.

Yes I do feel this all the time. Even my neighbors now talk about us. We moved to a new place where no one knows us, but this woman that knew us before came and told everyone our HIV status. So when we come home, our neighbors hide their children because they say our kid will bite them and give them HIV. This stresses my wife a lot and there are times she just wants to leave and go to a monastery. She always wants to move, but I can't afford to move. Sometimes she gets sick from all of this and she won't do any house work and she won't eat.

Discussion

Research relating stigma of HIV and its relationship to depression is limited in the Ethiopian setting. In addition, although depression and stigma may negatively impact treatment utilization among people with HIV in Ethiopia, there is a scarcity of research conducted in this area. The purpose of this study was to examine whether stigma associated with HIV was related to depressive symptoms among people with HIV at Gondar University Hospital ART clinic. In the present investigation, it was hypothesized that stigma related to HIV would be associated with depressive symptoms in patients seeking treatment at the ART clinic because studies outside of Ethiopia have shown this relationship (29). This hypothesis was confirmed; HIV related stigma was associated with depressive symptoms. Higher level of reported sigma was predictive of higher levels of depressive symptoms. We recruited more women than men in the study and therefore controlled for this variable in the multiple regression. However, gender was not significantly associated with depressive symptoms, although other studies have found a significant relationship between gender and depressive symptoms in PLWHA (46).

The implication of the stigma-depressive symptoms association was pronounced. Not only did our regression analyses suggest an association between stigma and depression, but the qualitative response of the participants showed the impacts of stigma and depression in the lives of the participants in our study. One participant highlighted his wife's difficulty leaving the house and having social relations. These psychosocial factors may also impact her engagement in care as well. It will be particularly important in future studies to identify whether stigma and depressive symptoms are barriers to treatment utilization, which can subsequently impact

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health outcomes. Both stigma and depression have been linked to poor engagement to care (8, 25, 30). Depression is known to disrupt engagement to care at all levels of HIV/AIDS care. Most importantly, depression has been linked to poor ART adherence (21). Researchers have found that HIV stigma is associated with poor linkage and retention to care including ART (10, 30, 31). One of the most important tools we have against HIV/AIDS treatment and prevention is ART (47). Ethiopia has an under developed health system for addressing mental health issues (11, 27). Depression is one of the most common issues PLWHA experiences (13). Hence, if depressive symptoms in PLWHA are unrecognized and unaddressed, the lack of attention to mental health issues will undermine the effort the Ethiopian government has put into scaling up ART treatment.

This study revealed an indispensable consideration researchers should make when measuring HIV related stigma. Most participants in the current study had experienced stigma related to their HIV status recently. However, the qualitative responses to the stigma questions revealed that HIV stigma has different faces. Twenty five years into the epidemic, we find that some patients are experiencing severe stigma, while others have overcome this challenge. A major theme echoed by participants was that this epidemic has become pervasive in our society and most people have been touch by it somehow. Thus, people are less inclined to stigmatize these days. Some participants report they stopped feeling stigmatized once they knew their close friends and family members were supportive. Others still feel stigma acutely and take extra measures to conceal their status in the communities they live in.

Another dimension participants described is the visibility of sigma. Some patients explained they don't feel stigma because HIV is not as visible as it used to be before (i.e. weight

loss, lesions, and being bedridden). In stigma discourse, concealability or the visibility of the condition has been identified as a factor that determines the level of stigma an individual experiences from a condition (48). Participant responses to stigma questions and the themes that emerge shed light on the complexity of HIV related stigma and the need to better understand it. As the epidemic evolves, we will need to adapt our measurement tools to capture the nuances of stigma experienced by PLWHA.

Limitations

One of the limitations of the study is the use of measurement tools such as the PHQ-9 and stigma questions from the SSCI. Validation of these measures in the Ethiopian setting is ongoing, which may have weakened the validity of their use in Ethiopia. Additionally, a cultural difference in how people respond to survey questions posed a difficulty. Although we made it clear to all participants that they had to respond using the response options described to them, the majority felt more comfortable responding with narratives, rather than choosing a numbered category response. Another limitation in this study is the sample size. A power calculation was conducted to detect a medium effect size for a bivariate regression analysis. A larger sample size would have allowed exploration of more factors with our variables.

Strengths

Despite these limitations, our study suggests that among people with HIV, stigma and depressive symptoms are important psychosocial factors that are intertwined. The strengths of our study were that the interview protocols were translated into Amharic by a certified medical translator in the Seattle area and questions were also back translated to make sure the content

was retained. Furthermore, the questions were piloted using 5 health professionals practicing in Gondar who have worked with PLWHA. These professionals provided feedback on the accuracy of the Amharic words used to describe depression and stigma. The wording of the questions was adjusted accordingly. Furthermore, giving participants the freedom to share stories enriched the current study. The 32 year old female who traveled 180 km to get her ART medication to avoid revealing her HIV status in the community she lives in answered that she didn't experience perceived stigma because she hid her status from most people. The 18 year old female who moved to a different area because of the debilitating stigma she experienced also reported she didn't experience perceived stigma because her status was a secret to most people in her new community. The motivation to conceal one's status even if it means traveling such a long distance while ART care is available nearby or relocating to a new community to start anew could not be captured with Likert type scales. The qualitative data revealed the personal and moving experiences of people living with HIV in the Gondar region of Ethiopia.

Conclusion

Knowing what factors contribute to depressive symptoms in people living with HIV/AIDS can inform programming and counseling in this population. Increased knowledge about the relationship between stigma and depressive symptoms in patients who are HIV+ is critical in providing additional support to at-risk patients. In Ethiopia, mental health services are very limited and if stigma affects adherence to ART via depressive symptoms as seen in some studies (42), we can use non-professionals within the community to alleviate HIV stigma and improve poor outcomes related to depressive symptoms.

References

1. Ministry of Health Ethiopia. AIDS Single Point Estimate. National Technical Consensus Workshop on HIV Prevalence Estimation. May 2007. Retrieved March 11, 2012 http://www.etharc.org/amhara/Asset/Dowloadables/singlepointprev_2007.pdf. In.
2. National Factsheet. AIDS in Ethiopia Main Indicators 2010- National. Retrieved May 3, 2011 http://www.etharc.org.
3. USAID Ethiopia HIV/AIDS Health Profile. Retrieved May 2, 2011 from http://www.usaid.gov/our_work/global_health/aids/Countries/africa/ethiopia.pdf.
4. HIV Facts & Figures-Amhara. Amhara HIV/AIDS prevention and Control Coordination Office.. Retrieved March 12, 2012 from http://www.etharc.org/amhara/resources/hiv%20facts%20and%20figures/amhara%20HIVfacts.htm. In.
5. City Population. Central Statistical Agency of Ethiopia. Retrieved March 12, 2012 from http://www.citypopulation.de/Ethiopia.html. In.
6. AIDS in Ethiopia. Federal Ministry of Health/National HIV/AIDS Prevention and Control Office: 6th Report. Retrieved March 12, 2012 from http://www.etharc.org/aidsineth/publications/aidsineth6th_en.pdf. In.
7. Federal HIV/AIDS Prevention and Control Office. *Ethiopian multi-sectoral HIV/AIDS response performance report.* Addis Ababa, Ethiopia; 2009. In.
8. Assefa Y, Van Damme W, Mariam DH, Kloos H. Toward universal access to HIV counseling and testing and antiretroviral treatment in Ethiopia: looking beyond HIV testing and ART initiation. AIDS Patient Care STDS 2010;24(8):521-5.
9. Mulissa Z, Jerene D, Lindtjorn B. Patients present earlier and survival has improved, but pre-ART attrition is high in a six-year HIV cohort data from Ethiopia. PLoS One 2010;5(10):e13268.
10. Abaynew Y, Deribew A, Deribe K. Factors associated with late presentation to HIV/AIDS care in South Wollo ZoneEthiopia: a case-control study. AIDS Res Ther 2011;8:8.
11. Prince M, Patel V, Saxena S, Maj M, Maselko J, Phillips MR, et al. No health without mental health. The Lancet 2007;370(9590):859-877.
12. Rabkin JG. HIV and depression: 2008 review and update. Curr HIV/AIDS Rep 2008;5(4):163-71.
13. Willard S, Holzemer WL, Wantland DJ, Cuca YP, Kirksey KM, Portillo CJ, et al. Does "asymptomatic" mean without symptoms for those living with HIV infection? AIDS Care 2009;21(3):322-8.
14. Ciesla J. Meta-Analysis of the Relationship Between HIV Infection and Risk for Depressive Disorders. In: Roberts J, editor. American Journal of Psychiatry; 2001. p. 725-730.
15. Morrison SD, Banushi VH, Sarnquist C, Gashi VH, Osterberg L, Maldonado Y, et al. Levels of self-reported depression and anxiety among HIV-positive patients in Albania: a cross-sectional study. Croat Med J 2011;52(5):622-8.
16. Clarke TR, Gibson RC, Barrow G, Abel WD, Barton EN. Depression among persons attending a HIV/AIDS outpatient clinic in Kingston, Jamaica. West Indian Med J 2010;59(4):369-73.

17.   Williams P, Narciso L, Browne G, Roberts J, Weir R, Gafni A. The prevalence, correlates, and costs of depression in people living with HIV/AIDS in Ontario: implications for service directions. AIDS Educ Prev 2005;17(2):119-30.

18.   Kaharuza FM, Bunnell R, Moss S, Purcell DW, Bikaako-Kajura W, Wamai N, et al. Depression and CD4 cell count among persons with HIV infection in Uganda. AIDS Behav 2006;10(4 Suppl):S105-11.

19.   Monahan PO, Shacham E, Reece M, Kroenke K, Ong'or WO, Omollo O, et al. Validity/reliability of PHQ-9 and PHQ-2 depression scales among adults living with HIV/AIDS in western Kenya. J Gen Intern Med 2009;24(2):189-97.

20.   Amberbir A, Woldemichael K, Getachew S, Girma B, Deribe K. Predictors of adherence to antiretroviral therapy among HIV-infected persons: a prospective study in Southwest Ethiopia. In: BMC Public Health. England; 2008. p. 265.

21.   Gardner EM, McLees MP, Steiner JF, Del Rio C, Burman WJ. The spectrum of engagement in HIV care and its relevance to test-and-treat strategies for prevention of HIV infection. Clin Infect Dis 2011;52(6):793-800.

22.   Leserman J. Role of depression, stress, and trauma in HIV disease progression. Psychosom Med 2008;70(5):539-45.

23.   Gordillo V, del Amo J, Soriano V, Gonzalez-Lahoz J. Sociodemographic and psychological variables influencing adherence to antiretroviral therapy. AIDS 1999;13(13):1763-9.

24.   Etienne M, Hossain M, Redfield R, Stafford K, Amoroso A. Indicators of adherence to antiretroviral therapy treatment among HIV/AIDS patients in 5 African countries. J Int Assoc Physicians AIDS Care (Chic) 2010;9(2):98-103.

25.   Pence BW, O'Donnell JK, Gaynes BN. Falling through the cracks: the gaps between depression prevalence, diagnosis, treatment, and response in HIV care. AIDS 2012;26(5):656-8.

26.   Baingana F, Thomas R & Comblain C (2005) *HIV/AIDS and mental health. Health, Nutrition and Discussion Paper* The World Bank, Washington DC. In.

27.   WHO & MOH Ethiopia. World Health Organization assessment instrument for mental health systems (WHO-AIMS) 2006. Retrieved October 12, 2010 http://www.who.int/mental_health/evidence/ethiopia_who_aims_report.pdf. In.

28.   Johansson KA, Jerene D, Norheim OF. National HIV treatment guidelines in Tanzania and Ethiopia: are they legitimate rationing tools? J Med Ethics 2008;34(6):478-83.

29.   Khan N, Loewenson R. Guidelines for reducing stigma and discrimination and enhancing care and support for people living with HIV and AIDS. In: South African Network of AIDS Service Organizations & European Commission; 2005.

30.   Biadgilign S, Deribew A, Amberbir A, Deribe K. Barriers and facilitators to antiretroviral medication adherence among HIV-infected paediatric patients in Ethiopia: A qualitative study. SAHARA J 2009;6(4):148-54.

31.   Maedot P, Haile A, Lulseged S, Belachew A. Determinants of vct uptake among pregnant women attending two ANC clinics in Addis Ababa City: unmatched case control study. Ethiop Med J 2007;45(4):335-42.

32.   Goffman E. Stigma and social identity. In: Stigma: Notes on the management of spoiled identity. Englewood Cliffs, NJ: Prentice-Hall; 1963. p. 1-40.

33.   Van Brakel WH. Measuring health-related stigma–-A literature review. Psychology, Health & Medicine 2006;11(3):307-334.

34.   Li L, Lee SJ, Thammawijaya P, Jiraphongsa C, Rotheram-Borus MJ. Stigma, social support, and depression among people living with HIV in Thailand. AIDS Care 2009;21(8):1007-13.

35.   Rao D, Choi SW, Victorson D, Bode R, Peterman A, Heinemann A, et al. Measuring stigma across neurological conditions: the development of the stigma scale for chronic illness (SSCI). Qual Life Res 2009;18(5):585-95.

36.   Rüsch N, Angermeyer MC, Corrigan PW. Mental illness stigma: concepts, consequences, and initiatives to reduce stigma. Eur Psychiatry 2005;20(8):529-39.

37.   Corrigan P, Watson A, Barr L. The self-stigma of mental illness: Implications for self esteem and self efficacy. *Journal of Social and Clinical Psychology* 2006;25(9):875-884.

38.   Update as of end of Yekatit. MOH_FHAPCO. Retrieved March 5, 2012 from www.HAPCO.GOV.et In.

39.   Nicodimos S, Gelaye BS, Williams MA, Berhane Y. Associations between witnessing parental violence and experiencing symptoms of depression among college students. East Afr J Public Health 2009;6(2):184-90.

40.   Gelaye B, Arnold D, Williams MA, Goshu M, Berhane Y. Depressive symptoms among female college students experiencing gender-based violence in Awassa, Ethiopia. J Interpers Violence 2009;24(3):464-81.

41.   Nunnally JC. Psychometric Theory. In. (2nd ed.) ed. New York: McGraw-Hill; 1978.

42.   Rao D, Feldman BJ, Fredericksen RJ, Crane PK, Simoni JM, Kitahata MM, et al. A Structural Equation Model of HIV-Related Stigma, Depressive Symptoms, and Medication Adherence. AIDS Behav 2011.

43.   Google search for G power Retreived May 17, 2011 from http://www.psycho.uni-duesseldorf.de/aap/projects/gpower/.

44.   Baron RM, Kenny DA. The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. Journal of Personality and Social Psychology 1986;51(6):1173-1182.

45.   Cohen J. A Power Primer. Psychological Bulletin 1992;112(1):155-159.

46.   Turner BJ, Laine C, Cosler L, Hauck WW. Relationship of gender, depression, and health care delivery with antiretroviral adherence in HIV-infected drug users. J Gen Intern Med 2003;18(4):248-57.

47.   Dieffenbach CW, Fauci AS. Universal voluntary testing and treatment for prevention of HIV transmission. JAMA 2009;301(22):2380-2.

48.   Jones EE, Farina A, Hastof AH, Markus H, Miller D, Scott RA. The dimensions of stigma. In: Social Stigma: The psychology of marked relationships. New York: W.H. Freeman; 1984. p. 24-79.

Appendix A

Table 1.

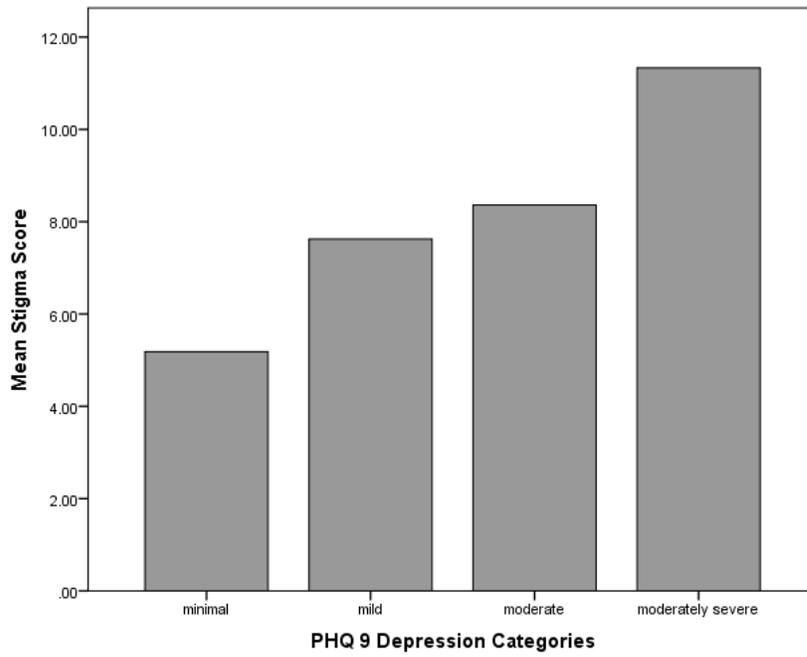| Characteristic (Categorical)	Frequency (%)
Sex	
Male	20 (36.4)
Female	35 (63.6)
Education Level	
No formal education	14 (25.5)
1-6th grade	12 (21.8)
7-12th grade	23 (41.8)
Diploma or above	6 (10.9)
Marital Status	
Legally married	21 (38.2)
Cohabiting	2 (3.6)
Unmarried/single	9 (16.4)
Separated/divorced	13 (23.6)
Widowed	10 (18.2)
Living Arrangement	
# adults living with	
0	18 (32.7)
1-3	30 (56.3)
4 - 6	4 (7.2)
> 6	2 (3.6)
Substance abuse	
Drinking Alcohol	
Once a week	3 (5.5)
On Special occasions	2 (3.6)
Never	50 (90.9)
Chewing Chat	
Once a week	2 (3.6)
Never	53 (96.4)
Religion	
Ethiopian Orthodox	48 (87.3)
Muslim	7 (12.7)
ART Patient	*55 (100)*
Characteristic (Continuous)	**Mean (Standard deviation)**
Age	34.68 (8.72)
CD4 count, N =37 (because of missing data)	366.5 (176.8)
Number of years living with HIV	4.59 (2.66)
Stigma	7.20 (3.82)
Depression	6.63 (4.90)

Figure 1.

Figure 2.