Developing a Scale for Measuring Attitudes of Health Professionals towards PLWHA

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Table of contents

List of tables----------I

List of figures----------I

List of annexes----------II

List of abbreviations----------III

Abstract----------IV

1. Introduction----------1
2. Literature Review----------2
3. Objectives----------12
4. Methodology----------13
5. Results----------23
6. Discussion----------36
7. Conclusions----------41
8. Recommendations----------42
9. References/ Bibliography----------43
10. Annexes----------48

List of tables

Table 1: Item selection criteria and their acceptable ranges Addis Ababa, February 2006/2007 [page 20]

Table 2: Acceptable values for statistics of the PCA of attitude items in Addis Ababa, 2006/2007 [page 21]

Table 3: Skewness and kurtosis of the *a priori* subscales, Addis Ababa, 2006/07[page 26]

Table 4: Inter-subscale and subscale-total correlation matrix, Addis Ababa, 2006/07[page 27]

Table 5: Mean values of component reliability statistics for the attitude towards PLWHA scale, Addis Ababa, 2006/07 [page 31]

Table 6: PCA of components of the attitudes towards PLWHA scale, Addis Ababa, 2006/07 [page 32]

Table 7: Descriptive statistics of the three subscales of the attitudes towards PLWHA scale, Addis Ababa, 2006/07 [page 33]

List of figures

Fig1: Scree plot of the components of the instrument [page 29]

Fig 2: Normal Q-Q plot of the total scale score [page 35]

List of annexes

Annex 1. Interview Questions [page 48]

Annex 2.Free listing opinion survey Format [page 49]

Annex 3: Expert review format [page 50]

Annex 4: pilot study format [page 53]

Annex 5: Main survey format [page 57]

Annex 6: Important tables

Table 1: *Factor loadings of the items of the attitude towards PLWHA scale, Addis Ababa, 2006/07 [page 61]*

Table 2*: Descriptive statistics of items in the three components of the scale, Addis Ababa, 2006/07[page 62]*

List of Abbreviations

AAU- Addis Ababa University

AIDS – Acquired immunodeficiency syndrome

ANC- Antenatal care

ART- Antiretroviral treatment

FHI- Family health international

GPs- General practitioners

HIV – Human immune virus

KMO - Kaiser-Meyer-Olkin

PAHO- Pan American Health Organization

PCA- Principal Component analysis

PLWHA- People living with HIV/AIDS

Q-Q- Quantile by Quantile

SD – Standard deviation

SPSS- statistical packages for social sciences

VCT- Voluntary counselling and testing

Abstract

Back ground: - No other disease in recent history has generated so much concern, fear, anxiety, and prejudice both among health care personnel and the general public as has HIV/AIDS. Health providers' attitudes about HIV/AIDS constitute an important dimension in the delivery of quality care to persons with HIV/AIDS. Besides these facts, very little is known about the attitudes of health professionals towards people living with HIV/AIDS (PLWHA).

Objective: - This study was aimed at developing a scale for measuring attitudes of health professionals towards PLWHA and evaluating the reliability and validity of the scale.

Methodology:-A cross-sectional study was conducted at 10 government hospitals in Addis Ababa between the months of February 2006 and February 2007. The study consisted of two phases: identifying attitude items for the instrument; and administering the instrument in its revised form to 474 health professionals [nurses and physicians] for rating. The instrument was initially pilot tested with other group of 44 health professionals. The instrument was analyzed for reliability and validity throughout the process. SPSS version 11 was used for analysis.

Results: A 22-item 'attitude towards PLWHA scale' had been developed with good internal consistency [Cronbach's alpha =0.79], and showed good construct and concurrent validity. Comparison of different groups suggested that nurses and health professionals with limited experience have more negative attitudes towards PLWHA. Factor analysis yielded three subscales explaining 34.35% of the variance: testing PLWHA, stigmatizing attitude, and care/ services.

Conclusions: The 'attitudes towards PLWHA' demonstrated strong reliability for the total scale. Continuing study, however, is vital in revising and optimizing the instrument to improve the quality of the scale overtime and externally validate it.

1. INTRODUCTION

Ethiopia has the second highest number of HIV infections and deaths in Sub-Saharan Africa after South Africa. It is estimated that there are about 3 million people living with the disease in the country. [1] The epidemic is claiming the lives of the most productive, energetic and educated segments of the population.

In addition to the other burdens of the disease, people living with HIV/AIDS (PLWHA) are subjected to stigmatization, discrimination and fear which contribute to the culture of silence surrounding the disease and consequently to its spread. Moreover, socio-cultural obstacles (misconceptions and taboos) also contribute to the silence surrounding AIDS and eventually its spread.[2]

HIV/AIDS associated stigma is probably most perturbing when it occurs in situations where it is least expected. In this respect, the experiences of some people living with HIV/AIDS indicate that even professionals and institutions supposed to provide the best care and support to those infected with HIV do not always behave according to professional ethics.[2]

Because they define health and illness and grant or deny access to life-saving treatments, health professionals have a tremendous influence on the physical and emotional welfare of people with HIV or who are vulnerable to infection. It is not surprising, therefore, that people with HIV/AIDS are highly sensitive to the attitudes and behavior of health workers.[3]

Though many surveys have been carried out to assess health professionals' attitudes towards HIV/AIDS worldwide, very little is known in Ethiopia. Moreover, there is no single instrument to measure the attitudes of health professionals towards PLWHA. Thus, this research will try to develop and initially validate an instrument to measure attitudes of health professionals towards PLWHA. The instrument may later be used by other researchers interested in the area and others involved in the delivery of quality care to persons with HIV/AIDS.

2. LITERATURE REVIEW

Attitude and its components

Attitude derives from the Latin 'aptitudo', meaning 'fitness'; that is fitness to engage in the execution of the task. The modern usage of the term is *a predisposition to act in a certain way towards some aspect of one's environment, including other people.*[4] Attitudes can be positive or negative and can affect the behavior of an individual. They serve a primary function of bringing together the diverse experiences to which an individual is exposed and forming them into a cohesive, organized whole. It is through the attitudes and belief systems of an individual that environmental perception acquires meaning. The danger is that attitudes may become so rigidly adhered to that instead of assisting an individual in understanding his environment and the events taking place within it, they become the perception. The process of changing attitudes requires that the individual

objectively examine the critical elements of the attitude and identifies those components that are valid and those that are prejudgments.[4]

Social psychologists describe attitude as a complex tendency of persons to behave in positive or negative ways or to respond in a favorable or unfavorable manner to social objects in his or her environment. They all agree that attitudes are learnt, but differ as to how. Attitudes are enduring systems but there are times when it is necessary to effect change. The functionalists believe that attitudes serve a particular motivational function, that is, serve ego needs and are therefore protective of self. They also provide support for one's values and therefore are intrinsically rewarding. This view makes it difficult to change attitudes since change to what motivates the individual is required, which is further compounded by the fact that what is underlying the motivation is usually unknown even to the individual. The cognitive theorists feel that the individual is always striving for consistency; therefore the way to institute change is through the components of attitude. They argue that there are three structural components of attitude: the affective components which refer to positive or negative emotions about something; the behavioral component which involves intentions to act in certain ways, to engage in behaviors that are somehow relevant to one's attitude; and lastly the cognitive component which refers to the thinking and interpreting that goes into forming or using an attitude.[4]

Attitude is gained through experience and contact with the world around us. As individuals develop, they acquire a set of beliefs and attitudes that in part influence how they interact. They may be altered by new experiences and information. Essentially, attitudes are formed through a learning process, which can occur in a number of ways: classical conditioning, operant conditioning, observational learning and imitation.[4]

Attitudes of health professionals towards PLWHA

As mentioned earlier above, the attitudes and behaviors of health professionals towards PLWHA have considerable influence on their physical and emotional wellbeing. Although the majority of health workers report neutral or positive attitudes, the experiences of people with HIV/AIDS in health care settings suggest that discrimination is widespread in South America.[5]

Discrimination in health care settings takes a variety of forms and can result in delayed, inappropriate or withheld treatment, breaches of confidentiality, inappropriate behavior, and use of excessive precautions. It can even lead to a false sense of safety and make health workers fail to take proper precautions when dealing with patients who are not perceived as members of stigmatized groups.[5]

A recent report by the Pan American Health Organization (PAHO) reveals that patients with HIV or AIDS experience stigma and discrimination from doctors, nurses and other health care providers just as from members of society at large.

Released on World AIDS Day, the PAHO report, Understanding and Responding to HIV/AIDS-Related Stigma and Discrimination in the Health Sector, reviews research on the attitudes and practices of health care providers and the experiences of HIV/AIDS patients. It finds that stigma and discrimination threaten the quality of patient care as well as efforts to control the epidemic's spread in the Americas and other regions.[5]

A survey conducted in 2002, among some 1,000 physicians, nurses and midwives in four Nigerian states, also returned disturbing findings. One in 10 doctors and nurses admitted having refused to care for an HIV/AIDS patient or had denied HIV/AIDS patients admission to a hospital. Almost 40% thought a person's appearance betrayed his or her HIV-positive status, and 20% felt that people living with HIV/AIDS had behaved immorally and deserved their fate.[6]

In another study done in Nigeria in 2005, 21% of health care providers (doctors, nurses and midwives) agreed to an attitude statement asking if one can refuse to treat a patient with HIV/AIDS to protect oneself.[7]

Lack of confidentiality is also repeatedly mentioned as a particular problem in health care settings. Many people living with HIV/AIDS do not get to choose how, when and to whom to disclose their HIV status. When surveyed recently, 29% of persons living with HIV/AIDS in India, 38% in Indonesia, and over 40% in Thailand said their HIV-positive status had been revealed to someone else without

their consent. Huge differences in practice exist between countries and between health care facilities within countries. In some hospitals, signs have been placed near people living with HIV/AIDS with words such as 'HIV-positive' and 'AIDS' written on them.[6]

Living with HIV and AIDS is seen as a shameful thing in Ethiopia for many reasons. The infection is associated with adultery and prostitution. HIV is associated with religious beliefs of 'irregular sex', which is categorized as 'sinful behavior'. Put simply, HIV/AIDS is seen as the result of gross negligence and irresponsibility of the infected person.

A report by FHI-Ethiopia, in 2002, revealed that even in places where beneficiaries were supposed to receive the best of care, attitudinal problems were encountered amongst service providers. These problems were manifested in different forms. Some service providers mistreated beneficiaries visiting health institutions for clinical care; the mistreatment faced by the beneficiaries included snubs, scolds and outright insults. In other cases, health workers pointed out that they were fed up with PLWHA and denied them proper care and treatment. Moreover, some health workers demanded greater proof of serostatus than that provided by official certificates.[2]

The same report quoted the following experience of two people living with the virus. The first female informant said that she was abused and mistreated by a physician at Yekatit hospital. She said that she was knocked against a wall and

dragged out of the room by the physician when she confessed her serostatus. The second informant reported that she was once asked to buy ten pairs of gloves for gynecological examination at Black Lion hospital because she was HIV positive. [2]

Ethiopia therefore requires a massive shift in attitudes among its communities in general and health workers in particular in order to reduce the stigmatization of people living with HIV and AIDS. More positive attitudes and social responses are needed to combat the spread of the disease; specifically we need to accept people with HIV and AIDS as a 'normal' part of our society. We should confront biased social attitudes that ostracize individuals and families through education and appropriate policy regimes. It is, therefore, very important to develop a reliable and valid instrument for measuring attitudes of health professionals towards PLWHA.

Attitudes as targets of measurement

Attitudes are essentially opinions. Most health educators have long been concerned with influencing attitudes because it is widely believed that attitudes are related to behaviors, and behavior change is a basic goal of health education and health promotion. Understanding attitudes is an important part of understanding behavior. Measuring attitudes with accuracy is a formidable challenge, however.[8]

Attitudes are a difficult entity to measure. They are more inferred than demonstrated. They are abstract qualities that we cannot measure directly. Attitudes are often inconsistent and can vary widely within the same individual.[8]

Approaches to attitude measurement

Based on where inferences are drawn from, five attitude measuring techniques are identified: self-report, observation, individual's reaction of partially structured stimuli, performance of objective task and psychological reactions to the attitudinal object. Among these, observation and self-report are the most commonly used measuring techniques.[9]

Though defining an attitude as a hypothetical construct seems to contradict with the view that attitude can be measured on the basis of observable responses, observers making use of rating-scales can measure attitude since attitudes affect behavior. However, the difficulties of finding qualified observers and sufficient relevant incidents to observe usually makes measurement based on direct observation unattractive. The easier and generally better way is to ask subjects directly what they believe or what they like to do. Thus, measurement of attitudes is usually based on the subject's self-report.[9]

Instruments used to measure attitudes are usually referred to as attitude scales. Although in many areas of psychological test construction the aim is to produce a

single, thoroughly validated test that will become widely adopted by the field, the area of attitude measurement has not followed that tradition. Researchers often prefer to devise a new attitude scale for each new research project even if several compendia of validated scales are available. One reason for this difference in approach is the existence of a near infinite number of attitudes.[9]

Many techniques of scale construction have been developed. These include Thurstone's equal-interval scale, Likert's summated rating scale, Osgood et al's Semantic differential, Guttmann's scaleogram, and Lazarsfeld's latent structure analysis. Of these, only the first two have come into wide use.[9] Even though these methods differ quite a bit, they are intended to do the same thing: measure and describe attitudes.[8]

Equal-interval measurement

Equal-interval scales, also known as ''Thurstone'' scales, require considerable effort to develop but are valuable because of relatively easy administration and scoring. The scale consists of a number of items whose position on the scale has been determined previously by a ranking operation performed by judges. The basic idea behind these scales is that attitudes about issues exist in graduations on an imaginary continuum from positive to negative and, therefore, the attitude of one person can be described according to its place on the continuum.[8]

Some of the limitations of Thurstone's equal-interval scales are[9]:

- The judges rating the items cannot be completely neutral and, depending on the issue, may produce a distorting bias in the rating system.
- It may be difficult to choose the best items from those with the scale values, and
- The construction of the scale can be time consuming.

Summated ratings

This is also known as the ''Likert'' format. Unlike equal-interval method, there is no underlying continuum of the attitude that one is trying to use to judge individual attitudes, nor is there any assumption that one can divides the attitude into gradations.

The summated rating approach has more flexibility than the equal-interval method and allows for easier introduction of context into the measurement process[8]. There are some limitations of this scale, however[9]:

- For each respondent, scores on the scale only have meaning relative to the scores in the distribution obtained from other respondents.
- The ''undecided'' score is ambiguous.

With these limitations, the Likert scale is still easier to use and currently it is the most widely used technique of scale development[9].

Semantic differential scales

This is based on a concept that is distinct from both summated ratings and equal-interval scales. The semantic differential, sometimes called ''adjective pairs'' is based on the idea that the way an individual reacts to an issue, and makes his/her attitude apparent, can be measured by the way he/she favors adjectives that describe various aspects of the issue in question. There is a certain type of cleverness that goes into developing the semantic differential that is different from that needed for the other types of attitude measures.[8]

3. OBJECTIVES

- General

- To develop a scale for measuring attitudes of health professionals towards People Living with HIV/AIDS (PLWHA).

- Specific

- To identify and assess descriptors of attitudes of health professionals towards PLWHA.
- To construct a preliminary scale for measuring attitudes of heath professionals towards PLWHA.
- To evaluate the reliability and validity of the scale.

4. METHODOLOGY

Study area and period

This study was conducted at 10 government hospitals in Addis Ababa between the months of February 2006 and February 2007. Addis Ababa is the capital city of Ethiopia and was established by Emperor Menilik II in 1886. It is geographically located at the center of the country. Addis Ababa is the economic and social center of the country where the large proportion of the country's health and social services are found. There are about 592 health institutions in the city: 394 private clinics, 106 government factory clinics, 28 NGO clinics, 23 government health centers, 9 government clinics, 32 hospitals (19 private, 12 government owned, and 1 NGO hospital). There are about 2500 health professionals working in these health institutions.

Study population

The source population for the study was all health professionals working in the government owned hospitals. The study population was selected health professionals [nurses and physicians] in these hospitals, as these are the ones who usually deal with PLWHA.

Study design

The study followed a cross-sectional study design employing both qualitative and quantitative methods. The qualitative part was used to identify descriptors of

attitudes of health professionals and to construct items for the scale. The quantitative part, on the other hand, evaluated the reliability and validity of the preliminary scale for measuring attitudes of health professionals towards PLWHA.

Sample size determination

Sample size was determined using a sample size formula for estimating correlations [10] under the following assumptions.

$\alpha = 0.05$

Type II error=0.2

Effect size= 0.2 (d_r=0.1)

Contingency = 20%

$$N = \frac{(Z_{\alpha/2} + Z_{\beta})^2}{d^2} + 3$$

Using the above formulae, traditional method, sample size was 787. Halving of this according to the modern method for initial validation of an instrument[11] the required sample size will be 394. Considering 20% non-response rate, the required sample size for this study became 474.

Sampling procedure

Qualitative phase

Sampling was generally purposive with selection of good sources of information for in-depth interviews and free listing opinion surveys. The informants include PLWHA, heads of PLWHA associations, and health professionals.

Quantitative phase

Simple random sampling with proportional allocation to size was used in this phase of the study. The calculated sample size was proportionally allocated to each hospital and then to each health profession.

Principal research instruments

Qualitative part

For this phase of the study, in-depth interview guidelines were prepared and used. The in-depth interviews were conducted with purposively selected experts in the area and focused on eliciting attitudes of health professionals towards PLWHA. They addressed issues like risk perception, emotionality, confidentiality to VCT, care and support, to explore the attitudes of health professionals towards PLWHA. The free listing opinion surveys, on the other hand, allowed respondents to freely list what they believed to be descriptors of attitudes of health professionals towards PLWHA.

Quantitative part

In this phase, the identified items were prepared in a six point Likert-type scale format as a preliminary scale of measurement for rating. The format included main independent variables, suspected confounders, and the outcome variables (i.e., the identified attitude items).

Operational definitions

- **Health professionals:** includes midwives, nurses, interns, general practitioners, residents, specialists, and sub-specialists.
- **Attitude:** predisposition of health professionals to act positively or negatively towards PLWHA.
- **Scale:** a Likert-type format with a response set from a negative to a positive continuum used to assess the degree of heath professionals' agreement to their attitudes towards PLWHA.
- **Measurement:** the process of determining the descriptive value of attitudes of health professionals based on the degree of their agreement to specific attitudes.
- **Item:** a short sentence or clause used to represent the attitudes.
- **Factor analysis**: a multivariable method that has as its aim the explanation of relationship among several difficult to interpret correlated variables in terms of few conceptually meaningful, relatively independent factors.
- **Factors:** are dimensions (or latent variables) identified with clusters of highly correlated variables, as computed using factor analysis.
- **Factor loadings**: the correlations between the factors emerging from factor analysis and the original variables used in the construction of the factors.
- **Communality:** the squared multiple correlations for a variable using factors as predictors
- **Eigenvalues**: the variance in all the variables that is accounted for by a factor, computed as the sum of its squared factor loadings for all the variables.

Data collection

Qualitative data

The principal investigator collected the qualitative data mainly through note taking and recording. The free opinion survey was first conducted followed by the in-depth interviews to further elaborate findings from the free opinion survey.

Quantitative data

Data were collected using a self-administered questionnaire (the preliminary scale) prepared in simple English. Four facilitators with first degree were trained for two days on the purpose of the study and on how to distribute, collect questionnaires and check them for completeness. Study subjects were briefed about the nature and objective of the study and then were asked to rate the attitude scale.

Designing of the instrument

Item development

Both inductive and deductive approaches to item development were employed. Attitude items elicited through interviews and opinion surveys were enriched by concepts from the literature. This resulted in an initial item pool containing 54 items.

These items were then handed to a group of experts (1 psychologist from AAU, 3 instructors at the Department of Community Health, 1 language expert, and 15 health professionals working in the area) for review and sorting on their degree of

importance in reflecting the construct of interest. This review resulted in deletion of 9 items and modification of 45% of the items to remain with item pool of 45.

Incorporating comments of the experts, the preliminary attitude items were administered for pilot testing after being prepared in a six point Likert-type scale format. The pilot study was conducted among 44 health professionals not to be included in the main study. Respondents were also asked to forward any comments regarding the item characteristics. After analysis of the results from the pilot study, six items were discarded for their large median-mean difference [>0.5] and six others were modified. Further analysis of the pilot study yielded the preliminary reliabilities of the *a priori* subscales to be 0.555, 0.564 and 0.502 [for stigma and discrimination, VCT, and care/support subscales, respectively]. The total scale alpha was found to be 0.72.

Incorporating the comments from the pilot study, a preliminary scale with 3 subscales and 42 [including 3 alternative scale questions] items was prepared in a 6-point Likert-type scale format and administered to the representative sample of health professionals.

Data analysis

Qualitative part

Data obtained in this phase of the study were organized manually. A framework of the research question was identified into which the data were sorted for descriptive analysis. Finally, the attitude items identified were prepared in a

preliminary six point Likert-type scale format for rating. The scales ranged from very strongly agree to very strongly disagree with no neutral option to avoid bias.

Quantitative part

Data were entered into SPSS version 11 for analysis. Data were assumed to follow a continuous pattern and were treated as interval data. Data analysis was done using measures of location and dispersion to determine the relative importance of attitude items. ANOVA was used to test differences among different items. Moreover, Pearson's product moment correlation coefficient, Cronbach's alpha, the Spearman-Brown prophecy formula, linear regression, student's t-tests, and exploratory factor analysis with Varimax rotation were also used. P-values less than 0.05 were considered to be statistically significant in all cases.

Item analysis and selection

The mean, median, item-subscale correlation, item-scale correlation, median-mean difference, communality, and factor loadings were computed for all items of each *a priori* subscale to identify items to be retained. Distributions of item scores (determined by median-mean difference, skewness, kurtosis, and Q-Q plots) were used to identify non-normally distributed items. The acceptable values for all the above item analysis criteria were settled within the following limits (Table 1).

Table 1: Item selection criteria and their acceptable ranges Addis Ababa, February 2006/2007

S.N	*Item analysis criteria*	*Acceptable values*[12, 13, 14]
1	Mean values of items	Between 2.5 & 4.5
2	Item-subscale correlation	Greater than or equal to 0.2
3	Item-scale correlation	Greater than or equal to 0.2
4	Median-Mean difference	Less than 0.5
5	Communality	Greater than 0.3
6	Skewness & kurtosis/ their SE	Between –2 and +2

Reliability analysis

Reliability of the scale was demonstrated by determining the internal consistency of the items using Cronbach's alpha, average item-total correlation, and split-half reliabilities. The Spearman-Brown prophecy formula was used to estimate the split-half reliability.

Validity analysis

Content validity and face validity were addressed by methodological triangulation in item development and expert review. Construct validity, and convergent and divergent validity were estimated by running correlations between factors and items under the same and different dimensions. The presence of a higher-order component (component of components) was determined to check whether the factors measured a single construct. Concurrent validity was measured by evaluating the discriminating ability of the scale between groups in expected ways.

Factor analysis

Exploratory factor analysis (principal component analysis) was conducted to reveal the underlying factor structure of the attitudes towards PLWHA instrument. The statistics for the factor analysis were set at the following values (Table 2).

Table 2: Acceptable values for statistics of the PCA of attitude items in Addis Ababa, 2006/2007

S.N	*Preconditions*	*Acceptable values*[12,13,14]
1	KMO measure of sampling adequacy	Greater than 0.5
2	Bartlett's test of spherity	P-value <0.05
3	Factor loadings	Greater than 0.35
4	Component-total correlation	Greater than 0.2
5	Item-higher order component correlation	Greater than 0.2

Further analysis of factors was done using Tukey's test of additivity [to check whether the factors were additive or not]. Hotelling's T-square was applied to test whether the means of the factors were different or not. The Z-transformation was used to establish the norm for respondents' total scores.

Data quality control

Qualitative part

Data were checked on daily basis for completeness. The context of the attitude items was evaluated through expert review, literature review and the pilot study. Within the preliminary subscales, items were randomly ordered to eliminate any

order effect. About half of the items were reversed in order to minimize response bias, and a six-point forced choice Likert-type scale was used to minimize any central effect.

Quantitative part

Data collectors with a first degree were recruited and trained for two days on how to collect data appropriately. On-site supervision and feedback were given to them. Appropriate changes were made after the pilot study. Data entry was done by the principal investigator after checking for completeness and coding. Ten percent of the data were double-entered to check for the accuracy of data entry. Data cleaning was done by running frequencies for each variable in SPSS. Reversely coded items were recoded before doing any form of analysis. Respondents having variance > 5 for at least two of the subscales were excluded from subsequent analysis to avoid extreme effect.

Ethical considerations

Ethical clearance was obtained from the Department of Community Health and Faculty of Medicine, AAU. Other letters of consent were also obtained from the respective hospitals to be involved in the study. Informed consent was obtained from the key informants and experts. Written consent was obtained from the study participants during the main survey (quantitative study). Participants were provided with information about the objectives and expected outcomes of the study at every stage of it. Confidentiality of information was maintained by anonymous linkage.

5. RESULTS

Demographic characteristics of respondents

The main survey format, containing 42 items in three *a priori* subscales [stigma and discrimination, VCT, and care and support], was administered to a total of 474 health professionals for rating. Four hundred sixty two [97.5%] questionnaires were returned, of which 457 [98.9%] were acceptably completed and were included for the study. The variance of 37 subjects was found to be very large [> 5.0] and they were excluded leaving 420 subjects for the analysis.

Of these, 215 [51.2%] were males and the rest were females. The minimum and maximum ages were 17 years and 59 years, respectively, with the mean being 31.5 years. Most [74.6%] were nurses [including clinical nurses and midwives] while 25.4% were physicians [including interns, GPs, residents, specialists and sub specialists].

Ethnicity wise, 43.3% of the respondents belonged to the Amhara ethnic group. Oromo, Tigre, Guraghe, and others made up the rest, in that order.

About 48% of the respondents had served for more than five years in health institutions. Only 19.7% of them had experience of less than a year.

About 74%of the respondents said that they had cared for an HIV/AIDS patient, and of these, 34.7% had caring experience of five years or more.

Item analysis and selection

Mean values

Based on the criterion given in Table 1, a total of 9 items [five items (items 2, 3, 7, 12 and 15) in the stigma and discrimination subscale, 2 items (items 19 and 22) in the VCT subscale and 2 others (items 31 and 42) in the care and support subscale] had mean values out of the acceptable range [i.e., 2.5-4.5]. However, apart from three items [items 3, 19, and 31], all had item-subscale correlation > 0.3 and were retained. The three items [3, 19, and 31] were discarded from further analysis.

Item-subscale and item-scale correlation

Corrected for self correlation, these were investigated in order to delete items which did not contribute to the scale's homogeneity and consistency. Because of low [i.e., < 0.2] item-subscale correlation, eleven new items [2 items (1 & 6) from the stigma subscale, 4 items (16, 17, 26, and 28) from VCT subscale, and 5 items (30, 33, 34, 37, and 40) from the care and support subscale] were discarded from their respective subscales.

Two new additional items [item 23 from VCT subscale and item 38 from care and support subscale] were discarded because their item-scale correlations were < 0.2.

Median-mean difference

Item 12 from the stigma subscale was deleted from the subscale as it had a large median-mean difference [>0.5] indicating non-normal item-score distribution.

Communality

This was determined applying principal component analysis [PCA]. All items in each subscale had an acceptable value for retention [i.e.,> 0.3].

Using the above five criteria, a total of 17 items were discarded from the *a priori* scale. The remaining 25 items were subjected to statistical analysis of skewness, kurtosis and reliability.

Skewness and kurtosis

Skewness is a measure of asymmetry of a distribution. The normal distribution is symmetric, and has a skewness of 0. A distribution with a significant positive skewness has a long right tail and vice versa. As a rough guide, a skewness value more than twice its standard error is taken to indicate a departure from symmetry.

Kurtosis is a measure of the extent to which observations cluster around a central point. For a normal distribution the value of the kurtosis stastic is 0. Positive kurtosis indicates that the observations cluster more and have longer tails that

those in normal distribution and negative kurtosis shows that the observations cluster less and have shorter tails.

As shown in the table below, all three *a priori* subscales had an approximately normal distribution. The nature of distribution of the subscales was further checked using normal Q-Q plots and was found to be consistent with the results displayed in the table.

Table 3: Skewness and Kurtosis of the *a priori* subscales, Addis Ababa, 2006/07

Subscales	**No of items**	**Skewness**	**SE of skewness**	**Kurtosis**	**SE of Kurtosis**
Stigma/discrimination	10	0.150	0.119	-0.379	0.238
VCT	7	-0.153	0.119	-0.339	0.238
Care/support	5	0.094	0.119	0.123	0.238

Inter-subscale and subscale-total correlations

These were done to demonstrate how the *a priori* subscales were correlated to each other and the total scale. All three subscales were found to be significantly correlated to each other and the total scale, the average inter-subscale and subscale-total correlations being 0.35 and 0.74, respectively. This can be seen from the table below.

Table 4: Inter-subscale and subscale-total correlation matrix, Addis Ababa, 2006/07

	S	**V**	**C**	**T**
Stigma/discrimin. (S)	-			
VCT (V)	.386**	-		
Care/support(C)	.400**	.259**	-	
Total (T)	.862**	.720**	.627**	-

**P<0.05 for all cases

Internal consistency

The internal consistency reliability of the scale was determined by using Cronbach's alpha, split-half, average inter-item correlation and average item total correlation.

The average item-total and inter-item correlations of the whole scale were found to be 0.33 and 0.21, respectively. The Cronbach's alpha for the *a priori* subscales, on the other hand was found to be 0.69 for stigma and VCT subscales while it was 0.6 for the care/support subscale. The split-half reliability of the scale was found to be 0.69. The total *a priori* scale with 22 items had a Cronbach's alpha of 0.79.

Factor analysis

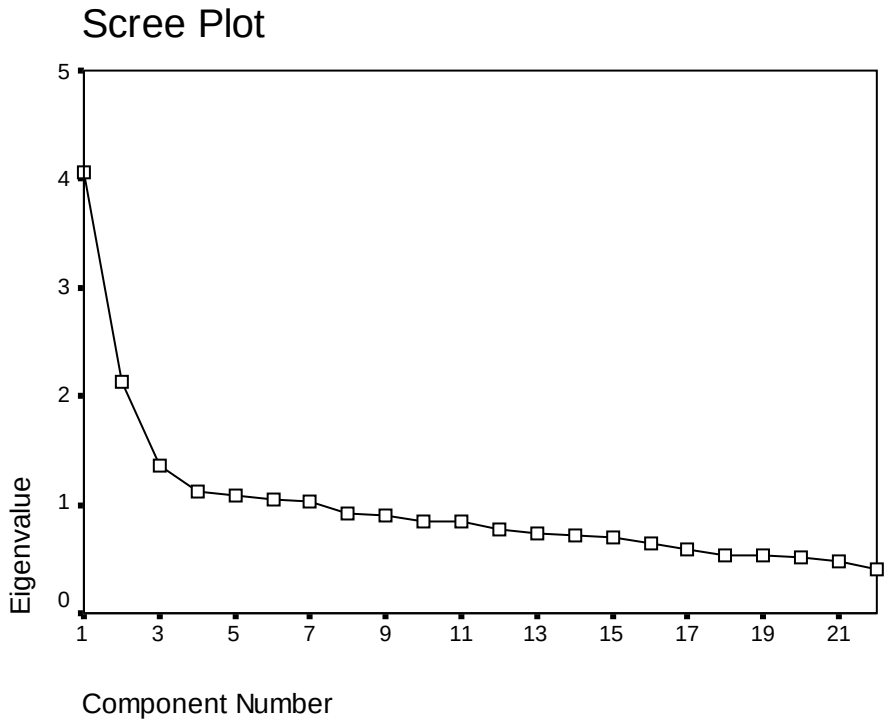
After omitting 17 items based on the criteria mentioned above, the remaining 22 items were subjected to exploratory factor analysis. Before proceeding to the

process of factor analysis, however, two tests were deemed necessary: the Kaiser-Meyer-Olkin [KMO] measure of sampling adequacy and Bartlett's test of spherity. Bartlett's test of spherity tests whether the correlation matrix is an identity matrix, which would indicate that the factor model is inappropriate. It was found that this test was statistically significant (chi-square=1451.826, DF=302, P-value<0.000) suggesting that factor analysis was appropriate for the data.

KMO measure of sampling adequacy, on the other hand, was found to be 0.8 indicating that the sample was adequate for factor analysis.

In the exploratory principal component analysis, seven components with eigenvalues > 1.0 emerged together explaining 53.83% of the variance. Examination of the scree plot [fig 1], however, suggested that a three-factor solution would be more appropriate. Interpretability of factor content was also examined to come up with the three-factor solution.

Fig1: Scree plot of the components of the instrument



After Varimax rotation, the three factor solution explained 34.35% of the variance. The three components identified were almost the same as the *a priori* subscales and labeling was made based on the name of the subscales.

The first factor [% of variance explained= 18.49%] contained 7 items describing perceptions towards testing PLWHA. The factor loadings ranged between 0.459 and 0.704. Five of the items in this factor originated from the *a priori* subscale VCT and one from the stigma subscale. This factor was labeled 'testing PLWHA'.

The second factor [% of variance explained = 9.71%] consisted of eight items which all originated from the *a priori* subscale stigma and discrimination. Hence, it was labeled as 'stigmatizing attitude'. Factor loadings ranged from 0.355 to 0.636.

The third factor [% of variance explained = 6.15%] comprised seven items, predominantly from the original care/support subscale [5 items] and one item from stigma and VCT subscales each. It described the perception of health professionals towards the services PLWHA should have and it was labeled as 'care/services'. The factor loadings ranged between 0.418 and 0.632.

Reliability analysis

In the subsequent reliability analysis, no further items were deleted since all contributed to the scale's consistency. Cronbach's alpha coefficients for the internal consistency reliability were good for the components with values 0.685 for testing PLWHA, 0.694 for the stigmatizing attitude and 0.613 for care/services.

The Cronbach's alpha and the standardized item alpha for the whole scale were found to be 0.79 and 0.78, respectively. The mean values of component reliability statistics are displayed in the table below.

Table 5: Mean values of component reliability statistics for the attitude towards PLWHA scale, Addis Ababa, 2006/07.

Components	Item means	Inter-item correlation	Item-total correlation	Cronbach's alpha
Testing	4.12	0.237	0.396	0.685
Stigmatizing	2.95	0.221	0.385	0.694
Care/services	2.86	0.201	0.328	0.613
Total Scale	**3.29**	**0.21**	**0.33**	**0.785**

Validity

Two types of validity were mainly demonstrated: construct validity [using PCA and demonstrating convergent and divergent validity] and concurrent validity.

Construct validity

Higher-order component

The identified three components of the scale were further analyzed to reveal the presence of an underlying construct. The inter-component correlation matrix was once again subjected to PCA to evaluate whether any higher-order component [component of components] could be identified. Using the PCA, one component solution emerged explaining 56.12% of the total variance. This revealed that all the components could measure a single construct.

Table 6: PCA of components of the attitudes towards PLWHA scale, Addis Ababa, 2006/07

Subscales	Component-total correlation	Communality	Factor loading
Testing	0.709	0.461	0.679
Stigmatizing	0.827	0.679	0.824
Care/services	0.703	0.544	0.737

The item-higher-order component correlations of all items in the scale were run and were found to be well > 0.2 which is in favor of retaining all the items. This resulted in a final 22-item of 'attitudes towards PLWHA' scale which can measure attitudes of health professionals towards PLWHA.

Convergent validity

This was demonstrated by running correlations among items in each subscale and their alternative items. It was found that the subscales were highly correlated with their alternative scale items suggesting convergent validity [mean inter-correlation being 0.35].

Divergent validity

Alternate items that belong to a certain subscale were found to be less correlated with the other subscales indicating divergent validity with some degree of overlap [mean inter-correlation being 0.19]. This value of *r* is less than that for convergent validity demonstrating construct validity.

Concurrent validity

As a measure of concurrent validity, demographic data were analyzed to evaluate the ability of the instrument to discriminate between groups in predictable ways. Descriptive statistics [mean, SD, and sum using the method of summated scores] of the three identified subscales revealed that 'testing PLWHA' subscale had the highest summated score to be followed by 'stigmatizing attitude' and 'care/services' in that order. The values can be seen in the following table.

Table 7: Descriptive statistics of the three subscales of the attitudes towards PLWHA scale, Addis Ababa, 2006/07.

Statistics	**Testing PLWHA**	**stigmatizing Attitude**	**Care/ services**
Mean	28.81	23.56	20.03
Std. Deviation	6.29	7.12	5.60
Sum	12098.00	9896.00	8413.00

Hotelling's T-square test was employed to compare if the means of the subscales were the same. It demonstrated that the means were significantly different [$P<0.001$]. Comparison of component scores between respondents of the two major professional groups included in the study [nurses and physicians] revealed a significant difference [$P<0.05$]. Nurses were found to score higher on the subscales when compared to physicians.

Influence of subjects' experience in care for PLWHA was also found to be significant for the 'stigmatizing attitude' subscale [P<0.05] but not for the other two subscales. Individuals who had no experience scored higher in the specified subscale. However, there was no significant relationship between the whole scale scores and other demographic characteristics of subjects [sex, age group, religion and ethnicity] with P> 0.05.

Weights of components

As the developed scale tries to investigate health professionals' attitudes towards PLWHA through selected predictors which later become components of the scale, Tukey's test of additivity was done to see if the components were additive. The Tukey's estimate of power to which observations must be raised to achieve additivity was 0.85 [i.e., ~ 1] indicating that the items in all the components were additive. Hence, simple summation of the scores of the components can determine the total attitudes towards PLWHA score. Linear regression analysis findings were also consistent with this result with all coefficients of the components being equal to one.

Norm

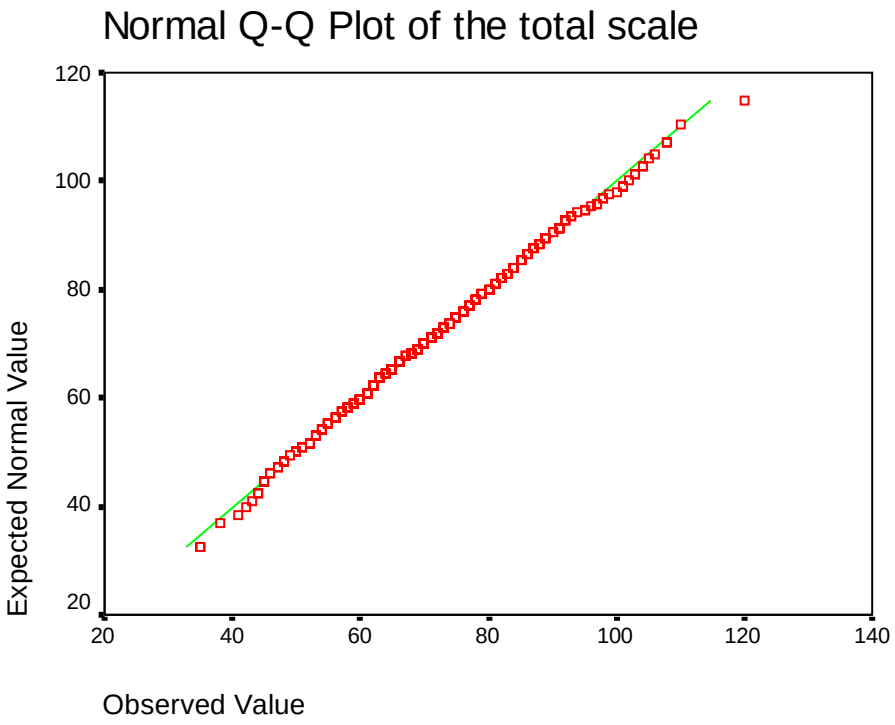
The scale has mean of 72.4 and standard deviation of 14.27. It was learned from the skewness and kurtosis of the scale that the data on which this scale is based are normally distributed [skewness and kurtosis statistics over their respective

standard error are between -2 and +2]. The Q-Q plot also speaks in favor of this finding. (Fig 2)

If one wants to know how each participant's score compares with the rest of the population, a norm is needed. The norm for the scale would be:

$$\textbf{Z-score} = \frac{\textbf{(Respondent's score) – (72.4)}}{\textbf{14.27}}$$

Fig 2: Normal Q-Q plot of the total scale score



6. DISCUSSION

The primary aim of this study was to develop and evaluate a scale for measuring attitudes of health professionals towards PLWHA. As attitudes are more inferred than demonstrated, the first step of item development was identifying important measuring issues [which later become subscales] that can predict attitudes of health professionals towards PLWHA. The scale development, therefore, began with a clearly defined content domain that included three distinct theoretical constructs: stigma and discrimination, VCT and care and support.

Since attitudes are inconsistent and can vary widely among different contexts, a qualitative study was necessary to identify the scale items for the three mentioned predictors of the construct of interest.

The study data were obtained from sample of health professionals [nurses and physicians] in government owned hospitals in Addis Ababa. Appropriate analytical techniques were used to examine the items and thereby assess the reliability and validity of the scale. Though talking about possibility of generalization of the findings of the study is preliminary at this stage, it is clear that it will pave the way for feature studies in this area of interest.

The item selection process was systematic and sequential employing many criteria set for the purposes of item analysis. This contributed to the quality of the items

that made the instrument. Triangulation of the methods of item development was also important in this respect.

The study used the forced choice Likert scale format, a summated ratings approach of measuring attitudes which is more flexible than other approaches of measurement and allows for easier introduction of context into the measurement process. This makes the administration and scoring of the instrument straight forward. For the purpose of this study, high scores are meant to express negative attitudes towards PLWHA and *vice versa*.

The instrument was found to be reliable with acceptable values for each item and the overall scale. Although it is not possible to calculate reliability exactly, it can be estimated using estimators. Internal consistency reliability was mainly used in the study for this purpose. Due to the inconsistent nature of attitudes, test-retest reliability could not be utilized to assess the consistency of the scale over time. The reliability of the developed scale, however, was 0.79. This tells that there is high consistency of with-in subject responses and greater variability between subjects in the sample. It also shows that there is homogeneity of variances among items of the scale. The widely-accepted cut-off for Cronbach's alpha is 0.70 or higher for a set of items to be considered a scale[12]. The alpha for the developed instrument in this study is, therefore, acceptable.

The scale was also found to be internally valid as demonstrated in several ways. Evaluation of individual items for content, theoretical fit, and readability by expert judges, and subsequently by representatives of the target population, helped ensure face and content validity. This shows that the items are good reflections of the construct.

Three pieces of evidence supporting construct validity were demonstrated. First, arriving at a final factor solution that closely approximated the three theoretical constructs that were used to develop the scale items supports the construct validity of the scale. Second, there was only one higher-order component indicating that the components measure one underlying construct. Finally, the two subtypes of construct validity, convergent and divergent validities, were also demonstrated. Though there are no firm rules for how high or low the correlations need to be to provide evidence for either type of validity, the convergent correlations should always be higher than the divergent ones [15]which is true in this study. Having construct validity, the developed instrument reflects *the construct of interest, the whole construct, and nothing but the construct*.[15]

Concurrent validity was measured by evaluating the ability of the scale to distinguish between groups in expected ways. Studies show that nurses and health professionals with less experience with PLWHA do have more negative attitudes towards PLWHA. As predicted, these groups of health professionals scored higher

[indicating more negative attitudes] mainly in the stigmatizing attitudes subscale. This could be an indication that, on top of up-to-date training, increasing the opportunities to provide direct patient care to PLWHA might improve the attitudes of health-care professionals towards this group.

It cannot be denied that the instrument has some limitations. First, though the sample size was adequate to represent health care professionals working in government hospitals in Addis Ababa, the reliability and validity of the scale need to be tested at a wider scale [involving many regions and private hospitals] to ensure valid external generalization.

Second, the absence of universally accepted guidelines for item analysis may have introduced some sort of subjectivity in selection of items for the instrument. Furthermore, using a normal distribution assumption for nearly normally distributed data may inevitably have introduced measurement error. The effect of these errors may not affect the entire quality of the instrument much, however.
Finally, the instrument was demonstrated to be internally valid. Nonetheless, the scale should further be validated against other already validated instruments to ensure external validity though there is no gold standard measurement to do so.

This instrument has been developed to measure attitudes of health professionals towards PLWHA, and has the reliability and validity to become a useful research

tool. It has several positive practical features: first, the items can be understood by the majority of health professionals. Second, it can be administered, on average, within 10 minutes which is relatively good in terms of saving health professionals' time. Finally, the score of the scale is additive making the analysis of the results simple. It may also prove important in improving the quality of care of PLWHA in health care institutions by assessing any prevailing negative attitudes of health-care professionals and designing measures to avoid them. Nevertheless, the instrument needs to be tested for reliability and validity in wider perspectives to ensure its generalization at a broader scale.

7. CONCLUSIONS

The 22-item 'attitude towards PLWHA scale' developed has high reliability (Cronbach's alpha =0.79), and apparently high construct and concurrent validity. These show that the scale does have high internal consistency and it is about one and only one construct; i.e., attitudes of health professionals towards PLWHA. Moreover, it can truly discriminate between different groups in expected ways.

Continuing study, however, is vital in revising and optimizing the instrument to improve the quality of the scale overtime and externally validate it.

Further study is necessary at a larger scale involving several groups of health professionals from different regions and private health institutions to ensure possibility of wider generalization.

8. RECOMMENDATIONS

The developed instrument could potentially be utilized by behavioral health researchers, public health and measurement experts. The principal investigator, therefore, would like to recommend the following:

As the development of this instrument is at its preliminary stage, and the study population considered to validate the instrument was limited, researchers should check at a minimum for reliability in any new population in which it is utilized.

Measurement experts should evaluate the reliability of the instrument as it is or after adding other important features, and check the applicability of the instrument to other group of health-care professionals working in different settings throughout Ethiopia.

Finally, measurement experts, behavioral health researchers or interested public health experts should demonstrate external validity of the instrument in order to ensure wider generalization.

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10. ANNEXES

Annex 1. Interview Questions

1. What do you understand by attitude towards PLWHA?
2. What do you think is the attitude of health professionals towards PLWHA at present? (Based on real life time experience) [Provoke!]
3. How do you describe the attitudes of health professionals towards PLWHA? (Based on real life time experience) [provoke!]

Annex 2.Free listing opinion survey Format

This format is prepared to create a pool of descriptors of attitudes of health professionals towards PLWHA. You are kindly requested to write your free opinion.

In your opinion write statements that can describe attitudes of health professionals towards PLWHA. (*Please write as much as you can).*

Thank you.

Annex 3: **Expert review format**

The following 54 statements are generated to be included in the scale to be developed to measure the attitudes of health professionals towards PLWH. As an expert working in the area of HIV/AIDS, you are kindly requested to classify the statements into one of three categories ("essential (1)", "interesting but not essential (2)", and "irrelevant (3") based on their importance to explore health professionals' attitudes towards PLWHA. You can also generate other items that you consider to be necessary to explore the issue. Your help is appreciated in advance.

Preliminary items

Stigma and discrimination

1. I am willing to work with an HIV positive colleague.----------
2. PLWHA shouldn't be the subject of clinical trial even if it is for their own benefit----------
3. PLWHA have the right to work----------
4. It is best to isolate HIV patients to protect them from infections from other patients.----------
5. It is best to isolate HIV patients to protect other patients from them. ----------
6. It is best to isolate HIV patients to protect medical staff. ----------
7. I would use additional precautions if I suspected or knew someone to be HIV positive. ----------
8. I can visually identify a person with HIV. ----------
9. PLWHA should be prohibited from using public services such as swimming pools. ----------
10. An HIV positive surgeon/ gynecologist shouldn't be allowed to practice. ----------
11. Patients will go elsewhere if they find out that I am treating AIDS patients. -------
12. There should be separate instruments/equipments for HIV/AIDS patients. ---------
13. Using RVI notation as a reminder to take precautionary infection control measures while providing services is advisable. ----------
14. Gossiping about suspected and confirmed HIV/AIDS infected individuals is normal. ----------
15. I don't want to touch a patient with HIV infection. ----------
16. Isolation of HIV patients should be legalized. ----------
17. I believe that any person with an opportunistic infection is a PLWHA. ----------
18. Patients living with HIV/AIDS should be treated the same as any other patients. –

VCT

19. Counseling families of PLWHA can be just as important as counseling PLWHA.
20. It is wrong for consent to be sought after blood taken for another purpose has been tested for HIV. ----------
21. HIV testing shouldn't be conducted if pre and post test counseling is not available. ----------
22. HIV testing for people who can't consent, because of mental illness or mental incapacity, should only be done with consent of a guardian, parent, and only if it is for the benefit of the persons involved. ----------
23. Health care workers should encourage PLWHA to disclose their HIV status. ----------
24. HIV status of patients should be kept confidential.-------
25. HIV/AIDS testing should never be a requirement for employment. ----------
26. Testing should be compulsory for particular populations like sex workers. --------
27. All foreigners should be tested. ----------
28. Any pregnant woman coming for ANC should be tested for HIV. ----------
29. There is no harm to disclose HIV status of patients to family members. ---------
30. There is no harm to disclose HIV status of patients to non-treating health workers.
31. There is no harm to disclose HIV status of patients to employers. ----------
32. There is no harm to disclose HIV status of patients to other patients. ----------
33. HIV testing prior to surgery should be a routine activity. ----------
34. It is important to know patients' serostatus to protect oneself from becoming infected with HIV. ----------
35. It is difficult to maintain confidentiality, particularly because community-members and other patients clearly recognize the clinical symptoms of HIV/AIDS. ----------

Care and support

36. ARV drugs should be available and accessible to those who require them. -------
37. Quality of life of PLWHA improves with home care and counseling. ----------
38. Overlooking the needs of PLWHA is a poor prevention strategy. ----------
39. Health professionals should treat PLWHA with respect and compassion. ---------
40. I am willing to assist with an operation on a patient with HIV/AIDS. ----------
41. I am willing to assist with the delivery of a baby born to a mother with HIV/AIDS
42. Treating some one with HIV/AIDS is waste of resources. ----------
43. Patients should not be left to die alone just because there is no cure. ----------
44. All HW caring for HIV/AIDS patients should be given incentives to motivate them. ----------
45. I wouldn't prefer to work in any HIV/AIDS related service. ----------
46. PLWHA are overly demanding, easily dissatisfied patient who ask for special care. ----------
47. I don't think an HIV-positive person with opportunistic infections can live a healthy life even if he gets ART. ----------

48. I believe that saliva, feces and urine of HIV/AIDS patients could also be sources of infection. ----------
49. I feel worried about caring for people with HIV/AIDS. ----------
50. I feel people may suspect me of being a PLWHA because of my service to PLWHA. ----------
51. I feel compassion when I see a PLWHA seeking treatment. ----------
52. I fear contact with any suspected PLWHA, irrespective of their health condition. _____
53. The public and private media should portray or paint positive pictures of people living with HIV/AIDS. ----------
54. PLWHA should seek remedy from religious places as there is no cure in modern health facilities._____

Annex 4: pilot study format

Consent form

A research project on developing a scale for measuring attitudes of health professionals towards PLWHA is being conducted by Esayas Haregot in the Department of Community Health, AAU. You are being asked to take part in this study by completing the attached questionnaire. It may take a maximum of 15 minutes to complete it. Please be aware that you are not obliged to participate in the study.

There is no possible risk associated with participating in this study except the time spent for completing the questionnaire. Your responses will be treated anonymously to protect your privacy. The scale developed will be used to measure attitudes of health professionals towards PLWHA so that appropriate actions could be taken as part of the efforts to contain the pandemic.

If you have questions regarding this study or would like to be informed of the results after its completion, please feel free to contact Esayas Haregot&/or Dr.Gail Davey at the Department of Community Health, AAU.[TEL. 0911180929/ 091388835]

If you agree to voluntarily participate in this study as described, please indicate your agreement by signing this consent form and completing and returning the attached questionnaire.

Signature ---------- Date----------

Questionnaire for developing a scale for measuring attitudes of health professionals towards PLWHA in Addis Ababa, Ethiopia, January 2007

Code---------

I. <u>Demographic information (write or circle)</u>

1. ***Age*** ----------
2. ***Sex*** 1.male
   2. Female

3. ***Profession*** 1.midwife
   2. Nurse
   3. Intern
   4. GP
   5. Resident
   6. Specialist
   7. Sub specialist

4. ***Religion*** 1.orthodox
   2. Protestant
   3. Catholic
   4. Muslim
   5. Other (specify)

5. ***Ethnicity*** 1. Amhara
   2. Oromo
   3. Tigre
   4. Guraghe
   5. Other (specify)

6. ***Year of service*** 1. < 1 year
   2.1-3 years
   3. 3-5 years
   4.>5 years

7. ***Have you ever given any service or Care for HIV/AIDS patient?*** 1. Yes 2. No

8. ***If yes, for how long?*** 1. < 6 months
   2. 6 months- 1year
   3. 1 year -3 years
   4. 3-5 years
   5. > 5 years

II. Rating format

The following are descriptors of attitudes of health professionals towards PLWHA identified by qualitative study in Addis Ababa. Please rate them on the following scale. (Mark "**X")**

1. Very Strongly disagree
2. Strongly Disagree
3. Disagree
4. Agree
5. Strongly agree
6. Very strongly agree

Thank you for your honest response!

	Attitude statements	1	2	3	4	5	6
1.	I am willing to work with an HIV positive colleague.						
2.	PLWHA shouldn't be the subject of clinical trial. [R]						
3.	PLWHA have the right to work.						
4.	RVI notation on charts of PLWHA reminds me to take precautions.[R]						
5.	Isolation of HIV patients protects other patients from them.						
6.	I would use additional precautions if I suspected someone to be HIV positive.						
7.	It is best to isolate HIV patients to protect medical staff.						
8.	PLWHA should be prohibited from using public swimming pools.						
9.	HIV positive surgeon shouldn't be allowed to practice.[R]						
10.	Patients will go elsewhere if they find out that I am treating AIDS patients.						
11.	There should be separate medical equipments for HIV/AIDS patients.[R]						
12.	Isolation of HIV patients protects them from other infections.						
13.	Talking about suspected HIV/AIDS infected individuals is normal.						
14.	I don't want to touch a patient with HIV infection.[R]						
15.	**Isolation of HIV patients should be legalized. [R]**						
16.	Counseling families of PLWHA can be just as important as counseling PLWHA						
17.	There is no harm in testing blood taken for another purpose for HIV. [R]						
18.	There is no harm to disclose HIV status of patients to other patients.						
19.	HIV status of patients should be kept confidential.						
20.	HIV/AIDS testing should never be a requirement for employment.[R]						

21.	Testing should be compulsory for particular populations like sex workers.						
22.	I fear contact with any suspected PLWHA.						
23.	Any pregnant woman coming for ANC should be tested for HIV.						
24.	HIV status should be disclosed to family members/partners.[R]						
25.	I am willing to assist with an operation on a patient with HIV/AIDS.						
26.	There is no harm to disclose HIV status of patients to employers.						
27.	There is no harm to conduct HIV testing without counseling.						
28.	HIV testing before surgery should be a usual activity.[R]						
29.	Knowing patients' serostatus will help me protect myself from HIV infection.						
30.	There is no harm to disclose HIV status of patients to non-treating health workers.[R]						
31.	**Maintaining confidentiality is difficult in health institutions.[R]**						
32.	Quality of life of PLWHA improves with home care. [R]						
33.	ARV drugs should be available and accessible to those who require them.						
34.	I am willing to assist a mother with HIV/AIDS in labor.[R]						
35.	I feel compassion when I see a PLWHA seeking treatment.[R]						
36.	Patients should not be left to die alone just because there is no cure.						
37.	Health Workers caring for HIV/AIDS patients should be given incentives.[R]						
38.	I wouldn't prefer to work in any HIV/AIDS related services. [R]						
39.	PLWHA are easily dissatisfied patients who ask for special care.						
40.	I don't think HIV-positive people can live a healthy life even with ART.						
41.	Saliva, feces or urine of HIV/AIDS patients could also be sources of infection.						
42.	I feel worried about caring for people with HIV/AIDS.						
43.	People may suspect me as a PLWHA because of my service to PLWHA						
44.	All foreigners should be tested for HIV.						
45.	**Treating HIV/AIDS patients is waste of resources.[R]**						

R== reversed items

Annex 5: Main survey format

Consent form

A research project on developing a scale for measuring attitudes of health professionals towards PLWHA is being conducted by Esayas Haregot in the Department of Community Health, AAU. You are being asked to take part in this study by completing the attached questionnaire. It may take a maximum of 15 minutes to complete it. Please be aware that you are not obliged to participate in the study.

There is no possible risk associated with participating in this study except the time spent for completing the questionnaire. Your responses will be treated anonymously to protect your privacy. The scale developed will be used to measure attitudes of health professionals towards PLWHA so that appropriate actions could be taken as part of the efforts to contain the pandemic.

If you have questions regarding this study or would like to be informed of the results after its completion, please feel free to contact Esayas Haregot&/or Dr.Gail Davey at the Department of Community Health, AAU.[TEL. 0911180929/ 091388835]

If you agree to voluntarily participate in this study as described, please indicate your agreement by signing this consent form and completing and returning the attached questionnaire.

Signature ---------- Date----------

Questionnaire for developing a scale for measuring attitudes of health professionals towards PLWHA in Addis Ababa, Ethiopia, January 2007

Code---------

I. <u>Demographic information (write or circle)</u>

1. ***Age*** ----------
2. ***Sex*** 1.male
   2. Female

3. ***Profession*** 1.midwife
   2. Nurse
   3. Intern
   4. GP
   5. Resident
   6. Specialist
   7. Sub specialist

4. ***Religion*** 1.orthodox
   2. Protestant
   3. Catholic
   4. Muslim
   5. Other (specify)

5. ***Ethnicity*** 1. Amhara
   2. Oromo
   3. Tigre
   4. Guraghe
   5. Other (specify)

6. ***Year of service*** 1. < 1 year
   2.1-3 years
   3. 3-5 years
   4.>5 years

7. ***Have you ever given any service or Care for HIV/AIDS patient?*** 1. Yes 2. No

8. ***If yes, for how long?*** 1. < 6 months
   2. 6 months- 1year
   3. 1 year -3 years
   4. 3-5 years
   5. > 5 years

II. Rating format

The following are descriptors of attitudes of health professionals towards PLWHA identified by qualitative study in Addis Ababa. Please rate them on the following scale. (Mark "**X")**

1. Very strongly disagree
2. Strongly Disagree
3. Disagree
4. Agree
5. Strongly agree
6. Very strongly agree

Thank you for your honest response!

	Attitude statements	1	2	3	4	5	6
1.	RVI notation on charts of PLWHA reminds me to take precautions.[R]						
2.	Isolation of HIV patients protects other patients from them.						
3.	I am willing to work with an HIV positive friend.						
4.	PLWHA should be the subject of clinical drug trial.[R]						
5.	PLWHA should be prohibited from using public swimming pools.						
6.	HIV positive surgeon should be allowed to practice.[R]						
7.	It is best to isolate HIV patients to protect medical staff.						
8.	Patients will go away if they find out that I am treating AIDS patients.						
9.	Talking about suspected HIV infected individuals is normal.						
10.	There should be separate medical equipments for HIV/AIDS patients.[R]						
11.	Isolation of HIV patients protects them from other infections.						
12.	I don't want to touch a patient with HIV infection.[R]						
13.	HIV/AIDS patients should be treated in a separate clinic.						
14.	I will use additional precautions if I suspect someone to be HIV positive.						
15.	**Isolation of HIV patients should be legalized.[R]**						
16.	There is no harm to disclose HIV status of patients to other patients.						
17.	HIV/AIDS testing should never be a requirement for employment.[R]						
18.	I will test blood of laboring mother suspected to have HIV infection.[R]						
19.	HIV status of patients should be kept confidential.						
20.	There is no harm in testing blood taken for another purpose for HIV.[R]						
21.	Testing should be compulsory for particular populations like sex workers.						

	Attitude statements	1	2	3	4	5	6
22.	Any pregnant woman coming for ANC should be tested for HIV.						
23.	HIV status should be disclosed to family members/partners. [R]						
24.	HIV testing before surgery should be a regular activity.[R]						
25.	All foreigners should be tested for HIV.						
26.	HIV status of patients shouldn't be told to non-treating health workers.[R]						
27.	Knowing patients' serostatus will help me protect myself from HIV infection.						
28.	HIV status of patients should be disclosed to employers.						
29.	**Maintaining confidentiality is difficult in health institutions.[R]**						
30.	I am willing to assist with an operation on a patient with HIV/AIDS.						
31.	Quality of life of PLWHA improves with home care.[R]						
32.	I fear contact with any suspected PLWHA.						
33.	I am willing to assist a mother with HIV/AIDS in labor.[R]						
34.	Saliva of HIV/AIDS patients could be source of infection.						
35.	I feel worried about caring for people with HIV/AIDS.						
36.	I don't think HIV-positive people can live a healthy life even with ART.						
37.	Health Workers caring for PLWHA should be given extra payment.[R]						
38.	PLWHA are easily dissatisfied patients who ask for special care.						
39.	I wouldn't prefer to work in any HIV/AIDS related services.[R]						
40.	I feel kindness when I see PLWHA seeking treatment						
41.	People may suspect me as a PLWHA because of my service to PLWHA						
42.	**Treating HIV/AIDS patients is waste of resources.[R]**						

Annex 6: Important tables

Table 1: *Factor loadings of the items of the attitude towards PLWHA scale, Addis Ababa, 2006/07*

Items	Components		
Testing PLWHA	1	2	3
I will use additional precautions if I suspect someone to be HIV Positive.	0.459		
I will test blood of laboring mother suspected to have HIV infection.[R]	0.468		
Testing should be compulsory for particular populations like sex workers.	0.525		
Any pregnant woman coming for ANC should be tested for HIV.	0.704		
HIV testing before surgery should be a regular activity.[R]	0.676		
All foreigners should be tested for HIV.	0.643		
Knowing patients' serostatus will help me protect myself from HIV infection.	0.571		
Stigmatizing attitudes			
Isolation of HIV patients protects other patients from them.		0.610	
PLWHA should be prohibited from using public swimming pools.		0.494	
It is best to isolate HIV patients to protect medical staff.		0.627	
Patients will go away if they find out that I am treating AIDS patients.		0.520	
Talking about suspected HIV infected individuals is normal.		0.355	
There should be separate medical equipments for HIV/AIDS patients.[R]		0.636	
Isolation of HIV patients protects them from other infections.		0.567	
HIV/AIDS patients should be treated in a separate clinic.		0.451	
Care/services			
PLWHA should be the subject of clinical drug trial.[R]			0.476
There is no harm in testing blood taken for another purpose for HIV.[R]			0.462
I fear contact with any suspected PLWHA.			0.418
I feel worried about caring for people with HIV/AIDS.			0.611
I don't think HIV-positive people can live a healthy life even with ART.			0.632
I wouldn't prefer to work in any HIV/AIDS related services.[R]			0.599
People may suspect me as a PLWHA because of my service to PLWHA			0.502

Extraction method: *PCA*

Rotation method: *Varimax with Kaiser Normalization*

Rotation converged *in 6 iterations*

Table 2*: Descriptive statistics of items in the three components of the attitudes towards PLWHA scale*, Addis Ababa, 2006/07.

Testing component	***Sum***	***Mean***	***SD***
I will use additional precautions if I suspect someone to be HIV Positive.	1656	3.94	1.44
I will test blood of laboring mother suspected to have HIV infection.[R]	1720	4.10	1.55
Testing should be compulsory for particular populations like sex workers.	1596	3.80	1.67
Any pregnant woman coming for ANC should be tested for HIV.	1991	4.74	1.47
HIV testing before surgery should be a regular activity.[R]	1648	3.92	1.52
All foreigners should be tested for HIV.	1696	4.02	1.62
Knowing patients' serostatus will help me protect myself from HIV infection	1791	4.26	1.40
Stigmatizing component			
Isolation of HIV patients protects other patients from them.	945	2.25	1.48
PLWHA should be prohibited from using public swimming pools.	1174	2.80	1.48
It is best to isolate HIV patients to protect medical staff.	983	2.34	1.52
Patients will go away if they find out that I am treating AIDS patients.	1246	2.97	1.48
Talking about suspected HIV infected individuals is normal.	1423	3.39	1.57
There should be separate medical equipments for HIV/AIDS patients.[R]	1545	3.68	1.76
Isolation of HIV patients protects them from other infections.	1434	3.41	1.71
HIV/AIDS patients should be treated in a separate clinic.	1146	2.73	1.57
Care/services component			
PLWHA should be the subject of clinical drug trial.[R]	1301	3.10	1.50
There is no harm in testing blood taken for another purpose for HIV.[R]	1273	3.03	1.51
I fear contact with any suspected PLWHA.	1114	2.65	1.50
I feel worried about caring for people with HIV/AIDS.	1302	3.10	1.36
I don't think HIV-positive people can live a healthy life even with ART.	1168	2.78	1.54
I wouldn't prefer to work in any HIV/AIDS related services.[R]	1081	2.57	1.41
People may suspect me as a PLWHA because of my service to PLWHA	1174	2.80	1.38

Declaration

I, the undersigned, declare that this thesis is my original work, has not been presented for a degree in this or any other university and that all sources of materials used for the thesis have been fully acknowledged.

Name: Esayas Haregot

Signature: _____

Place: _____

Date of submission: May, 2007

This thesis has been submitted for examination with my approval as a university advisor.

Name: Dr. Gail Davey

Signature: _____

Date: _____