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Factors Influencing Attitudes towards People Living with HIV/AIDS in Zambia: Does HIV Testing Matter?

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Abstract

Background: In spite of the increase in the number of people testing for HIV, the virus that causes AIDS, stigma and discrimination against people living with HIV/AIDS (PLWH) remains one of the major obstacles in the fight against HIV/AIDS. This paper examines the factors that influence HIV testing in Zambia and looks into detail whether testing for HIV reduces stigma and discrimination against PLWH.

Methods: The data used in this paper were drawn from the 2005 Zambia Sexual Behaviour Survey conducted by MEASURE Evaluation and the Central Statistical Office, Zambia. This is a nationally representative survey whose main objective is to obtain national estimates on a number of key indicators important for monitoring progress of the national HIV/AIDS/STDs programme. The study was conducted among women aged 15-49 years and among men aged 15-59. Our analysis is based on 3,982 men and women aged 15-49 years.

Results: Results show that HIV testing is not the most significant factor in inculcating tolerant attitudes towards PLWH. The most influential factors are level of education and knowledge of HIV/AIDS. Multivariate results also show that respondents who are young, from Nyanja-speaking ethnic groups, with low HIV/AIDS knowledge levels, less than secondary education, and those with high risk sexual behaviour had lower odd-logs of having more than less tolerant attitudes towards PLWH. On the other hand, health workers and those from Region 1, and males who had ever tested for HIV had higher odd-logs of having more than less tolerant attitudes towards PLWH.

Conclusions: This paper demonstrates that HIV testing alone is not the most influential factor towards achievement of positive attitudes towards PLWH. Ideally, apart from learning about one's status, a person who has undergone the counselling process during testing should also have more tolerant attitudes towards people infected with HIV. Therefore, there is need to ensure that counselling is emphasised before and after testing for HIV in order to change attitudes towards PLWH.

Keywords: Attitudes; Stigma; Discrimination; HIV testing; PLWH

Introduction

In spite of the increase in the number of people testing for HIV, stigma and discrimination against PLWH remains one of the major obstacles in the fight against HIV/AIDS [1,2]. Extant literature defines HIV/AIDS-related stigma as a process of devaluation, prejudice, discrediting and discrimination of people living with or associated with HIV and AIDS depending on their confirmed or suspected HIV serostatus [3-7]. This process may not only affect the physical health of individuals [8,9] but could also hinder seeking of HIV/AIDS-related health services such as HIV Voluntary Counselling and Testing (VCT) [10,11]. On the other hand, proponents of VCT argue that use of VCT services helps in the normalisation and acceptance of HIV/AIDS, which are critical for the reduction of stigma and discrimination against PLWH [10,12]. As HIV/AIDS awareness levels rise, an individual's tolerance of PLWH increases, regardless of one's social or economic status [13,14]. Among the health professionals, it has been observed that their attitudes towards PLWH are influenced by how much they know about HIV/AIDS [15,16].

Several factors influence people's attitudes towards PLWH. These factors could be psychological factors, direct personal experiences, parental influences, group determinants of attitudes, mass media and learning processes in attitude formation [8,17]. In China, a study by Chen et al. found that the prevalence of HIV/AIDS related stigma was much higher among individuals who incorrectly believed that casual contact with people who had HIV/AIDS could cause HIV/AIDS [18], other studies have also found significant differences in attitudes towards PLWH by various demographic and socio-economic characteristics such as age, sex, ethnicity and education [6,16,19,20]. In Jamaica, Norman et al. found that students who were very spiritual (highly religious) were more sympathetic towards PLWH than those with low religiosity but added that the sympathy also depended on the type of PLWH (e.g. children, male-homosexual, female-sex worker, male-heterosexual) [14].

Studies investigating the relationship between HIV related stigma and discrimination and HIV testing have found that stigma plays a role as a barrier to testing uptake and different types of stigmas have varying measures of association with pathways to HIV testing [11,16,21,22].

However, very little is documented on the effect of HIV testing in reducing the stigma associated with HIV. Therefore, using a sample of 3,982 respondents in the 2005 Zambia Sexual Behaviour Survey (ZSBS), this paper examines the effect of HIV testing on attitudes towards PLWH in Zambia. In this study, we try to establish whether people who have undergone HIV testing are likely to have higher tolerance towards PLWH.

Conceptual Framework

The conceptual framework was designed using various sources of literature. This framework shows that attitudes, which are part of

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the psychosocial factors, are influenced by bio-demographic, socio-cultural, socio-economic factors and HIV testing. On the other hand, attitudes also influence decisions regarding HIV testing. As Weil (1990) observed, individuals are likely to adopt behaviours that suit their perceptions or attitudes through personal experiences [23].

Methods

The data for this paper were drawn from the 2005 ZSBS data sets. These data comprise of 4,386 men and women aged 15-49 years. However, only 3,982 cases were valid for the multivariate analyses. In order to include some sexual behaviour characteristics in the analyses, the Individual and Partners Files were merged using identity numbers.

The ZSBS is a nationally representative survey conducted by MEASURE Evaluation and the Central Statistical Office. The main objective of this survey is to obtain national estimates on a number of key indicators important for monitoring progress of the national HIV/AIDS/STDs programme. However, this 2005 ZSBS over-sampled some clusters in Southern and Western Provinces in order to study peer educators. Therefore, to ensure that the data are nationally representative, only individuals from clusters 1-150, which are the originally designed clusters were included in the analyses. Furthermore, for purposes of making comparisons between men and women, men aged 50-59 were excluded from the analyses.

Variables

Five (5) key questions from the 2005 ZSBS were used to model the dependent variable. These questions were expressed in form of statements and respondents had three options: (i) Yes; (ii) No; and (iii) Don't Know. The percentage distributions of respondents according to the response given per each of the five questions are shown in Table 1 below.

According to Table 1, most respondents were willing to help look after relatives suffering from AIDS but a quarter of respondents also felt that PLWH should be blamed or ashamed for bringing AIDS in the community. In addition, almost a third (31%) of respondents said that they could not buy fresh vegetables from people infected with HIV. Table 1 also shows that almost 40 per cent of respondents could not reveal the HIV-positive status of their relative or family member.

No.	Attitude towards PLWH questions/statements	Responses (%)				Total	
		Yes	No	DK	Missing	%	n
1.	People with AIDS should be ashamed of themselves.	25.2	73.4	-	1.3	100.0	4,286
2.	People with the AIDS virus should be blamed for bringing the disease into the community.	23.0	76.4	-	0.5	100.0	4,286
3.	If a relative of yours became sick with the AIDS virus, would you be willing to care of him or her in your own household?	92.7	6.5	0.3	0.4	100.0	4,286
4.	Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had the AIDS virus?	67.7	31.5	0.2	0.6	100.0	4,286
5.	If a member of your family got infected with the virus that causes AIDS would you want it to remain a secret?	39.2	59.7	0.4	0.6	100.0	4,286

DK=Don't know.

Table 1: Percent distribution of respondents' attitudes towards people living with HIV/AIDS.

Background characteristics	%	n
Age		
15-24	30.7	1,224
25+	69.3	2,758
Sex		
Male	46.0	1,831
Female	54.0	2,151
Marital status		
Unmarried	24.5	977
Married	75.5	3,005
Religion		
Catholic	22.6	900
Non-Catholic	77.4	3,082
Religiosity		
High	86.0	3,426
Low	14.0	556
Ethnicity		
Nyanja	74.5	2,966
Non-Nyanja	25.5	1,016
Residence		
Rural	51.3	2,043
Urban	48.7	1,939
Occupation		
Health worker	0.9	35
Other	99.1	3,947
HIV/AIDS knowledge level		
Low	62.9	2,506
High	37.1	1,476
Ever tested for HIV		
Yes	54.6	2,173
No	45.4	1,809
Region		
Region 1	59.6	2,373
Region 2	40.4	1,609
Education level		
<Secondary	17.5	696
Secondary+	82.5	3,286
Sexual behaviour		
High risk	33.5	1,334
Low risk	66.5	2,648
Total	**100.0**	**3,982**

Table 2: Percentage distribution of respondents by selected background characteristics.

The information in Table 1 was used to construct the index of attitudes towards PLWH. Each tolerant (or positive) response had a score of 1. An intolerant (or negative) response had a score of 0. The few respondents who gave "don't know" responses and missing cases were excluded from the analyses. However, there were very few (<1%) such cases (Table 2). Total scores per individual were summed up and the results are shown in Figure 1.

According to Figure 2, 1,362 (33%) respondents were highly tolerant of PLWH having provided positive responses to all five (5) questions. Others (1,351 or 33%) had four positive responses out of five, showing fairly high tolerance levels towards PLWH. The rest (1,445 or 34%) had two or more negative responses with 20 of them having an attitude score of 0.

The median was used to determine categories of the dependent variable (i.e. attitude groups). According to results in Figure 2, the score

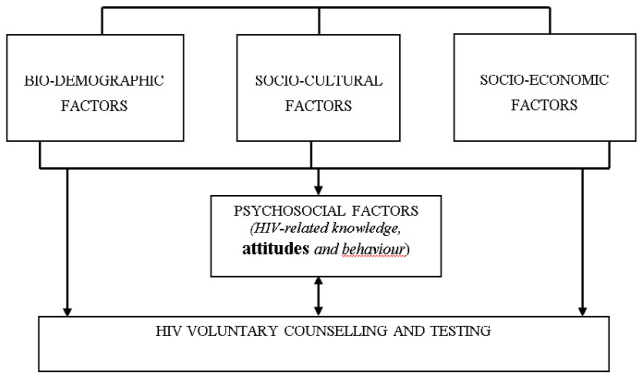
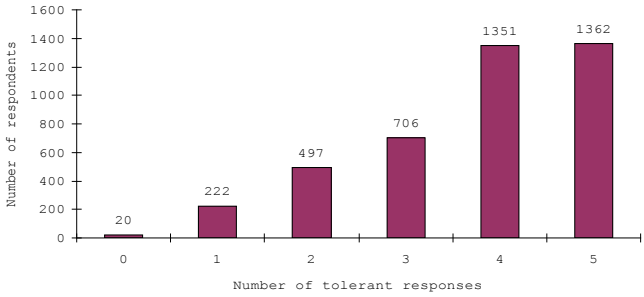


Figure 1: Determinants of attitudes framework.



[1]Note that all missing cases and respondents with don't know response were excluded from figure 2

Figure 2: Number of respondents by number of tolerant responses towards PLWH (n=4,158)[1].

of 4 was the median score. Based on the median score, three attitude models were constructed: (i) the more tolerant (with a score higher than the median score [>4]); (ii) the tolerant (with a median score [4]); and (iii) the less tolerant (with a score less than the median score [<4]). The dependent variable was assessed for skewness and the result showed that it had no skewness (sk=0.037).

Various independent variables were also identified and included in the analyses (Table 2). Except for respondents' sexual behaviour and perception about their most recent partner's sexual behaviour, which were highly correlated (r=0.832), the rest of the independent variables had no significant correlations. Since the latter variable is based on suspicion and not fact, only the respondents' sexual behaviour was retained for the multivariate analyses. There were also no significant interactions among the rest of the independent variables on the dependent variable.

Furthermore, variables with more than two categories were transformed into dummy variables in order to ease the interpretation of results. These variables are age, ethnicity, province and education. Age was recoded into adolescents (15-24) and adults (25-49) while ethnicity was recoded into the Nyanja-speaking and Non-Nyanja-speaking groups. The Nyanja-speaking groups were the majority, comprising almost half of the sample. This group is predominantly found in the Eastern Province and Lusaka City, the capital of Zambia. Education was transformed into the <secondary categories and secondary+ categories. The variable province was transformed into regions 1 and 2. Region 1 is the more developed area and comprises of provinces along the main line of rail (Central, Copperbelt, Lusaka and Southern). Region 2 is the less developed area and comprises of provinces outside the main line of rail (Eastern, Luapula, Northern, North Western and Western).

Data Analysis

Ordinal regression analysis was used to determine the net effect of each independent variable on the level of tolerance towards PLWH using the Statistical Package for Social Sciences. More information about this approach can be obtained from works such as those by Allison [24] and Hosmer and Lemeshow [25]. According to Allison, this technique is also a more powerful tool for testing hypotheses. Ordinal regression depends upon the idea of the cumulative logit, which in turn relies on the idea of the cumulative probability. The cumulative probability can be thought of as the probability that the i^{th} individual is in the j^{th} or higher category. This can be expressed as:

$$C_{ij} = \Pr(y_i \leq j) = \sum_{k=1}^{j} \Pr(y_i = k) \quad (1)$$

where:

y = dependent variable (HIV/AIDS knowledge); and

k = values of y (1, 2, 3, ... n).

The cumulative probability above (equation 1) can be transformed into the cumulative ordered logit:

$$\text{Logit}(C_{ij}) = \log [C_{ij}/(1- C_{ij})]$$

$$= \alpha_{ij} - \beta_{ij} \quad (2)$$

where:

α_j = logit of the odds of being equal to or less than category j for the baseline group (also referred to as intercepts or cut-points); and

β = the increase in the log-odds of being higher than category j per one-unit increase in the independent variable[1] .

The results of the analyses are presented in Tables 2 and 3. A negative β coefficient shows lower log-odds of having higher than less tolerant attitudes towards PLWH compared with the reference category (i.e. less tolerant towards PLWH than the reference category). On the other hand, a positive coefficient indicates higher log-odds of having higher than less tolerant attitudes towards PLWH compared with the reference category (i.e. more tolerant towards PLWH than the reference category).

Results and Discussion

Background characteristics of respondents

Table 2 below shows the distribution of respondents by background characteristics. Slightly over 69% of the respondents were aged 25 years and above, 54% were female and almost 80% were married. Approximately 23% were Catholics and 86% had high religiosity. Over half of the respondents lived in the rural areas, 60% came from Region 1, majority (75%) came from the Nyanja ethnic group, and only 1% was in the health profession.

Almost 63% had low knowledge level of HIV/AIDS and only 55% had tested for HIV in the past while 67% had low risk sexual behaviour. Majority (82%) respondents had at least secondary level education.

Table 3 shows the distribution of respondent's level of tolerance towards PLWH by selected background characteristics. Although no great variation in tolerance towards PLWH is observed in total, about a third of the population have low tolerance of PLWH. The highest

[1]Exponentiation of β coefficients yields odds ratios but odds ratios are not used in this paper.

Background characteristics	Beta (β)	
	Model I	Model II
Age		
15-24	-0.283***	-0.210
25+†	-	-
Sex		
Male	0.114	0.369*
Female†	-	-
Marital status		
Unmarried	-0.091	-0.225
Married†	-	-
Religion		
Catholic	0.141	0.058
Non-Catholic†	-	-
Religiosity		
High	0.043	0.131
Low†	-	-
Ethnicity		
Nyanja	-0.247***	-0.227
Non-Nyanja†	-	-
Residence		
Rural	-0.074	-0.155
Urban†	-	-
Occupation		
Health worker	0.735*	-
Other†	-	-
HIV/AIDS knowledge level		
Low	-0.655***	-0.582***
High†	-	-
Ever tested for HIV		
Yes	-0.112	-
No†	-	-
Region		
Region 1	0.321***	0.224
Region 2†	-	-
Education level		
<Secondary	-0.675***	0.550***
Secondary+†	-	-
Sexual behaviour		
High risk	-0.319***	-0.232
Low risk†	-	-
Type of service provider for HIV test		
Government health facility	-	0.018
Other†	-	-
Year of previous test		
Before 2004	-	0.073
2004/2005†	-	-
Last test was voluntary		
Yes	-	0.206
No†	-	-
Intercept 1	**-1.586*** **	**-0.816**
Intercept 2	**-0.086**	**0.621**
X^2	**509.735*** **	**66.061*** **
df	**13**	**14**

**p<0.01; ***p<0.001

Table 3: Percentage distribution of respondents' level of tolerance towards PLWH by selected background characteristics.

proportion of people with the low tolerance levels was observed among those with less than secondary education; in Region 2; with high risk sexual behaviour; low HIV/AIDS knowledge level; and those in rural areas.

Bivariate Results

Results further show that those aged 25 years and above had higher tolerance for PLWH. Similar results were observed for males, Catholics, Nyanja-speaking ethnic group, health workers, those with high level of HIV/AIDS knowledge, those with at least secondary education and among those with low risk sexual behaviour. The highest proportion of those with high tolerance was observed among those in the health profession (58%). Those ever tested for HIV and those never tested had low tolerance for PLWH with just a slight difference in proportion (33.5% and 35%, respectively).

Similar to findings in Kenya [26] and contrary to results of other studies in Asia and the Caribbean [13,14,27], which found that women are more tolerant than men or that there is no significant difference in attitudes towards PLWH between men and women, Zambian women were found to be less tolerant towards PLWH than Zambian men. This could be attributed to the lower level of HIV/AIDS knowledge among women as misinformation is a source of stigma. However, one would expect women to be more tolerant towards PLWH than men given their care-giver roles [28-31]. This could not be verified with available data as the 2005 ZSBS data set does not have information about one's history of care-giving for PLWH. However, Ogden et al. observed, provision of care for the sick may be due to lack of options and not necessarily out of compassion [30].

Similarly, individuals in the high-risk sexual behaviour category are less tolerant of PLWH than those in the low risk category. However, many of the respondents in the high-risk category could be facing a high risk for HIV infection because of their partner's behaviour. Therefore, for such respondents, this intolerance could be more directed at a type of PLWH whose sexual behaviour is like that of their partners than other types of PLWH such as children.

Young people (15-24) also exhibit higher levels of intolerance towards PLWH than adults (25-49). This finding is similar to other studies that found that older people are more tolerant of PLWH than young people [13,19]. Even among health workers, it has been observed that older workers are more positive towards PLWH than younger workers [15].

While various studies have reported negative attitudes towards PLWH among health workers in various countries [15,16,32], our results show that health workers have the highest tolerance of PLWH. In a qualitative study in South Africa, for example, Smit observed that nurses had negative perceptions about PLWH largely because they had themselves been stigmatised for having been in close contact with PLWH [32].

Knowledge of HIV/AIDS is also a strong predictor of attitude towards PLWH for both sexes. As the knowledge of HIV/AIDS increases, the level of tolerance for PLWH also increases. Similarly, level of formal schooling also exerts the same effect on people's attitudes towards individuals living with HIV/AIDS. As the level of education increases, the level of tolerance for PLWH increases. This result is in tandem with the observation in Turkey that the more educated are more tolerant of PLWH than the uneducated [19]. This is because formal education improves capacity to access and understand HIV/AIDS information.

Unlike Jamaica where Norman et al. found that religiosity had a strong relationship with attitudes towards PLWH [14], in Zambia no significant differences were observed in tolerance levels among those with high and low religiosity. However, significant differences in tolerance levels were observed among Catholics and non-Catholics in Zambia where the Catholic Church is a leading provider of HIV/AIDS related services among religious organisations. It then appears that the involvement of the church in HIV/AIDS relief work is the main reason why Catholics, unlike non-Catholics, are more tolerant towards PLWH.

Although, Lau et al. found that unmarried men in Hong Kong had lower tolerance for PLWH than their married counterparts, our study findings reveal no significant differences in tolerance towards PLWH among the married and the unmarried [13].

Zambia has two major regions which vary socio-economically. These differences are further observed in the variation in tolerance towards PLWH. Respondents in Region 1, which is the most developed area of the country, exhibit higher tolerance levels for the PLWH than respondents from Region 2. This differential, furthermore, underpins the importance of HIV/AIDS knowledge as Region 1 is better served with information, education and communication facilities on HIV/AIDS.

Multivariate results

Table 4 shows odds of having tolerant attitudes towards PLWH by selected background characteristics using two models. While model one (general model) includes all the respondents, model two only includes respondents who had previously tested for HIV. Three variables (Type of service provider for HIV test, Year of previous test and Last test was voluntary) that relate to the last HIV test done on the respondent were added to the second model. The variable occupation was removed from the models because the number of health workers (10) who tested for HIV was too small.

Results of the general model show that young people (15-24) were less likely to be more tolerant towards PLWH, results which confirm earlier findings by Lau and Tsui [13] and Unal [19]. Interaction between ethnicity and tolerance towards PLWH was highly significant, and showed respondents from Nyanja ethnic group had lower odds of being more tolerant towards PLWH compared to non-Nyanja ethnic groups. According to Dovidio et al., stigma associated with race and ethnicity is shown through stereotypes, prejudice and discrimination [33]. Other studies have had similar findings where people from certain ethnic/racial groups are less tolerant towards PLWH [22,33,34]. Such stigma reflects the stereotypes Dovidio et al. talked about where people from certain ethnic/racial groups are associated with various characteristics or stereotypes such as high HIV infection risk and therefore stigmatised by people from other ethnic/racial groups [33]. Although in many African countries, region and ethnicity go hand in hand whereby various ethnic groups tend to dominantly occupy a certain region in the country, in Zambia there are two main regions, with region one being more developed with and with better access to basic services and socioeconomic amenities as compared to Region 2. It's hence expected that people living in Region 1 have better access to HIV/AIDS information and services and are more likely to attain high levels of education as compared to those in Region 2. This resonates with our results that people in Region 1 have higher odds of being more than less tolerant to PLWH compared to those in Region 2. Congruent to expectations, low knowledge of HIV/AIDS and having less than secondary education has lower odds of having more than less tolerant attitudes towards PLWH. The significant effect on attitudes towards PLWH exhibited by the knowledge variables i.e. level of education and

Background characteristics	Beta (β)	
	Model I	Model II
Age		
15-24	-0.283***	-0.210
25+†	-	-
Sex		
Male	0.114	0.369*
Female†	-	-
Marital status		
Unmarried	-0.091	-0.225
Married†	-	-
Religion		
Catholic	0.141	0.058
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Intercept 1	**-1.586*** **	**-0.816**
Intercept 2	**-0.086**	**0.621**
X^2	**509.735*** **	**66.061*** **
df	**13**	**14**

*p<0.05; ***p<0.001; †reference category; df=degrees of freedom.

Table 4: Respondents' log-odds of having more than less tolerant attitudes towards PLWH by selected background characteristics.

one's knowledge of HIV/AIDS shows that raising people's knowledge levels about HIV/AIDS is a critical factor in stigma reduction. People with higher levels of education are more likely to have better access and understanding of HIV/AIDS messages as compared to those with lower levels of education. In Turkey, Ayranci had similar results in that more educated people have higher tolerance of PLWH compared with less educated [19]. As expected, health workers have higher odds of being more than less tolerant to PLWH which could also be associated with access to HIV/AIDS information and materials and also high levels of education and also specific trainings on how to handle and care for PLWH.

High risk sexual behaviour exposes one to HIV virus and being aware of one's risk may imply that one will be more tolerant of PLWH in a manner that they would like people to be tolerant towards them if they got infected too. However, our study found that people in this category had lower odds of having more than less tolerant attitudes towards PLWH. As earlier indicated, this could be attributed to their partner's sexual behaviour that predisposes them to the high risk of HIV infection and hence they are less tolerant to any PLWH whose character resonates with that of their partner.

In the second model which included only people who have ever been tested for HIV only HIV/AIDS knowledge level and education level remained significant compared to the significant variables in Model 1. Also, being male among those that had tested for HIV had increased odds of being more tolerant to PLWH, a result similar to what was observed in Kenya by Karama et al. [26].

The results clearly show that testing for HIV have no effect on tolerance towards PLWH in Zambia and hence reducing stigma associated with HIV/AIDs. These results differ with findings elsewhere; in South Africa, Young et al. found that people who had previously tested for HIV were more tolerant towards PLWH [35]. The significant effect on attitudes towards PLWH among respondents tested for HIV is exhibited by the knowledge variables i.e. level of education and one's knowledge of HIV/AIDS. This shows that raising people's knowledge levels about HIV/AIDS is a critical factor in stigma reduction.

Conclusion

This paper has demonstrated that HIV testing is not the most influential factor towards achievement of positive attitudes towards PLWH in Zambia. The most important variables in inculcating positive attitudes towards PLWH are level of education and knowledge of HIV/AIDS. This means that programmatic effort that disseminate information on HIV/AIDS need to be scaled up to ensure that everyone has access to the information. Even though the 2005 ZSBS did not measure counselling in detail, these findings indicate that counselling during HIV testing is weak. Ideally, apart from learning about one's status, a person who has undergone the counselling process during testing is expected to be more informed on HIV/AIDS and therefore should also have more tolerant attitudes towards people infected with HIV. Therefore, there is need to ensure that counselling is emphasised before and after testing for HIV in order to change attitudes towards PLWH.

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