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Knowledge, Beliefs and Attitudes about HIV/AIDS related issues, and the Sources of Knowledge among Health Care Professionals in Southern Nigeria.

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Abstract

The HIV/AIDS pandemic has become one of the most important public health problems in recent times and it is having a profound impact on the lives of infected people and their families. There is an acknowledged burden of HIV/AIDS in Nigeria. As the prevalence of HIV/AIDS infection rises, health care professionals worldwide can expect greater clinical exposure to infected patients.

Aims: The care of people living with AIDS presents a significant challenge to the health care sector. This study seeks to explore the relationship between sources of HIV/AIDS information and knowledge, and the relationship between knowledge of HIV/AIDS and care for people with AIDS among health care providers in three different levels of health care institutions in the Southern region of Nigeria.

Mehods: Health care workers from two states in southern Nigeria completed a questionnaire that was designed to assess knowledge, attitudes and practices about HIV/AIDS. The sample was composed of 277 (65%) females and 135 (31.7%) males. Results: The results showed a fair level of knowledge among all health care professionals, with the highest knowledge among the doctors and the lowest among laboratory workers. There was a significant gender difference in the level of knowledge but the data suggested that knowledge did not differ by hospital settings. There were generally negative feelings and views about the care of HIV/AIDS patients among the professionals, these views being worst at the Community Health Centers and best at the Government Hospital. The greatest source of information for the majority of professionals was health talks/seminars, and those respondents who got their information from school scored the highest on the items on general knowledge of HIV/AIDS incidence, cause, transmission, and clinical treatment.

Conclusions: The study showed a fair level of knowledge among all health care professionals, with the highest knowledge among the doctors and the lowest among laboratory workers and a significant gender difference in the level of knowledge, though the data suggested that this did not

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differ by hospital settings. This has important implications for future interventions designed for health care professionals including doctors, nurses and laboratory workers.

Keywords

HIV/AIDS; Knowledge, Attitudes; Health Care Professionals; Sources of Information

Introduction

Human Immunodeficiency Virus /Acquired Immuno Deficiency Syndrome in Nigeria

The Human Immunodeficiency Virus /Acquired Immuno Deficiency Syndrome (HIV/AIDS) epidemic has become one of the most important public health problems in recent times, and sub-Saharan Africa has been disproportionately impacted by the disease. As the largest and most populous country in Africa (population approximately 130 million), Nigeria has been experiencing a steady increase in annual Human Immunodeficiency Virus (HIV) sero-prevalence rates (from 0% in 1986 to 3.7% in 1993, and 5.8% in 2003), with rates of up to 23% being reported among commercial sex workers (1). Gwarzo (2) examined the HIV prevalence rates in health care settings in Nigeria and found that the prevalence of HIV infection ranges from 4.5% in antenatal clinic users, 15% in Sexually Transmitted Disease (STD) patients to 34.5% among commercial sex workers. The national prevalence is 5.4% and 2.9 million people are already infected with the HIV virus (3,4). These statistics, it is noted parenthetically, come from sentinel surveys in the formal medical sources, which are accessible to less than 50% of the population (5), suggesting that the prevalence is much higher than is reported. The difference between HIV seroprevalence in urban and rural areas is not large, indicating that the AIDS problem in Nigeria is not strictly an urban one (6).

As the prevalence of HIV/AIDS continues to rise, health care practitioners in all geographic regions of Nigeria can expect greater clinical exposure to patients infected with HIV.

HIV/AIDS and Health Care Professionals

Health care professionals (HCP) operationally defined as professionally trained health care-givers includes doctors, nurses and laboratory scientists/workers, occupy a potential vanguard position in AIDS preventative programs and the management of diagnosed patients. As HIV/AIDS-related issues usually evoke strong emotional reactions including anxiety and withdrawal (7), the workers' attitudes to such issues may indicate their level of preparedness in caring for people living with AIDS (PLWA). Given that health workers are expected to provide care and accurate information on this subject matter to patients and their relatives, as well as to the general public, it is clearly important that they have credible and accurate knowledge of the disease. This is important for optimal health care delivery because several studies have shown that the knowledge and beliefs of HCP about HIV and AIDS are frequently inaccurate and their attitudes are often negative (8,9,10,11,12).

As a group, it can be said that Nigerian health care providers probably have not benefited from systematic sensitization towards mobilization against HIV/AIDS (13,14). While several studies have explored AIDS knowledge, attitudes and practice (KAP) in secondary school students in Nigeria (15), and university students (16,17); and others have examined issues related to HIV/AIDS among health care providers (18,19,20,21), no study known to the authors has been done that explore the relationship between sources of HIV/AIDS information and knowledge and the relationship between knowledge of HIV/AIDS and care for people with AIDS among health care providers.

Adelekan et al (22) concluded that health care workers in Nigeria were not ready to provide care to patients infected with HIV/AIDS. Thus, there is a need for additional studies that evaluate HIV/AIDS knowledge and attitudes among health care providers in Nigeria as well as intervention programs that target misconceptions and fears about HIV/AIDS in this population.

Stigma and HIV/AIDS

In a study by Alubo et al. (23), in an area of high prevalence of HIV/AIDS in Nigeria, the level of stigmatization was found to be high and acceptance of people living with AIDS (PLWA) low. The PLWA believe that this was due to fear of contracting the disease, wide spread poverty (precluding any financial aid to this population, thus isolating them to hasten their death) and lack of sympathy for other people. The known absence of a cure for AIDS as a justification for neglect is a recurrent theme in the attitudes of community members of PLWA. In addition, the association of HIV/AIDS with commercial sex work introduces an important gender dimension to the discourse of AIDS.

Are Attitudes and Beliefs towards People Living With AIDS, a function of knowledge?

Cultural norms may affect the attitudes of health care workers towards people infected with the HIV/AIDS virus. These beliefs may translate into reluctance to care for and treat HIV/AIDS patients. McCann (24) has highlighted that issues related to sexuality, blame, conditional duty and care, and discriminatory care should be assessed, and appropriate wide-ranging in-service education and support should be provided to health care professionals. Improvement in clinical practice is not always guaranteed nor does it always persist following educational interventions (25,26).

Sources of information on HIV/AIDS

Since the beginning of the 1990s, a considerable amount of information about AIDS has appeared in a variety of sources. The Nigerian national program on AIDS has produced print, television and radio material on HIV/AIDS prevention and educational directed towards the public at large. However, some of these have been of dubious quality and informational value because they were not based on the needs assessment of any specific group (27).

The current study builds on previous HIV/AIDS research among health care workers in Nigeria by examining three different categories of health care professionals in the three levels of health care institutions in Nigeria to ascertain their knowledge, beliefs and attitudes about HIV/AIDS related issues and determine if there is an association between the sources of HIV/AIDS information and knowledge of the disease. Specifically, the study was designed to answer the following questions: (a) What do Nigerian health providers know about HIV/AIDS in terms of its cause, transmission, and treatment; (b) What is the attitude of Nigerian health care providers to patients with AIDS; and (c) How do health care providers get their information about HIV/AIDS and how is this related to their level of knowledge about HIV/AIDS. This baseline information will enable public health experts to develop target audience specific HIV intervention programs for health care providers in Nigeria.

Methods

Location

Data for the present analysis were obtained from an anonymous survey of health care providers in two states in southern Nigeria to determine knowledge, attitudes, beliefs, and sources of HIV/AIDS information. The first study site, Cross River State, has a population

of 1.87 million, with 14 Local Government Areas (LGA). The second study site, Akwa Ibom State, is adjacent to Cross River State and has a population of 2.36 million, with 24 Local Government Areas. Each LGA has a hospital capable of admitting and treating HIV/AIDS patients. Both states have similar socioeconomic and cultural characteristics. The study relied on self-administered questionnaire, and respondents were recruited from hospitals at each local government area. Data were collected between July 1996 and July 1997 as part of a World AIDS Foundation supported intervention designed to change health care providers' attitudes and knowledge about HIV/AIDS.

Study design

Inclusion criteria were age above 18, employment as a health care provider in either of the study sites, and ability to fill out a questionnaire in English. The study was approved by the appropriate university ethics committee. All participants were informed that they could refuse to answer any questions and that their participation was voluntary and anonymous. Those who agreed to participate were given the questionnaire to complete and deposit in a sealed box that was designated for that purpose. Return of the questionnaire was taken as evidence of consent. Completion of the questionnaire took approximately 30 minutes and the participants were given $10 as compensation for their time. More details on the study are provided elsewhere (28)

Measures

The questionnaire used in the survey was developed by the investigative team (28) and designed to assess health workers' HIV/AIDS knowledge, beliefs, attitudes, feelings towards people with AIDS, and sources of information about HIV/AIDS. The measures were developed based on preliminary focus groups with the study population. Pilot testing was carried out to ensure readability and clarity using medical and nursing students and reviewed by the Nigerian National AIDS director.

A copy of the questionnaire is available on request from the first author.

The hospitals were stratified into high, intermediate and low staff facilities if they had >15, 5-15, or < 5 physicians respectively to ensure representation of different hospital levels. This stratification was done in order to reflect the different hospital settings, i.e., tertiary hospital with >15 physicians, general hospital with 5-15 physicians and the community hospital with <5 physicians.

Data analysis

The primary analysis investigated the knowledge, beliefs and attitudes, and the sources of knowledge and beliefs, in Nigerian health workers (physicians, nurses and laboratory staff) across occupational categories, hospital setting and by age and gender. The sample included health care professionals from different fields and hospital settings. The fields were summarized into three categories: doctors, nurses and laboratory workers. The hospital settings were summarized into four categories: tertiary/specialist hospital, government hospital, community health center and other (‘other’ being any health care institution other than the three mentioned). Independent variables that were evaluated include the health worker occupational category, gender (some occupational categories, e.g., physicians, nurses, are heavily gender-biased in Nigeria), and age (split at the median age of the occupational category). Preliminary analysis was carried out by state to evaluate the influence of occupation, age, gender and hospital setting on knowledge, beliefs and attitudes. A descriptive analysis examined the differences across health care occupational category on HIV/AIDS information sources.

For the comparative aspect of the objectives, bivariate analysis consisted of chi-squared tests with Yates correction for discontinuity where appropriate, and for any continuous data, one-way analysis of variance (ANOVA) with contrasts and Scheffé post hoc analyses conducted employing also bivariate analysis with Scheffé post hoc analyses. The data analysis used measures of central tendency, mean median and mode, and also standard deviations to describe the characteristics of the study sample.

Comparative analysis of mean knowledge score by occupation, hospital setting, gender and age group, was conducted using ANOVA with contrasts and Scheffé and Temhane post hoc analyses (which were found to be more suitable for analysis of unequal cell sizes) was employed. In addition, univariate analysis of variance with Scheffé post hoc and Temhane post hoc and multiple comparisons were used. The analysis of attitude and belief items used frequency with mean, median, mode and standard deviation. To describe the feelings and views of the respondents on care of AIDS patients, a factor analysis conducted in the initial data analysis (Ezedinachi et al, 2000) was analyzed and Pearson's correlation conducted. All data were analyzed using SPSS version 10.0. Significance levels were set at $P<0.05$, two tailed where appropriate.

Results

Description of Study Sample

The sample was composed of 426 participants. Of this, 277 (65%) were females and 135 (31.7%) males. There were 307 (72.1%) nurses, 53 (12.4%) laboratory workers and 35 (8.2%) doctors. Data on occupation were missing for 31 (7.3%), age was missing for 57 people (13.4%) and gender for 14 (3.3%) of the participants respectively.

The mean age of the study sample was 35.8 years (SD= 8.1) with a median of 35.0 years, range = 19 - 60 or 41 years. The age groups were split into 4 different age categories; group 1=19 - 29, group 2=30 - 39, group 3=40 - 49, and group 4=50 - 60 years and were compared. Among the study population, 86 people (23.3%) fell into group 1, 170 (46.1%) in group 2, 85 (23.0%) in group 3, and 28 (7.6%) in group 4. The ages were summarized according to occupational group. The oldest groups were doctors (mean age = 38.0; SD= 7.3) followed by nurses (mean age = 35.9; SD= 7.8). The laboratory workers were the youngest (mean age = 33.9; SD= 9.3). There was no statistically significant difference in the mean ages of the occupational categories by hospital setting category (data not shown). At all 3 levels of hospital, (Tertiary/Specialist Hospital, Government Hospital, and Community Health Center), the greatest number of respondents was in the 30 - 39 age group.

Of the participants working at the teaching hospital, 18(4.5%) were male and 79 (19.6%) were females. Of the 4 participants in community health centers (CHC), all 4 were females (1%). Of the government hospital participants, 114 (28.3%) were male and 186 (46.2%) were females. When examining the sample by gender and by age, there was no statistically significant difference found between the ages of the males and females (male mean = 35.2 years, SD=8.3 and female mean = 36.1 years, SD=8.1). In general there was a preponderance of females and nurses in the sample, which is representative of the Nigerian health care professional demographics where nurses are generally more common than other workers and the nursing profession is female dominated.

Health care professionals' knowledge about HIV/AIDS

Seven items determined health professionals' general knowledge of HIV/AIDS related issues. There were statistically significant differences between the doctors and nurses, between doctors and laboratory workers, and also between nurses and laboratory workers,

all at $p < 0.05$. Table 1 shows the mean knowledge score of the different occupational groups.

Across occupations comparing hospital settings, there was a statistically significant difference among the laboratory workers $p < 0.05$, but there was no statistically significant difference among the nurses and doctors working at the three different hospital settings. By hospital setting, excluding the CHC due to small sample size (n=4), there was no significant difference between the mean knowledge scores for the teaching/specialist hospitals and the government hospitals. For the different age groups, there was a statistically significant difference between those ages 30 - 39 compared with the eldest group, 50-60 years of age $p < 0.05$.

Beliefs and Attitudes of Study Sample

Table 2 summarizes the beliefs and attitudes about diagnosis and care of HIV/AIDS patients. To describe the feelings and views of the respondents on care of AIDS patients, a factor analysis conducted in the previous analysis of the data was analyzed (29). These factors were related to the total knowledge score. The Pearson's correlation for both factors 1 and 2 for the total study population was statistically significant at the 0.01 level of significance. Table 3 shows the total score on feelings and views of the health care professionals in the different health care settings towards the care of HIV/AIDS patients. Scores greater or equal to 33 suggest a more positive feeling and view towards care of AIDS patients. When the 2 factors were combined, the distribution of the scores on feelings and views of respondents on care of AIDS patients, the mean was 26.36 (SD= 5.5), median 27 and mode 27 with a range of 41 (1 - 42). The Teaching and government hospitals had negative feelings and views towards care of AIDS patients 83% and 85.1% respectively while the CHC had substantially more negative feelings and views (100%). Broken down by occupation, more nurses scored less than 31 compared to doctors and laboratory workers, and more doctors scored 33 and above when compared to nurses and laboratory workers. By gender, more females had scores below 31 while more males had scores above 33. Pearson correlation suggests a weak positive linear relationship between the feelings and views of the participants towards persons with AIDS and their total knowledge score ($p < 0.01$, 2-tailed, r^2 X 100 =5.0%). This suggests that as HIV/AIDS knowledge increases, so do positive feelings and views towards patients with AIDS.

Sources of HIV/AIDS Information and relationship to knowledge.

There were 8 responses: Friend, radio, television, newspaper, church, school, health talk/ seminar, and other; which were provided as the different sources of HIV/AIDS information for health care professionals to select one.

The greatest number of participants (143) received their information from health talks/ seminars. This was followed by the radio with 70 participants then school. The church was the least source. Broken down by occupation, the greatest number of nurses and doctors got their information from health talks or seminars, while the least number got information from a friend, unlike the laboratory workers, who the greatest number got information from the radio while the least got it from both friend and school respectively. There was a statistically significant difference by occupational category among the laboratory workers and their source of HIV/AIDS information $p < 0.05$.

Relating the source of the information to the mean knowledge score among the different professional categories, the highest mean scores were among the nurses who got their information from the school, the doctors who got it from newspapers and the laboratory workers who got it from school. The lowest mean scores were among the nurses who got

information from the radio, the doctors who got it from another person and the laboratory workers who got it from health talks/seminars. From the estimated marginal means, there does not appear to be any interaction between the gender and the source of information. There is a statistically significant difference between the group who got their information from school and from radio (school > radio, $p < 0.05$), and also a significant difference between school and health talks/seminars, (school > health talks/seminars, $p < 0.05$).

By hospital setting, health talks/seminars were the largest source of information for all three-hospital settings. Relating the source of the information to the mean knowledge score among the different hospital settings (excluding the community health center where all participants got information from health talks/seminars), the highest mean scores were among the tertiary/specialist hospital participants who received information from the newspaper and the government hospital participants who received information from the school. The lowest mean scores were among the tertiary/specialist hospital participants who received information from health talks/seminars and the government hospital participants who received it from the radio.

Discussion

This analysis used a sample of 426 health care professionals aged 19 - 60 years to ascertain knowledge, beliefs and attitudes and sources of information on HIV/AIDS among health care professionals in two States in Nigeria. Forty-six percent of the study participants got a total knowledge score of 50% and above on general knowledge on HIV/AIDS related questions. This suggests a fair level of knowledge. The knowledge increases and peaks in the 30 - 39 age group then declines from the 40 - 49 group and is least in the 50 - 60 group, suggesting that the older the worker, the less their knowledge on HIV. This could be explained by the fact that at the time the oldest age group was in school, HIV/AIDS did not exist and since its emergence, these people have not been adequately educated in issues pertaining to the disease, while in the 30 - 39 year old age group respondents received information from their school curriculum, because they were in school at the time the disease emerged.

Males had significantly higher scores than females. This may be accounted for by the fact that there were more male doctors and the nurses were predominantly females, and in general, the educational curriculum of doctors is more rigorous and longer in duration than that for nurses and laboratory workers. There is a significant difference between the mean knowledge score among different occupational groups. The doctors had the highest knowledge scores, followed by nurses, while the laboratory workers had the lowest scores. In the 3 different occupation groups the highest score was consistently in the group who got information from school, suggesting that of all the sources of information, school was the most significant source, yielding highest knowledge scores. This may be accounted for by the structure, duration and content of information received in school compared to the other sources of information.

The low percentage of respondents who had cared for AIDS patients within the past 12 months suggest that there is a reluctance to care for these patients, and this may be related to the fact that only 1 in 8 respondents have any friends or relatives who have suffered from AIDS.

Male participants generally had a more positive feeling and view about care of AIDS patients. This might be explained by the fact that males score significantly higher on knowledge than females. When compared by occupation, gender and hospital setting, an average of 8 out of every 10 people had negative feelings and views towards care of AIDS patients. This suggests similar negative feelings and views among health care professionals

towards care of AIDS patients regardless of respondent demographics. The weak positive correlation of knowledge with feelings and views on care of AIDS patients that was found may suggest that empowering health care professionals with better knowledge would improve their attitudes towards patient care as has been found by several studies.

In issues pertaining to source of information, the results showed that the most participants got their information from health talks or seminars with average scores suggesting that this is an efficient and effective means of updating health care professionals on emerging issues because more people access it. In contrast, the low scores of persons who got information from friends and the small numbers of people who use this source suggests that it is an ineffective and inefficient source of information.

These data must be interpreted with the limitations that they are based on a nonrandom convenience sample, and a self-report English language questionnaire. In addition, although this study can theoretically be extrapolated to the whole country given the similarities in the demographics of the study sample to the Nigerian health care environment in general, it may not be generalizable to the entire country given the relatively small sample size and under representation of community health centers (CHC). However, those CHCs that participated had demographics similar to what holds true in the rest of the country. Lastly, there could have been a ceiling effect if knowledge was already high; this would have been exacerbated by the limited range of responses (3-point scales) in the outcome measures.

The strength of this study lies in the fact that it explores three different hospital settings and three different health occupations in those hospitals. There has been no study done in Nigeria to the best of our knowledge that has compared knowledge, attitudes and beliefs of both clinical and non clinical workers (in this case laboratory technicians) in different hospital settings so as to guide the development of an effective HIV intervention program that is tailored to fit this particular group.

In general the data show that the workers at both the teaching and government hospitals have been exposed to HIV/AIDS patients when compared to the CHC workers. Their general feelings and views of AIDS patients though poor, are still better than that of the CHC where there has been minimal or no contact as reported by the respondents who work there and where strong negative feelings and views are held towards care of AIDS patient. In the study by Alubo et al (23), it was found that there were different reactions from family and community members, acceptance of PLWA can be likened to three concentric circles where the innermost is the family, followed by the neighbors, and then the general community. Acceptance is highest in the family, and decreases rapidly outwards. The data in the current study support the assertion that the more the contact with PLWA, and the higher the knowledge base of these workers, the more willing the staff would be to offer care. This finding is similar to results from previous work by Brachman et al (30) which showed that the level of comfort in caring for HIV-infected patients and HIV/AIDS knowledge scores varied directly with the amount of previous contact with these patients.

Hentgen et. al. (31) in their study with physicians, midwives, nurses, medical students and nursing auxiliaries in Madagascar, noted that there were gaps in the knowledge of the respondents and that physicians and paramedical staff differed only in their better knowledge about HIV transmissibility. They also noted the same negative attitudes towards HIV-positive patients across the respondents. Similarly, Adelekan et al. (22) in a study conducted among doctors, nurses and non-health workers in a teaching hospital in Nigeria noted important gaps in knowledge in all groups with doctors performing better than the others. About one in three nurses would hesitate to nurse a PLWA, while half would not

participate in birth delivery. Also, about a quarter of the doctors would hesitate to treat a PLWA while one in three would not carry out surgery despite adequate precautions (22).

The present study also suggests that in terms of scope, a wider audience can be educated through well structured health talks and seminars which would include in-service training and continuing medical education specially designed for the particular target group. Given the fact that quite a number of health talks and seminars are targeted at professionals working at the government and teaching hospitals and more so the nurses and doctors and a few to none targeted at workers in the rural areas or the laboratory workers specifically (this is reflected in the poor knowledge base of both the CHC and the laboratory workers), more attention needs to be focused on these underserved groups in particular those working in the rural areas. This should empower them to handle care of HIV/AIDS patients more confidently and willingly.

For upcoming students in health related professions still in school, this study supports the fact that quality knowledge is obtained via the school as reflected in the high knowledge scores of the respondents that got their information through this source; hence schools for all these professions should constantly update and improve their curricula so that the students can benefit maximally.

Conclusions

The study showed a fair level of knowledge among all health care professionals, with the highest knowledge among the doctors and the lowest among laboratory workers and a significant gender difference in the level of knowledge, though the data suggested that this did not differ by hospital settings. There were generally negative feelings and views about the care of HIV/AIDS patients across all HCP but worst at the CHC and best at the Government Hospital. The greatest source of information for the majority of professionals was health talks/seminars, and those respondents who got their information from school scored the highest on the items on general knowledge of HIV/AIDS incidence, cause, transmission, and clinical treatment.

This has important implications for future interventions designed for health care professionals. Better structured education targeted to all health care professionals working in both rural and urban hospital settings, in the form of health talks/seminars, in-service training, continuing medical education and school curricula, would improve the HIV/AIDS knowledge for health care providers most efficiently and effectively. In addition, by fostering a more positive environment where universal precautions are in effect and empathy for HIV/AIDS patients is encouraged, more positive views on the care of PLWA would be expected.

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Table 1:

Mean Knowledge Score by Occupation

Occupation	N	Mean[a,b]	Std. Deviation	Median
Nursing	307	13.19**	5.53	14.00
Laboratory	53	11.01**	6.52	12.00
Doctor	35	18.43	5.02	19.00
Total	395	13.36*	5.88	14.00

a. * ANOVA p.= < 0.000

b. ** Dunnet test p= <0.0000 Doctor was the control

Table 2:

Beliefs and Attitudes About Diagnosis and Care of HIV/AIDS Patients and Health Care Settings

	Teaching Hospital		Community Health Center		Government Hospital	
	Yes	No	Yes	No	Yes	No
Has AIDS ever been diagnosed in your hospital?	97%	1%	25%	75%	78.1%	19.4%
Are AIDS patients discriminated against in your hospital?	37.6%	42.6%	75%	25%	30%	53.2%
Have you cared for AIDS patients in the last 12 months?	27.7%	69.3%	0%	100%	33.9%	60.0%
Has any of your friends or relations suffered from AIDS?	4.0%	78.2%	0%	100%	7.7%	71.3%

Table 3:

Feelings and Views Towards Care of HIV/AIDS Patients in Different Health Care Settings *Total score on feelings and views towards care of HIV/AIDS patient item.

	</= 31	= 32	>/= 33
Teaching Hospital	83%	7%	10%
Community Health Center	100%	0%	0%
Government Hospital	85.1%	3.9%	11%
Scores < 31 suggest a more negative feeling and view towards care of AIDS patients.			
Scores = 32 suggest neutrality.			

* Maximum score = 48.

Table 4:

Comparison of Means of Total Knowledge Score by Source of Information

Source of information	Mean	N	Std. Deviation
Friend	13.89	19	4.79
Radio	11.83	70	5.70
Television	13.19	42	6.33
Newspaper	14.91	44	5.60
Church	9.50	8	4.93
School[a,b]	15.24*	65	5.30
Health talks/seminars	12.53	143	6.27
Other	16.67	9	4.95
Total	13.28	400	5.97

a. School > radio $p < 0.05$

b. School > health talks/seminars $p < 0.05$