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Comparison of knowledge and accessibility to information sources of HIV/AIDS between blind and sighted populations in Nigeria

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The aim of this study was to compare the HIV/AIDS knowledge and accessibility to HIV/AIDS information between blind and sighted individuals in Nigeria. A cross-sectional survey was undertaken among rural and urban blind (57) and sighted (62) adolescents in 2006. A structured questionnaire was used to collect data about HIV/AIDS symptoms, transmission and prevention knowledge, as well as accessibility to sources of HIV/AIDS information. Binary logistic regression and chi-square statistics were applied to compare responses between the two populations. Blindness was found to be associated with diminished knowledge of HIV/AIDS transmission, prevention and symptoms. At the same time, the blind rely on different sources of HIV/AIDS information than sighted respondents. A lack of knowledge and limited accessibility to proper sources of information causes the blind disabled to be more vulnerable. It is necessary to supply them with proper information and increase their HIV/AIDS knowledge.

Keywords: blindness; AIDS; HIV; vulnerable populations; Nigeria

Introduction

In the spread of the HIV/AIDS epidemic, the more vulnerable populations are at particularly risk of HIV contraction. Among them are the visually disabled. Approximately 600 million disabled individuals are living among the poorest, least educated and most marginalized people around the world (Groce, 2003). From them, the estimates of the World Health Organization (WHO) state a figure of 161 million visually impaired (about 2.6% of the world population) in the year 2002 (WHO, 2004). The number of blind and visually impaired individuals throughout the world will continue to rise, mainly because of population growth and the increase in life expectancy. The majority of the visually impaired live in developing countries, which are disproportionate hit by the HIV/AIDS epidemic. Because of the lack of a cure, the focus of controlling this growing disaster is education and prevention. It is clear that disabled people are vulnerable to HIV infection, but most of the time they are not seen as a risk group. Lack of information, access, abuse and extreme poverty lead to increased vulnerability (Nosek, Howland, & Hughes, 2001). In Africa, the population of people living with a disability is more than 10%, but only a few studies are available about the level of HIV/AIDS knowledge among the disabled.

Previous research compared the HIV/AIDS knowledge among deaf and hearing college students in the US (Heuttel & Rothstein, 2001). Studies done in Swaziland (Groce, Yousafzai, Dlamini, Zalud, & Wirz, 2006; Yousafzai, Dlamini, Groce, & Wirz, 2004) and Nigeria (Groce, Yousafzai, & van der Maas, 2007), demonstrated that disabled and deaf are prone to misunderstanding and have less accessibility to information sources. Furthermore, in a recent study from South Africa the authors advised to perform more studies on the prevention of HIV/AIDS among South Africans with visual impairments (Philander & Swartz, 2006). In other African countries no such studies are available. Therefore, we conducted a study among visually impaired and sighted youth in the developing country Nigeria. The study was done in the southeast part of the country, where the estimated adult HIV prevalence rate is 6.4% (UNAIDS, 2006). No data on the prevalence of HIV infection in any disabled population in Africa are available (Groce, 2003).

The purpose of the study was to compare HIV knowledge and accessibility to HIV/AIDS information sources among blind and sighted adolescents in Nigeria.

Methods

Data collection

A cross-sectional structured survey was performed among 119 adolescents in Izzi. Izzi is a rural area,

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about 1940 km^2, located in the northeastern part of Ebonyi State and partly in the bordering southern part of Benue State, in the south east of Nigeria. Because of the relatively large distances between, and bad accessibility to, the many small villages and towns, we choose to restrict our population sample to school communities. Izzi contains primary schools for the blind, but lacks secondary schools accessible for visually impaired people. The average age in the highest class of a primary school for the blind is significantly higher compared to an equal class on a regular primary school. For this reason the survey was conducted among the highest classes of three primary schools of the blind ($n = 57$) and lowest classes of three regular secondary schools ($n = 62$). Schools were selected at random from all available Izzi schools (three out of seven primary blind schools and three out of thirty-five regular secondary schools). Because this was the first study on HIV/AIDS knowledge performed in Nigeria, no sample size calculation could be conducted prior to study start. The sample sizes were chosen to be as large as possible. The questionnaire, containing multiple-choice and open questions, was divided into four main subjects: demography; modes of HIV transmission; modes of HIV prevention; and accessibility to different sources of HIV/AIDS information.

The questions were constructed from two previous HIV/AIDS knowledge studies done in Swaziland (Yousafzai et al., 2004) and Nigeria (Groce et al., 2007). The questions were piloted and then administered by the trained local workers of the non-governmental organization Community Based Rehabilitation Effata. From the six schools, sighted (Ndioke, Onenyim Iseke and Obudu secondary school) and blind (Iboko, Guidiri and Obudu primary school) participants were chosen at random from every third person in the classroom. The sighted individuals completed the questionnaire mostly by themselves. The blind received help from a worker. The workers read the questions and wrote the answers when helping the blind people. Only questions for clarification were allowed to be asked.

All schools have given written or oral consent to take part in the study and also the children had to give oral consent prior to participation.

Statistical analysis

Binary logistic regression was used to compare responses and calculate odds ratios (ORs) from the blind and sighted respondents (Statistical Package for Social Sciences (SPSS) version 15.0). The regression model was also used to adjust, when necessary, for the confounders age, sex and residence. Per confounder, a change of $> 10\%$ in OR was considered as a criteria to include the concerning confounder in the final model. The AIDS-symptoms open-ended question was analyzed by categorizing the mentioned symptoms into the most related answers and tested for significant difference using Chi-square statistics. Due to extremely diverse answers, we did not include the open questions: 'What is the meaning of window period?'; 'What is the meaning of voluntary counselling and testing (VCT)?'; 'What is the meaning of anti-retroviral (ARV)?'; 'How can HIV be transmitted from mother to child?'; and 'What do you think is important for us to know about HIV/AIDS in your community that we have not asked?' in the analysis. The only open question included was: 'What are the symptoms of AIDS?'

Table 1. Demographic data for the participating blind and sighted adolescents ($n = 119$).

	Sighted		Blind	
	n	%	*n*	%
Age				
10–15 years	14	23.0	19	33.3
11–20 years	39	63.9	22	38.6
21–30 years	8	13.1	15	26.3
31–40 years	0	0.0	1	1.8
Sex				
Male	46	75.4	39	68.4
Female	15	24.6	18	31.6
Married				
Yes	6	9.7	3	5.3
No	56	90.3	54	94.7
Residence				
Urban	29	46.8	21	36.8
Rural	33	53.2	36	63.2
Village				
Iboko	0	0.0	20	35.1
Obudu	21	33.9	18	31.6
Guidiri	0	0.0	19	33.3
Ndioke	22	35.5	0	0.0
Onenyim Iseke	19	30.6	0	0.0
Denomination				
Christian	61	98.4	56	98.2
Muslim	1	1.6	1	1.8
Read/write				
Yes	60	96.8	56	98.2
No	2	3.2	1	1.8

Table 2. The association of blind versus sighted in believe of mode of HIV transmission.

	Sighted Number true (%)	Blind Number true (%)	(Un)adjusted OR (95%CI) *p*-value
Through mosquito bites	14 (45.2)	17 (54.8)	1.5 (0.6–3.3) 0.37
Through kissing	12 (35.3)	22 (64.7)	2.3 (1.0–5.3) 0.048
Through sexual intercourse	55 (51.9)	51 (48.1)	2.1 (0.1–9.0) 0.31*
Through sharing spoons	15 (46.9)	17 (53.1)	1.2 (0.5–2.8) 0.64
Through touching	7 (50.0)	7 (50.0)	1.0 (0.3–3.2) 0.95
Through injections	50 (48.5)	53 (51.5)	0.3 (0.1–1.2) 0.08**
Through razorblades	52 (49.1)	54 (50.9)	0.4 (0.1–1.7) 0.22
Through pregnancy (mother-to-child)	46 (53.5)	40 (46.5)	1.8 (0.8–4.5) 0.18
Through coughing	14 (43.8)	18 (56.3)	1.4 (0.6–3.2) 0.41

Notes: *Adjusted for sex; **Adjusted for residence.

Results

Demography

Table 1 shows the demographic data from the blind ($n = 57$) and sighted ($n = 62$) groups. Most participants were within the age category 11–20 years. In spite of the lower education level, the average age among visually impaired respondents was higher than in the sighted adolescents.

HIV transmission

The assumed modes of HIV transmission are presented in Table 2. In general, the wrong ideas about modes of transmission of HIV tended to be higher among the visually impaired than among the sighted individuals. However, this trend was only significant for kissing as a mode of transmission (OR of blind versus sighted individuals was 2.3)

HIV prevention, treatment and symptoms

Comparing the assumed modes of HIV prevention also resulted in a trend that blind individuals had a greater risk in believing the wrong prevention modes (Table 3). Only two ORs were significant: testing your blood for HIV before transfusion (OR 11.1; $p < 0.001$); and eating good food (OR 3.9; $p < 0.001$). Questions related to HIV/AIDS treatment, including 'Is there is vaccine against HIV', 'Is there a HIV blood test' and 'AIDS patients may look healthy', did not show significant differences between the two groups of respondents. The categorized AIDS symptoms are represented in Table 4. The main categories with significant differences were weight loss, diarrhea, coughing and rashes.

Accessibility to different sources of HIV/AIDS information

Table 5 contains the results of the accessibility to different sources of HIV/AIDS information. Significant differences were seen in the category Posters/billboards, hospital/clinic and church/mosque. The remaining questions (not shown in the Table), 'Do you know anybody with HIV/AIDS', 'Has anyone come to your school to talk about HIV/AIDS' and 'Is there a lesson in the school about HIV/AIDS?' had

Table 3. The association of blind versus sighted in believe of mode of HIV prevention.

	Sighted Number true (%)	Blind Number true (%)	(Un)adjusted OR (95%CI) *p*-value
Avoid dirty places	12 (40.0)	18 (60.0)	1.8 (0.8–4.2) 0.17
Test blood for HIV before transfusion	57 (58.2)	41 (41.8)	13.0 (2.7–61.9) 0.001*
Use clean needles	47 (52.2)	43 (47.8)	1.7 (0.7–4.3) 0.27
Not sharing spoons	17 (45.9)	20 (54.1)	1.3 (0.6–2.9) 0.51
Use condoms	39 (54.2)	33 (45.8)	1.3 (0.6–2.8) 0.50
Practice abstinence	44 (48.9)	46 (51.1)	1.0 (0.4–2.4) 0.93
Eat good food	11 (28.9)	27 (71.1)	3.9 (1.7–9.0) <0.001

Notes: *Adjusted for age.

Table 4. The symptoms believed to be AIDS-related in blind and sighted adolescents.

Symptom	Sighted		Blind	
	n	%	*n*	%
Weight loss*	6	7.2	36	39.6
Coughing*	8	9.6	1	1.1
Diarrhea*	1	1.2	7	7.7
Rashes	15	18.1	8	8.8
Fever*	1	1.2	3	3.3
Open wounds/sores*	5	6.0	2	2.2
Headache	2	2.4	3	3.3
Frequently ill	5	6.0	10	11.0
Weakness	3	3.6	4	4.4
Vomiting	1	1.2	3	3.3
Emaciation	3	3.6	0	0.0
Poor hair growth	3	3.6	0	0.0
Skin problems	3	3.6	6	6.6
Others*	11	13.3	2	2.2
No answer*	16	19.3	6	6.6

Notes: *Significant categories ($p < 0.05$).

2.4 ($p = 0.05$), 0.1 ($p < 0.001$) and 1.2 ($p = 0.62$) as OR, respectively.

Discussion

This study demonstrated differences in HIV/AIDS knowledge and accessibility to HIV/AIDS information between blind and sighted youth in Nigeria. Blind disabled are more prone to misunderstanding and rely on different sources of information than sighted individuals.

In the limited studies available about HIV/AIDS knowledge in disabled people, most are restricted to deaf populations. This is the first survey done among blind adolescents. Moreover this study was not done in the western world, but in an African country hit by the HIV epidemic, making the results more relevant for the places where help is needed most.

According to the results of studies done among deaf adolescents in the US (Bat-Chava, Martin, & Kosciw, 2005; Heuttel et al., 2001), Swaziland (Groce et al., 2006; Yousafzai et al., 2004) and Nigeria (Groce et al., 2007), we found that blind disabled are prone to more misunderstanding and wrong information. Blind disabled think kissing is a mode of HIV transmission (OR 2.3). Also, for other transmission modes the blind group tended to have the wrong ideas. We found the blind not to appreciate HIV blood tests as a mode of prevention (OR 13.0) and they falsely believe that eating good food is an adequate mode of prevention (OR 3.9).

Both groups were able to state the main AIDS-related symptoms, however, in all cases the percentage of stated symptoms was low. We consider these results to be caused by lower levels of literacy, which interferes with their ability to understand HIV/AIDS information. Although blind individuals are able to talk and listen, they are often isolated from the surrounding society. This could strengthen their HIV/AIDS misinformation, which is often received through stories, folklore and rumors.

Great difference was found in the accessibility to different sources of HIV/AIDS information. The result in the poster/billboard source of information category (OR 0.1) is not surprising concerning the disability of the visual impaired. The remarkable low information source for hospital-clinic (OR 0.1) is similar to the results found in the Swaziland survey by Groce, Yousafzai, Dlamini, Zalud, & Wirz (2006). The inadequate physical access to clinics and hospital and lack of both confidentiality for people with communication impairments and disability-friendly medical information, as reported by Groce (2004) is probably the cause of this finding. However, they found religious organizations as a diminished source of information for deaf, which is in contrast with our findings (OR 5.5). Vocal information as the only communication mode in churches and mosques is

Table 5. The association of blind versus sighted in accessibility to different sources of HIV/AIDS information.

	Sighted Number true (%)	Blind Number true (%)	(Un)adjusted OR (95%CI) *p*-value
Television	36 (58.1)	26 (41.9)	0.6 (0.3–1.3) 0.18
Radio	50 (49.5)	51 (50.5)	2.7 (0.9–8.4) 0.09*
Posters or billboards	31 (91.2)	3 (8.8)	0.1 (0.0–0.2) <0.001
School	40 (58.0)	29 (42.0)	0.6 (0.3–1.2) 0.13
Parents	32 (58.2)	23 (41.8)	0.6 (0.3–1.3) 0.22
Friends	31 (50.8)	30 (49.2)	1.1 (0.5–2.3) 0.77
Hospital or clinic	44 (80.0)	11 (20.0)	0.1 (0.0–0.2) <0.001*
Church or mosque	28 (38.9)	44 (61.1)	5.5 (2.3–13.2) <0.001*/**
Village meetings	20 (58.8)	14 (41.2)	0.7 (0.3–1.5) 0.35
Others	16 (94.1)	1 (5.9)	0.5 (0.1–0.3) 0.01

Notes: *Adjusted for sex; **Adjusted for residence.

probably the cause for differences between deaf and blind individuals.

Limitations of our study must be acknowledged. Due to the differences between northern and southern Nigeria, the results are not representative for the country as a whole. Extrapolation of results to other countries might also be questionable. Several trends that were not statistically significant might become clearer with an increased sample size. The restriction of the survey population to school communities will have influenced our results. The poorest families have limited money available for the education of their children. Furthermore, the non-disabled family members are usually chosen to go to school, while the disabled, and especially the blind, are kept at home.

We compared the HIV knowledge, together with the accessibility to HIV/AIDS information sources, among the blind and sighted. It was shown that not only the deaf but also the blind are a vulnerable population. More research on HIV-knowledge in blind and sighted groups is needed. Because of the great differences between Christian and Muslim states in Nigeria, a national investigation is important.

A lack of knowledge and a limited access to proper sources of information on HIV/AIDS causes an unnecessary vulnerability. Because this is found particularly in individuals with a disability, it is necessary in HIV/AIDS-prevention campaigns to pay specific attention to this group of individuals and supply them with proper information to increase their knowledge.

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