

Original Article

HIV and Syphilis Infection among Elderly People in Northwest Ethiopia

Afewerk Kassu^{1,7*}, Alemayehu Mekonnen², Abebe Bekele³, Nuru Abseno⁴, Endalkachew Melese⁵, Feleke Moges¹, Yared Wondmikun⁶ and Fusao Ota⁷

¹Department of Microbiology and Parasitology, ²Department of Community Health,

³Department of Surgery, ⁵Department of Internal Medicine and

⁶Department of Physiology, University of Gondar, Gondar; ⁴Department of Gynaecology and Obstetrics, Faculty of Medicine, Addis Ababa University, Addis Ababa, Ethiopia and

⁷Department of Preventive Environment and Nutrition, Systems of Nutritional Sciences, Graduate School of Health Biosciences Research, the University of Tokushima, Tokushima 770-8503, Japan

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SUMMARY: The prevalence of HIV has been continually increasing both in urban and rural Ethiopia. As yet, there has been no report on the magnitude of the problem in the elderly and rural population. This study assessed the seroprevalence of HIV and syphilis infection among 706 elderly and predominantly rural subjects in Northwest Ethiopia. Socio-demographic information was collected using a structured questionnaire. Venous blood was collected and the serostatus of HIV and that of syphilis were checked by ELISA and RPR, respectively. The total HIV-1 seroprevalence was 5% (35/706). Sex-specific prevalences of HIV for males and females were 5.6 and 4.7% respectively. A 4.2% difference in prevalence was observed by area of residence, which was statistically significant, $P = 0.018$. Only 6% of subjects positive for syphilis were also positive for HIV, while 4.9% of subjects negative for syphilis were positive for HIV. The data indicates that the prevalence of HIV among elderly people in Northwest Ethiopia was high. This indicates the importance of involving the elderly in HIV/AIDS prevention and control programs.

INTRODUCTION

Ethiopia, like most of sub-Saharan Africa, has been experiencing a severe HIV/AIDS epidemic. The first Ethiopian sera found positive for HIV-1 antibodies date to 1984 (1,2). The prevalence of HIV infection in Ethiopia has rapidly increased over the past few years (3). It was estimated that adult prevalence had increased from 3.2% in 1993 to 10.63% in 2001 (3).

Initial reports indicated that the urban population was more affected than the rural in Ethiopia (4). However, recent evidences indicate that the scope of the problem is increasing as the disease spreads from urban centers to rural communities (3). Because of the difficulty and high cost of population surveys, most of the prevalence studies performed thus far in Ethiopia were targeted at specific sentinel groups such as blood donors, antenatal care attendees, and commercial sex workers (3-13). All of these studies have shown that the young and productive population is the hardest hit. There has been no report on the prevalence of HIV/AIDS in the elderly population, which has been considered to be a group at less risk for HIV (14). Further, the currently available data are not adequate to accurately measure the level of infection in rural areas, where 85% of the population lives (3,14).

This study was, therefore, aimed at assessing the prevalence of HIV and syphilis infection among a predominantly rural and elderly population for whom there has been no focused report in Ethiopia.

SUBJECTS AND METHODS

This cross-sectional study was conducted in University of Gondar Hospital, a tertiary level teaching and service-giving hospital that provides health services to over four million inhabitants in Northwest Ethiopia. The study subjects were cataract patients who visited the Ophthalmology Department of University of Gondar Hospital for cataract surgery between December 23, 2001 and January 7, 2002. Eight hundred and ten patients were contacted and 710 volunteered to undergo a screening test for HIV and syphilis. Institutional ethical clearance was obtained from the University of Gondar Research and Publications Committee.

Data was collected using a structured questionnaire asking information on socio-demographic characteristics. The variables included age and sex of the patients, marital status, residence, religion, and occupation. Questionnaires were given code numbers and not the names of the subjects.

After obtaining informed consent from each subject and providing appropriate pre-test counselling, about 5 ml of venous blood was collected. The blood samples were centrifuged and sera were separated from cells immediately after clotting. The serum samples were kept in Nunc tubes at -20°C until used for screening. Testing for antibodies for HIV was done by using enzyme-linked immunosorbent assay (ELISA) (Vironostica HIV Uni-Form II plus O, Organon Teknika, Boxtel, the Netherlands) following the manufacturer's instructions. Syphilis serostatus was checked by rapid plasma regain test (RPR) according to the manufacturer's instructions (RPR, Wampole Laboratories, Princeton, N. J., USA).

The data were then entered and analysed using EPI-INFO version 2000 statistical software. The chi-square analysis was used to compare categorical data. Odds ratio (OR) and 95% confidence interval (CI) were used to measure the strength of

*Corresponding author: Present address: Department of Preventive Environment and Nutrition, Systems of Nutritional Sciences, Graduate School of Health Biosciences Research, the University of Tokushima, Kuramoto-cho 3-18-15, Tokushima 770-8503, Japan. Tel: +81-88-633-9598, Fax: +81-88-633-7410, E-mail: afeworkkassu@yahoo.com

Table 1. Socio-demographic characteristics of elderly subjects in Northwest Ethiopia, 2002

Characteristics	Frequency (%)
Age	
50-59	134 (19.0)
60-69	274 (38.8)
70-79	241 (34.1)
>80	57 (8.1)
Sex	
Male	415 (58.8)
Female	291 (41.2)
Religion	
Christian	657 (93.1)
Muslim	49 (6.9)
Marital Status	
Married	420 (59.5)
Divorced	72 (10.2)
Widowed	206 (29.2)
Single	8 (1.1)
Occupation	
Farmer	484 (68.6)
Housewife	113 (16.0)
Merchant	29 (4.1)
Government employee	19 (2.7)
Soldier	12 (1.7)
Others	49 (6.9)
Residence	
Rural	474 (69.9)
Urban	204 (30.1)

Table 2. Socio-demographic characteristics of elderly HIV positive subjects in Northwest Ethiopia, 2002

Characteristics	HIV Positive No. (%)	OR (95% CI)	P-value
Age (year)			
Men			
50-59	5 (9.1)	1.0	
60-69	6 (4.2)	0.43 (0.11-1.73)	0.15 ¹⁾
70-79	9 (5.2)	0.55 (0.16-1.97)	0.22 ¹⁾
≥80	2 (4.8)	0.50 (0.06-3.15)	0.34 ¹⁾
Women			
50-59	1 (1.3)	1.0	
60-69	10 (7.7)	6.5 (0.83-137.8)	0.03 ¹⁾
70-79	2 (3)	2.4 (0.17-68.48)	0.43 ¹⁾
≥80	0	0 (0-96.8)	0.84 ¹⁾
Marital status			
Married	18 (4.3)	1.0	
Divorced	3 (4.2)	0.97 (0.22-3.62)	0.63 ¹⁾
Single	1 (12.5)	3.19 (0.07-27.0)	0.30 ¹⁾
Widowed	13 (6.3)	1.50 (0.68-3.30)	0.27
Residence			
Urban	16 (7.8)	2.29 (1.07-4.87)	0.0181
Rural	17 (3.6)		
Occupation			
Farmer	22 (4.5)	1.0	
Housewife	5 (4.4)	0.97 (0.32-2.79)	0.95
Merchant	0	0.0 (0-3.79)	0.27 ¹⁾
Govt. employee	2 (10.5)	2.47 (0-12.23)	0.22 ¹⁾
Soldier	2 (16.7)	4.2 (0-22.43)	0.11 ¹⁾
Others	4 (8.2)	1.87 (0.52-6.07)	0.20 ¹⁾

¹⁾: Fisher exact test.

association. *P* value less than 0.05 was considered significant.

RESULTS

A total of 706 subjects were included in the study. Table 1 shows socio-demographic characteristics of the study population. The median age of the subjects was 65 years (range 50 - 91 years). The majority belonged to the age group 50-70 years. Males constituted 58.8% of the participants. A substantial majority of the subjects were Christians (93.1%). Four hundred eighty-four (68.6%) of the subjects were farmers followed by housewives (16%). Regarding the marital status of the subjects, 59.5% were married, 29.2% were widowed, and 10.2% were divorced. Seventy percent of the subjects came from rural areas, the remaining 30% from Gondar town.

Among the study population, 5% (35/706) were found to be seropositive for HIV antibodies. The sex-specific prevalence of HIV for males was 5.6% (22/415), which did not differ much from that of females (4.7%, 13/291) (Table 2). HIV prevalence was found to be high among age groups 50-59 for males and 60-69 for females, where the levels of HIV seropositivity were 9.1 and 7.7%, respectively. In this study, the oldest seropositive person was an 81-year-old male subject from rural Gondar who has been married for 50 years. Among females, the oldest seropositive subjects were two 70-year-old women from Gondar town, who had both been widowed for 11 years.

The prevalence of HIV was high among urban residents, where 7.8% (16/204) were positive compared to 3.6% (17/474) of rural residents. This difference is statistically significant (*P* = 0.018). High seroprevalence by marital status was found among the single (12.5%) and the widowed (6.3%). Soldiers and government employees were the two occupa-

tional groups among which the prevalence of HIV was more than 10%.

The prevalence of active syphilis was 4.6%. As shown in Table 3, the highest syphilis prevalence was found among males in the age group of >80 years and who were or had been soldiers and bar owners by profession. Looking at possible co-infection of HIV with syphilis to indicate the mode of transmission revealed that only 6% of subjects positive for syphilis were found to be positive for HIV, whereas 4.9% of subjects negative for syphilis were positive for HIV.

DISCUSSION

The prevalence of HIV-1 antibody among elderly cataract patients was 5%. This was quite a high prevalence for this age group considering the expectation that elderly subjects are a low risk group for HIV. This figure is only slightly less than the 6.3% seroprevalence of HIV among sexually active adults (15-49 years) obtained by national sentinel surveillance (3). This might indicate the growing magnitude of the HIV problem in the country's population including the elderly and rural.

There has been a high level of silence concerning the issue of HIV/AIDS in Ethiopia, especially in the rural setups where over 85% of the population lives. The issue in the vast majority of rural residents is compounded by widespread denial and the fear of possible stigma and discrimination, and further complicated by the low educational level of the rural population and the traditional taboo associated with sexuality.

Recent evidences suggest that transmission of HIV is

Table 3. Socio-demographic characteristics of elderly subjects by syphilis positivity in Northwest Ethiopia, 2002

Characteristics	Positive for syphilis No. (%)	OR (95% CI)	P-value
Age (year)			
Men			
50-59	3 (5.5)	1.20 (0.24-5.21)	0.51 ¹⁾
60-69	5 (3.5)	0.75 (0.21-2.59)	0.61 ¹⁾
70-79	8 (5.6)	1.0	
≥80	3 (7)	1.60 (0.32-7.05)	0.36 ¹⁾
Women			
50-59	5 (6.3)	1.03 (0.28-2.64)	0.58 ¹⁾
60-69	8 (6.1)	1.0	
70-79	1 (1.5)	0.23 (0.01-1.88)	0.12 ¹⁾
≥80	0	0 (0-6.16)	0.40
Marital status			
Married	19 (4.5)	1.0	
Divorced	4 (5.4)	1.24 (0.35-4.03)	0.44 ¹⁾
Single	0	0 (0-15.50)	0.69 ¹⁾
Widowed	10 (4.9)	1.08 (9.46-2.49)	0.85
Residence			
Urban	14 (7.3)	1.87 (0.86-4.04)	0.84
Rural	18 (3.9)		
Occupation			
Farmer	19 (3.9)	1.0	
Housewife	4 (3.5)	0.90 (0.25-2.87)	0.55 ¹⁾
Merchant	0	0.0 (0-4.46)	0.32 ¹⁾
Govt. employee	1 (5.5)	1.36	0.54 ¹⁾
Soldier	2 (16.7)	4.89 (0-26.53)	0.08 ¹⁾
Others	7 (14.3)	4.08 (1.4-11.03)	0.006 ¹⁾

¹⁾: Fisher exact test.

increasing among adults of 50 years of age or older (16). Over the last decade, more and more elderly people have become infected with HIV (16). Today, between 11 to 15% of Americans infected with HIV are over the age of 50 years (17). In Western Europe, nearly 10% of new infections declared between January 1997 and June 2000 occurred in the over 50 groups (18,19).

By the end of 2001, a cumulative total of 100,353 Ethiopian AIDS cases had been reported to the Ministry of Health, 2.8% of which represented people of age 50 and above (20). This indicates that the contribution of elderly people to the national figure was relatively low. Notably, different studies in the US have shown that older subjects do not get tested for HIV on a regular basis, and it would be difficult for health workers to differentiate between the symptoms of aging and those of AIDS (16,17). These circumstances complicate the matter, suggesting there may be more cases than those reported (16,17).

Our finding of 5% HIV seropositivity in an elderly population was much lower than that in a study conducted among medically hospitalised elderly patients in Dar es Salaam, Tanzania, which showed an HIV prevalence of 15% (15). This difference can be explained by the fact that the subjects in our study were apparently healthy except for vision problems.

In the present study, the prevalence of HIV among males was slightly higher than that among females; males constituted 63% of HIV seropositive elderly subjects. This figure is in agreement with that in previous studies elsewhere, which have shown 73.7 to 91% positivity in males (15,18,19). In

contrast, in Western Europe, older women were found to have a higher incidence than older men (21).

Like the results of recent sentinel surveillance in Ethiopia, which revealed an overall HIV prevalence of 6.1%, and a 13.2 and 3.7% prevalence among urban and rural pregnant women, respectively (3), the results of this study showed a high prevalence among urban residents. Similarly, Abebe et al. (22) found a significant difference in HIV prevalence among urban and rural military recruits, 7.2 versus 3.8%. It is interesting to note that HIV prevalence varies widely among geographical areas in Africa. A study in rural North Tanzania showed a marked difference in HIV prevalence between a small trading center (13.3%) and an adjacent rural agricultural village (3.9%) (23).

Several studies have linked the presence of sexually transmitted diseases to a higher risk of HIV (9,10,24). However, our finding of an only 6% sero-reactivity for syphilis in subjects found positive for HIV antibodies, compared to a 4.9% HIV prevalence among subjects negative for syphilis, is inconsistent with other reports from young adults. Such studies demonstrated that HIV-positive individuals had significantly higher syphilis seropositivity compared to that in the HIV seronegatives, implying sexually transmitted diseases as risk factors for HIV (9,10,24). However, it is important to point out that the main mode of transmission of HIV among Ethiopians is heterosexual intercourse (3), which would also hold true for our study subjects. The high rate of positivity for HIV and syphilis among the elderly indicates that they are sexually active. Therefore, education addressing the sexual needs of the elderly should be strengthened as a contribution to the fight against HIV.

In conclusion, the prevalence of HIV and syphilis among elderly subjects in Northwestern Ethiopia was found to be relatively high. Efforts should be made to include the elderly in HIV/AIDS prevention and control programs. In addition, health workers should consider the elderly as a risk group for HIV, and in light of our findings, a nationwide large-scale study on the burden of HIV on the elderly is recommended.

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