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Original Research

Marriage Patterns and Sero-prevalence of HIV Infection at Gambella Administrative Region, Southwest Ethiopia

Amanuel Molla[1], Baye Gelaw[2], Zelalem Addis[2], Aschalew Gelaw[2]

[1]Gambela Teachers' Education and Health Sciences College, P.O.Box 113, Gambela, Ethiopia
[2]School of Biomedical and Laboratory Sciences, College of Medicine and Health Sciences, University of Gondar, P.O.Box 196

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Corresponding Author:
Aschalew Gelaw,
University of Gondar, P.O. Box 196
aschalew3@gmail.com

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Abstract

Different types of marriage patterns such as polygyny and levirate marriages are expected to be risks for HIV infection in communities where such practices are common. Previous to this study 6.5% HIV prevalence was reported in Gambella, a region where polygyny and levirate marriages are common. We conducted a cross sectional study to assess the sero-prevalence of HIV infection across different marriage patterns using 424 individuals attending Gambella Hospital. The overall HIV prevalence in the current study was 8.5%, with a prevalence of 3.5%, 4.0%, and 1.0% among monogamy, polygyny and unmarried individuals, respectively. Polygyny, illiteracy, levirate and gift marriage, rural residency, being housewife, lack of knowledge about HIV/AIDS, absence of discussion about HIV with partner, lack of knowledge about VCT and not being tested before were factors that showed statistically significant association with HIV infection in bivariate analysis. The findings of this study indicated the need for fighting harmful traditional practices such as polygyny and levirate marriage through community dialogue and implementation of preventive measures to tackle HIV infection in Gambella administrative region in particular which may also hold true in some other parts of the country in general.

BACKGROUND

Acquired immunodeficiency syndrome (AIDS) caused by the human immunodeficiency virus (HIV) is a major health problem in many parts of the world, and is considered as a pandemic disease. The major factors for spread of AIDS are sexual transmission and vertical transmission from mother to child at birth and through breast milk [1].

According to the report of world health organization there were an estimated 34 million people living with HIV and an estimated 1.8 million deaths around the world in 2010 [2]. Sub-Saharan Africa remains the region most heavily affected by HIV. In 2010, about 68% of all people living with HIV resided in sub-Saharan Africa. Sub-Saharan Africa also accounted for 70% of new HIV infections and almost half of the deaths from AIDS related illness in 2010 [3]. Africa has a range of varying traditions and culture among its countries that are seen as main contributing factors to the escalating HIV/AIDS pandemic. Evidently, African men have a tendency to prefer marriage with younger girls, polygynous marriage, sharing of wives, widow inheritance and sexual cleansing [4].

Ethiopia is one of the Sub-Saharan African countries with hard-hit by HIV/AIDS. According to the 2007 Single Point Estimate, there were 1,116,216 people living with HIV in 2009. There were an estimated 131,145 new HIV infection and 44,751 AIDS-related deaths [5]. According to the 2011 demographic and health survey, from nine regional states and two city administrations in Ethiopia the highest HIV prevalence was recorded in Gambella regional state which was 6.5 % (6). In this region the number of men and women

having more than two sexual partners was also the highest among the regions with a percentage of 8.5 for men and 11.2 for women [7].

Concurrent partnerships such as polygyny and levirate marriage are some of the factors that may contribute to the spread of HIV [8, 9]. Marriage patterns such as polygyny involve multiple partners, each of whom might introduce HIV into the household [10, 11]. Studies and reviews from different parts of Africa, including Zambia, Uganda, Malawi, Nigeria, and Zimbabwe indicated the impact of marriage patterns on the prevalence of HIV [12-16]. However, the contribution of different marriage patterns to the prevalence of HIV infection in Gambella region were not investigated, even though the prevalence of HIV and rate of polygnous relations are very high as compared to the other regions of Ethiopia. Therefore, this study was designed to investigate the role of different marriage patterns on the prevalence of HIV among individuals attending Gambella hospital, Southwest Ethiopia.

METHODS

Study area and study design

From February to April 2012, a cross sectional study was conducted at voluntary counseling and testing (VCT) and provider, initiated HIV counseling and testing (PIHCT) clinic of Gambella hospital, Southwest Ethiopia. Gambella is one of the nine regional states of Ethiopia located 777Km away from Addis Ababa, the capital of Ethiopia.

Sample size and sampling technique

Sample size was determined using single population proportion formula and 10% non-response rate which gave a total of 424 individuals. Study participants were selected based on systematic random sampling technique among those who attended the voluntary counseling and testing and provider initiated counseling and testing centers.

Data collection and processing

Socio-demographic data: Socio-demographic data was collected by face-to-face interview using structured questionnaire translated from English to Amharic and then to English language. The interview took place in private room after informed consent was obtained from each participant. Two trained nurses were involved during the data collection process.

Specimen collection and laboratory investigation: Five-milliliter venous blood was collected using ethylene diamine tetra-acetate anticoagulant. The blood samples were screened for HIV using rapid tests (KHB rapid, STAT-PAK and Uni-Gold). The test results were interpreted according to the National HIV rapid tests Algorithm.

Data analysis

The data was entered and analyzed using SPSS version 16.0 for statistical analysis. Bivariate and multivariate analysis was used to identify associated variables between socio-demographic variables including marriage patterns and the prevalence of HIV infection. Variables with p-value less than or equal to 0.05 at 95% confidence interval and 5% significant level in the multivariate analysis were considered significantly associated with HIV infection.

Ethical considerations

Ethical approval was obtained from Ethical Clearance Committee of School of Biomedical and Laboratory Sciences, College of Medicine and Health Sciences, University of Gondar. Verbal consent was obtained from each participant prior to the interviews and data was collected anonymously to ensure confidentiality. The HIV screening result was delivered to each participant through the VCT and PIHCT clinic of the hospital.

RESULT

Socio-demographic characteristics

A total of 401 individuals, 217 males and 184 females, were involved in this study, giving a response rate of 95%. The age range of the study participants was 15-82 years with a mean and standard deviation of 28 and 8 years, respectively. Majority, 44.4%, were in the age range from 25-34 years. Higher proportions, 43.9%, 31.9%, 78.8% and 36.2% of the participants were Protestants in religion, illiterate in their level of education, rural residents and government employees, respectively. Seventy three percent of the participants were married with marriage type of 31.2% gift, 23.9% legally married and 4.2% levirate. About 26% of the study participants were in polygynous relationship (Table 1).

Knowledge, attitude and practice of patients towards HIV/AIDS

About 96.8% of participants had information about HIV/AIDS but only 10.7% responded that they can acquire the infection. Majority of the respondents, 88.5%, had knowledge about the preventive methods of HIV/AIDS and 92.8% mentioned condom use as one prevention method but only 3.55% used condom. Seventy seven percent of the participants in this study had information about VCT service and 69.1% had undergone HIV testing and counseling before (Table 2).

Table 1. Sociodemographic characteristics and marriage patterns of clients at the PIHCT and VCT clinics of Gambella Hospital, Southwest Ethiopia, 2012

Variables	Number	Percentage
Sex		
Male	184	45.9
Female	217	54.1
Age		
15- 24	149	37.2
25-34	178	44.4
≥35	74	18.5
Educational status		
Illiterate	176	43.9
Literate	225	56.1
Average income/month(Birr)		
<801	112	27.9
801-1230	88	21.9
1230-1800	103	25.7
>1800	96	23.9
Marriage Types		
Legal	96	23.9
Gift	125	31.2
Levirate	17	4.2
Levirate & Gift	39	9.7
Other	15	3.7
Never Married	109	27.2
Residence		
Urban	316	78.8
Rural	85	21.2
Religion		
Orthodox	116	28.9
Protestant	176	43.9
Muslim	19	4.7
Catholic	45	11.2
Other	45	11.2
Occupation		
Government	145	36.2
Private	35	8.7
Merchant	33	8.2
Housewife	67	16.7
Student	46	11.5
Others	75	18.7
Relationship type		
Monogamy	189	47.1
Polygyny	103	25.7

The Prevalence of HIV and Associated Risk factors

The overall sero-prevalence of HIV infection among individuals visiting the VCT center during the study period was 8.5%, 4.5% among males and 4% among females. The prevalence was higher among clients within the age group of 25-34 years (4.5%), urban dwellers (5.2%), illiterate (6.2%) and housewives (2.2%). The sero-positivity across different marriage patterns was 1.5%, 2.0%, 1.2% and 2.2% among legally married, for those married through cultural gift, for levirate marriage and for those involved in levirate & gift marriage. Four percent HIV prevalence was observed among individuals in polygynous relation and 3.5% among those in monogamous relation. When assessed for any association educational status, marriage type, type of relationship, resident area and occupation showed a statistically significant association with HIV seropositivity in bivariate analysis. But none of these demographic factors showed association in multivariate analysis (Table 3).

Table 2. The Knowledge, attitude and practice of patients towards HIV/AIDS at Gambella Hospital Southwest of Ethiopia, 2012

Variables	Number	Percentage
Have you heard about HIV?		
Yes	388	96.8
No	13	3.2
Is HIV Preventable?		
Yes	355	88.5
No	10	2.5
Don't know	36	9.0
Did you discuss about HIV with partner?		
Yes	204	50.9
No	197	49.1
Do you think you have a chance of getting HIV?		
Yes	43	10.7
No	358	89.3
Do you know about condoms?		
Yes	372	92.8
No	29	7.2
Have you used condom in your last sex?		
Yes	14	3.5
No	375	93.5
Refused to answer	12	3.0
Do you know about VCT?		
Yes	309	77.1
No	63	15.7
Don't know	29	7.2
Have you been tested for HIV before?		
Yes	277	69.1
No	124	30.9

The prevalence of HIV was also assessed based on the knowledge, attitude and practice of study participants. Accordingly, higher prevalence of HIV was observed among those who have information about HIV (7.5%), knew prevention methods of HIV (6.2%), do not discuss about HIV with their partners (6.2%), did not think they can get HIV (7%), knew about condom (8%), do not use condom (7%) and have information about VCT (6.2%). In bivaraite analysis information about HIV, knowledge on the prevention of HIV, discussion about HIV with partner, information about VCT and being tested for HIV before showed a statistically significant association with HIV prevalence. But only discussion about HIV with partner showed a statistically significant association with HIV prevalence in the multivariate analysis (Table 4).

Table 3. Prevalence and associated risk factors of HIV across socio-demographic variables

Variables	HIV result		Crude OR (95% CI)	Adjusted OR (95% CI)
	Positive	Negative		
Sex				
Female	16(4.0%)	168(41.9%)	1.05 (.52, 2.13)	
Male	18(4.5%)	199(49.6%)	1.000	
Age				
18-24	14(3.5%)	135(33.7%)	1.000	
25-34	18(4.5%)	160(39.9%)	1.09 (.52, 2.26)	
≥35	2(.5%)	72(18.0%)	.27 (.06, 1.21)	
Educational status				
Illiterate	25(6.2%)	151(37.7%)	3.97(1.80, 8.75)*	2.81 (.68, 11.69)
Literate	9(2.2%)	216(53.9%)	1.000	1.000
Average income/month(Birr)				
<801	15	97	2.32 (.86, 6.24)	
801-1230	5	83	.90 (.27, 3.07)	
1230-1800	7	96	1.09 (.35, 3.38)	
>1800	6	90	1.000	
Marriage type				
Legal	6(1.5%)	90(22.4%)	1.000	1.000
Gift	8(2.0%)	117(29.2%)	1.03 (.35, 3.09)	.80 (.24, 2.70)
Levirate	5(1.2%)	12(3.0%)	5.77 (1.54, 21.63)*	4.76 (.81, 27.90)
Levirate & Gift	9(2.2%)	30(7.5%)	4.50 (1.48, 13.69)*	4.33 (.69, 27.05)
Other	2(.5%)	13(3.2%)	2.31 (.42, 12.67)	2.38 (.38, 14.71)
Relationship				
Monogamy	14(3.5%)	175(43.6%)	2.10 (.67, 6.55)	
Polygyny	16(4.0%)	87(21.7%)	4.83 (1.56, 14.97)*	1.59 (.43, 5.96)
Unmarried	4(1.0%)	105(26.2%)	1.000	1.000
Resident area				
Rural	13((3.2%)	72 (18.0%)	2.54 (1.21, 5.31)*	.951 (.33, 2.77)
Urban	21(5.2%)	295(73.6%)	1.000	1.000
Occupation				
Government	6(1.5%)	139(34.7%)	1.000	1.000
Private	0(.0%)	35(8.7%)	.99 (.00, .00)	.99 (.00, .00)
Merchant	2(.5%)	31(7.7%)	1.49 (.29, 7.76)	.71 (.09, 5.83)
Housewife	9(2.2%)	58(14.5%)	3.59 (1.22, 10.56)*	1.46 (.25, 8.50)
Student	2(.5%)	44(11.0%)	1.05 (.21, 5.41)	4.70 (.45, 49.44)
Other	60(15.0%)	15(3.7%)	5.79 (2.14, 15.65)*	3.35 (.70, 16.05)

*P-value <0.05

Table 4. Prevalence and associated risk factors of HIV across the knowledge, attitude and Practice of study participants, 2012

Variables	HIV Result		Crude OR (95% CI)	Adjusted OR (95% CI)
	Positive	Negative		
Have you heard about HIV?				
Yes	30 (7.5%)	358 (89.3%)	1.000	1.000
No	4 (1.0%)	9 (2.2%)	5.30 (1.54, 18.24)*	2.26 (.47, 10.99)
Is HIV Preventable?				
Yes	25 (6.2%)	330 (82.3%)	1.000	1.000
No	1 (.2%)	9 (2.2%)	1.47 (.18, 12.04)	.88 (.09, 8.48)
Don't know	8 (2.0%)	28 (7.0%)	3.77 (1.56, 9.14)*	1.92 (.46, 8.01)
Did you discuss about HIV with partner?				
Yes	9 (2.2%)	195 (48.6%)	1.000	1.000
No	25 (6.2%)	172 (42.9%)	3.15 (1.43, 6.93)*	2.48 (1.02, 6.05)*
Do you think you have a chance of getting HIV?				
Yes	6 (1.5%)	37 (9.2%)	1.000	
No	28 (7.0%)	330 (82.3%)	.52 (.20, 1.35)	
Do you know about condoms?				
Yes	32(8.0%)	340(84.8%)	1.000	
No	2(.5%)	27(6.7%)	.79 (.18, 3.46)	
Have you used condom in your last sex?				
Yes	0(.0%)	14(3.5%)	1.000	
No	31(7.7%)	344(85.8%)	1.456e8 (0.000)	
Refused to answer	3(.7%)	99 (2.2%)	5.358e8 (0.000)	
Do you know about VCT?				
Yes	25(6.2%)	284(70.8%)	1.000	1.000
No	2(.5%)	61(15.2%)	.372 (.09, 1.61)	.18 (.04, .85)
Don't know	7(1.7%)	22(5.5%)	3.62 (1.41, 9.29)*	.69 (.14, 3.28)
Have you been tested for HIV before?				
Yes	15(3.7%)	262(65.3%)	1.000	1.000
No	19(4.7%)	105(26.2%)	3.16 (1.55, 6.45)*	2.22 (.97, 5.11)

*P-value <0.05

DISCUSSION

The overall prevalence of HIV infection in Gambella Hospital among patients visited the PIHCT and VCT clinic was 8.5%. The prevalence of HIV infection in the current study was higher than the prevalence previously reported by the Ethiopia Demographic Health Survey (EDHS) by the year 2011 which was 6.5% [5]. High prevalence of HIV infection was demonstrated among individuals that had information about HIV transmission and knowledge about the uses of condom. This means that knowledge about HIV/AIDS and its mode of transmission had not brought significant behavioral change in the study area. The influence of culture based sexual practices such as polygyny and levirate marriage cultures could be possible contributors for such unexpected outcomes. On the other hand illiteracy showed a significant association with HIV prevalence (COR= 3.97; 95% CI = 1.80, 8.75). It is not unwise to expect that educated individuals can minimize risk behaviors for HIV infection. Moreover, Micheloa et al from Zambia reported that a decreased HIV prevalence observed among people that attended higher education [17].

Respondents involved in polygyny marriage had high HIV infection and polygyny was significantly associated with HIV infection. Individuals involved in a polygamous relation were 4.83 times more exposed to HIV infection as compared to their unmarried

counterparts. This finding is consistent with a report from Uganda where excess HIV-risk behavior among men involved in polygynous relationships was observed [13]. This significant association between polygyny and HIV may be due to junior wives of a man, usually younger than the man, may exchange sex for material gain or for other reason without enjoying the social status to request condom use and are at an elevated risk of contracting HIV and other sexually transmitted infections (STIs), which they may then introduce into a polygynous marriage (18). Polygyny also shapes a man's emotional and sexual relationship to his wives in favour of HIV and other STIs transmission. First, relationships between polygynous spouses are often marked by loose emotional ties and with lack of communication between spouses about sexual health matters including important symptoms and treatment issues [19]. The absence of communication about HIV with partner is significantly associated with the prevalence of infection as demonstrated in the current study. Individuals who do not discuss about HIV with their partners were 2.84 times more exposed to HIV as compared to those who discuss. On the other hand polygynous women may be more likely to have multiple sexual partners due to the absence of satisfaction in their relationship which could be solved by communication but to keep their fidelity women usually keep it by their own [20]. Moreover the concern of women fidelity to the husband hinders women's from requesting condom use [21]. These interpersonal factors all contribute to an expansion of sexual partners and to an increased risk of STI transmission within polygynous marriages. In contrary to the current finding a report from sub-saharan Africa indicated a protective effect of polygyny against HIV infection both at a country and sub-national level [22]. The authors explained the protective effect by the researches the possible reason for this negative association may be due to the distinctive structure of sexual networks produced by polygyny, the disproportionate recruitment of HIV positive women into marriages with a polygynous husband, and the lower coital frequency in conjugal units of polygynous marriages [22].

The practice of levirate marriage (widow inheritance) can also be considered as a serious risk for HIV acquisition as a man whose brother died of AIDS inherits his widow facilitating transmission to the current wives [18]. In such practices men play a dominant role in most relationships, while women and girls are generally expected to be submissive. As a result, most women lack confidence, skills and the knowledge necessary to negotiate safe sexual relationships with men and to make independent lifestyle choices which will contribute to the rapid transmission of HIV [23].

The current study showed significant association between polygyny and HIV transmission among PIHCT and VCT patients. However, different reports were documented concerning polygyny and HIV transmission which needs further study to determine the exact relationships. Even though the study gave a base line data as it was conducted in an area where data are limited, its limitation in a hospital area made it impossible to assess the real situation of the problem from the grass root of the population.

CONCLUSION

With a limitation of similar data from other parts of the country and the study area, from this study it can be concluded that the prevalence of HIV infection is relatively high in the study area indicating that the importance of HIV prevention is yet to be promoted and implemented. HIV infection was high among polygynous marriage and socio-demographic factors such as illiteracy, levirate and gift marriage, rural residency and being housewife were found significantly associated with HIV infection at least in the bivariate analysis. Moreover, in adequate knowledge about HIV, absence of discussion about HIV with partner, poor knowledge about VCT and not being tested for HIV infection before marriage were other factors that showed significant association with HIV infection. The findings of this study indicated the need for fighting harmful traditional practices, such as polygyny and levirate marriage, that are related to HIV infection. Therefore, we recommend that community dialogue and health education are urgently required to tackle HIV infection as a result of traditional malpractices such as polygyny and levirate marriage. In addition, because this study may not indicate the exact prevalence of HIV infection in the community as a result of polygyny, levirate marriage and others, further study is required at a large scale to determine the HIV burden in the locality.

CONFLICT OF INTEREST STATEMENT

The authors do not have any competing interests to declare.

AUTHORS' CONTRIBUTIONS

AM conceived the study, collect data and undertook statistical analysis. BG initiated the study and made major contributions to the study design, statistical analysis manuscript revision. ZA participated in data analysis and manuscript drafting. AG involved in data analysis and manuscript review. All authors approved the final version of the manuscript.

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