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Knowledge of Viral Hepatitis among MSM in a Sub-Saharan African City: A Cross-Sectional Study in Calabar, Nigeria

Omoronyia Ogban Ezukwa*, Ekpenyong Nnette Okon, Mkpanam Nkese Effiong, Akpet Obaji Etaba
Department of Community Medicine, University of Calabar, Calabar, Nigeria

***Correspondence:** omoronyia2016@gmail.com

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Abstract
Infection with hepatitis B or C viruses is still one of the most dreaded infectious diseases worldwide. Health education and screening, particularly among vulnerable groups, are the most cost-effective interventions that can be provided in developing countries. Facility and community-based provision, of effective strategic health education and counseling, are dependent on better understanding of the factors that may be associated with the level of knowledge on hepatitis. One of such groups is men who sleep with men (MSM) or homosexuals, who are at high risk of hepatitis infection through unprotected anal intercourse. This study was therefore aimed at assessing the knowledge of hepatitis infection among MSM in Calabar, a metropolitan city in the oil-rich Niger-Delta region of Nigeria. Cross-sectional study design was utilized. The snow-ball sampling method was used to recruit subjects, with self-administration of structured questionnaires. Questionnaire assessed awareness, causes, sources, consequence, and prevention of hepatitis infection. Knowledge scores were obtained for each subject. Chi-square was used to assess factors associated with knowledge, with p-value fixed at 0.05. Sixty-nine (69) consenting subjects were surveyed, with mean age of 22.5 ± 3.2 years, ranging from 16 to 31 years. Mean knowledge percentage score was 43.5 ± 32.0, ranging from 0% to 100%. Age group, occupation, and other sociodemographic characteristics were not significantly associated with the knowledge of hepatitis infection. There is inadequate knowledge of hepatitis infection among MSM in the study area. This inadequacy appears worse among receivers, who are even at higher risk of sexually transmitted infections compared with inserters. These findings have implications for control of viral hepatitis in sub-Saharan Africa.

Keywords: Viral hepatitis, Men who sleep with men, Homosexuals, Knowledge, Inserter, Receiver, Nigeria

1. INTRODUCTION

The burden of disease owing to viral hepatitis has worsened, from being the tenth, to the seventh leading cause of death, between 1990 and 2013 [1]. This transition may have occurred owing to inaccessibility and/or lack of knowledge of the availability of regular screening, effective vaccines, and treatments, particularly among high-risk groups [2]. Men who sleep with men (MSM) constitute one of such high-risk groups, therefore affording potential opportunity for cost-effective disease control among targeted groups [2]. Unfortunately, in countries where homosexual practices are constitutionally illegal, MSM who may be hard-to-access may not have adequate access to health education and other preventive measures [3,4]. There are few studies on MSM in the sub-Saharan African region, and most of them typically assess sexually transmitted disease burden, as regards practice of preventive measures [5-7]. Only few studies, worldwide, have assessed the knowledge of viral hepatitis, which is the key for better understanding of the dynamics of disease spread and control [8].

Anal sexual roles in MSM are dichotomized into masculine top-positioned inserters, effeminate bottom-positioned receivers, and versatile (insertive and receptive) partners [9]. These roles have been considered to be associated with varying degrees of risk of acquiring or transmitting sexually transmitted infections, which may be dependent on their knowledge of these infections [10,11]. This study was therefore aimed at assessing the levels, as well as factors associated with the knowledge of viral hepatitis B and C among MSM in Calabar, a city in Southern Nigeria, where high-risk homosexual practices have been reported [5].

2. MATERIALS AND METHODS

Study design was cross-sectional descriptive, with recruitment of subjects using snowball sampling technique through the months of February and March 2017 in Calabar. Self-administered, structured, and pretested questionnaires were used to obtain quantitative data, from consenting MSM subjects, following ethical approval from the University of Calabar Teaching Hospital (UCTH) ethical review committee. Questionnaire consisted of sociodemographic characteristics (including type of MSM), awareness of hepatitis B and C, and 20-item questions assessing knowledge of the meaning (1), basic prevalence (1), means of transmission (4), basic symptoms and signs (4), fatality (2), and means of prevention of the infections (8). Questionnaire was adapted from validated tools for the assessment of knowledge of sexually transmitted infections, as well as from previous surveys [12-14].

Sociodemographic characteristics, awareness, and knowledge were presented using frequency tables. Knowledge scores (obtained for each subject) were categorized into poor, fair, good, and excellent. These categories were further categorized as inadequate (poor or fair) and adequate (good or excellent). Sociodemographic and other relevant factors associated with knowledge were assessed using chi-square and presented using cross-tables. *p*-value was fixed at 0.05.

3. RESULTS

Sixty-nine (69) respondents provided data for analysis, with mean age of 22.5 ± 3.2 years, ranging from 16 to 31 years. Most subjects were within 24 years old (53, 76.9%), had at least secondary level of education (67, 97.2%), single (67, 95.7%), and students (47, 68.2%). Eleven subjects (15.9%) were smokers, while majority (57, 82.6%) consumed alcoholic beverages. One-third of the subjects (23, 33.3%) practiced both inserting and receiving, while 29 (42.1%) and 17 (24.6%) were solely inserters and solely receivers, respectively (Table 1).

3.1. Awareness and knowledge of hepatitis infection

A little below one quarter of the subjects (16, 23.2%) reported that they had never heard of hepatitis B or C infection (Table 2). A little below half of the subjects (33, 47.8%) had inadequate knowledge of hepatitis, consisting of poor (21, 30.4%) and fair (12, 17.4%) knowledge (Table 2).

Table 1: Sociodemographic characteristics and sexual roles of subjects (*N* = 69).

Variable	Frequency	Percentage
Age group (years)		
≤19	12	17.4
20-24	41	59.5
25-29	13	18.8
≥30	3	4.3
Total	69	100
Educational level		
Primary	1	1.4
Secondary	33	47.8
Tertiary	34	49.4
Missing	1	1.4
Total	69	100
Marital status		
Married	2	2.9
Single—living alone	33	47.8
Single—living with guardian	29	42
Single—living with friends	4	5.8
Divorced	1	1.4
Total	69	100
Occupation		
Student	47	68.2
Trader	4	5.8
Apprentice	7	10.1
Unemployed	10	14.5
Others	1	1.4
Total	69	100
Smoking status		
Yes	11	15.9
No	57	82.7
Missing	1	1.4
Total	69	100
Alcohol consumption		
Yes	57	82.6
No	12	17.4
Total	69	100
MSM type		
Inserter	29	42.1
Receiver	17	24.6
Both	23	33.3
Total	69	100

Table 2: Awareness and knowledge of hepatitis infection (*N* = 69).

Variable	Frequency	Percentage
Aware of hepatitis B and C infection		
Yes	53	76.8
No	16	23.2
Total	69	100
Knowledge grade		
Poor (<25%)	21	30.4
Fair (25-49.9%)	12	17.4
Good (50-74.9%)	24	34.8
Very good (≥75%)	12	17.4
Total	69	100
Knowledge category		
Adequate (good or very good)	36	52.2
Inadequate (poor or fair)	33	47.8
Total	69	100

Table 3: Factors associated with knowledge of hepatitis (*N* = 69).

Variable	Knowledge category		Chi-square	*p*-value
	Adequate *n* (%)	Inadequate *n* (%)		
Age group (years)				
≤24	27 (81.8)	26 (72.2)	0.89	0.35
>24	6 (18.2)	10 (27.8)		
Total	33 (100)	36 (100)		
Educational level				
Primary or Secondary	15 (46.9)	19 (52.8)	0.24	0.63
Tertiary	17 (53.1)	17 (47.2)		
Total	32 (100)	36 (100)		
Occupation				
Student	25 (75.8)	22 (61.1)	1.7	0.19
Nonstudent	8 (24.2)	14 (38.9)		
Total	33 (100)	36 (100)		
Single status category (*n* = 66)				
Living alone	20 (60.6)	13 (39.4)	3.0	0.09
Living with guardian or friend	13 (39.4)	20 (60.6)		
Total	33 (100)	33 (100)		
MSM type				
Inserter only	18 (54.5)	11 (30.6)	4.07	0.04
Receiver (receiver only & both)	15 (45.5)	25 (69.4)		
Total	33 (100)	36 (100)		

3.2. Factors associated with knowledge of hepatitis infection

There was higher proportion of adequate knowledge of hepatitis among younger subjects (81.8% vs. 18.2%, those with tertiary level of education (53.1% vs. 46.9%), students (75.8% vs. 24.2%), and single subjects that lived alone (60.6% vs. 39.4%), though these differences were not statistically significant ($p > 0.05$, Table 3). Inadequate knowledge was proportionally commoner among subjects that were receivers (consisting of receiver only as well as those that received and inserted) compared with those that were inserter only (69.4% vs. 30.6%, $p = 0.04$, Table 3).

4. DISCUSSION

This study assessed the knowledge of viral hepatitis among MSM in Calabar Metropolis, Nigeria. There was younger age distribution (mean age of 22.5 years) when compared with other similar studies [15,16]. This distribution may however not be a

fair representation of the MSM subpopulation in the study setting, owing to the use of peer-driven non-probability snowball sampling technique for subject recruitment. There is potential for older MSM who may have been reluctant to participate in the study, owing to associated social stigma and illegal status of homosexual practices in Nigeria [17].

In this study, at least three quarters of MSM subjects (53, 76.8%) were aware of viral hepatitis. These findings are comparable to the reports of 75.0% level of awareness in the Netherlands [18], but higher than the reports from Switzerland (46.0%) [19]. However, approximately half of the subjects (33, 47.8%) had inadequate knowledge of hepatitis, which is considerably higher than the report of 18.9% in a similar study in Brazil [16]. Gangcuangco *et al*. also reported higher proportion of MSM subjects (390, 96%) with adequate knowledge of condom use as means of preventing Sexually Transmitted Infection (STI) transmission [20]. It is possible that differences in instruments used, as reflected in components of knowledge assessed, may account for difference in degrees of adequacy of knowledge reported. Notwithstanding, the low level of knowledge reported in this study may be due to the lack of health education programs, which focus on MSM in the potentially discriminatory study setting. Knowledge, particularly of preventive measures, is one of the essential requirements for consistent practice toward containment of viral hepatitis within and without the MSM subpopulation. This is key, because many MSM have multiple homosexual and/or bisexual partners, therefore subsisting MSM as a potential nidus for disease spread to general population [21,22].

Higher proportion of single students that were living alone had adequate knowledge of viral hepatitis compared with those that lived with their guardians (60.6% vs. 39.4%). Although this difference in proportion was not statistically significant ($p = 0.09$), it may be clinically significant with implications for disease control. Compared with living with a guardian, living alone may afford greater potential for freedom toward enhanced peer-to-peer interactions, and consequent transfer of knowledge from more knowledgeable to less knowledgeable MSM [23]. This study also found significantly higher proportion of receivers having adequate knowledge of viral hepatitis compared with inserters. This may have implications for disease spread, because receivers may be at higher risk of disease transmission through their mucosal injury during unprotected anal intercourse [24]. For instance, hepatitis infection has been found to increase the risk of contracting leptospirosis, therefore potentially posing public health risk by initiating emerging or re-emerging infectious diseases [25].

5. LIMITATIONS

The use of non-probability snowball sampling technique may limit the generalizability of the study findings.

6. CONCLUSION

Knowledge of viral hepatitis among MSM has been found to be inadequate in this study setting. Sociodemographic characteristics may not be associated with the level of knowledge. However, receivers, who may be at higher risk of disease transmission, may be having lower levels of knowledge compared with inserters. These findings have implications for control of sexually transmitted infections among high-risk groups who are part of the general population.

Although the illegal status of homosexual practices in most of Africa may pose challenge of difficult access to MSM for hepatitis control, there is need to consolidate on ongoing health education and other prevention efforts. Such consolidation may involve and engage all relevant stakeholders, particularly toward review of existing policies on prevention of sexually transmitted infections among high-risk groups. Otherwise, overwhelming epidemics of viral hepatitis in sub-Saharan Africa may just be waiting to happen. Further research on knowledge of viral hepatitis among larger sample of MSM in other similar and dissimilar settings is also recommended.

Author Contributions

1. Ekpenyong, NO and Omoronyia, OE – Conceptualized the idea and research proposal
2. Omoronyia, OE - designed study instruments
3. Ekpenyong, NO, Mkpanam, NE and Akpet, OE - collected data
4. Omoronyia, OE - analysed the data
5. Omoronyia, OE and Ekpenyong, NO - wrote the manuscript
6. Mkpanam, NE and Akpet, OE - reviewed the manuscript

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Conflict of Interest

The authors have no conflict of interest to declare.

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