

## Jacobs Journal of AIDS/HIV

---

### Research Article

# High Prevalence of Syphilis, Hepatitis B and HIV among Men who have Sex with Men in Tanga region, Northern Tanzania

Hamimu Omary Kigumi<sup>1,2</sup>, Samwel Mtullu<sup>3</sup>, Maseke Mgabo<sup>1,4</sup>, Michael J. Mahande<sup>5</sup>, Jenny Renju<sup>5,6</sup>, Damian J. Damian<sup>1,5,7</sup>,  
Sia E. Msuya<sup>1,5,7\*</sup>

<sup>1</sup>Department of Community Health, Institute of Public Health, Kilimanjaro Christian Medical University College (KCMUco), P.O. BOX 2240, Moshi, Tanzania

<sup>2</sup>Prime Minister's Office, Regional Administration and Local Government, Local Government Training Institute, Health department, P.O. BOX 1125, Dodoma, Tanzania.

<sup>3</sup>Tanga AIDS Working Group (TAWG), P.O. BOX 1374, Tanga, Tanzania

<sup>4</sup>Institute of Rural Development Planning (IRDP), P.O. BOX 138, Dodoma, Tanzania

<sup>5</sup>Department of Epidemiology and Biostatistics, Institute of Public Health, Kilimanjaro Christian Medical University College (KCMUco), P.O. BOX 2240, Moshi, Tanzania.

<sup>6</sup>London School of Hygiene and Tropical Medicine, Keppel Street, London, WC1E 7HT

<sup>7</sup>Department of Community Medicine, KCMC Hospital, P.O. BOX 3010, Moshi, Tanzania

\*Corresponding author: Dr. Sia E. Msuya, Department of Epidemiology and Biostatistics, Institute of Public Health, Kilimanjaro Christian Medical University College (KCMUco), P.O. BOX 2240, Moshi, Tanzania, Tel: +255 784 405619;

Email: [siamsuya@hotmail.com](mailto:siamsuya@hotmail.com)

Received: 11-20-2015

Accepted: 01-21-2016

Published: 02-23-2016

Copyright: © 2016 Sia E. Msuya

### Abstract

#### Background

Whilst studies have shown a high prevalence of HIV and sexually transmitted infections (STIs) among men who have sex with men (MSM) globally and in Africa, few studies have been conducted in Tanzania.

#### Methods

A cross sectional study was conducted between April and June 2015 in four districts of Tanga region in north-east Tanzania. Interviews were conducted with 266 MSM followed by serological testing for syphilis, hepatitis B surface antigen and HIV.

#### Results

The mean age of the participants was 27.2 (SD 6.7) years, 48% were married or cohabiting, with median of 20 lifetime male partners and 23% reported consistent condom use. The prevalence of Hepatitis B, syphilis and HIV were 28.2%, 31.2%, and 33.8% respectively. Syphilis seropositivity was significantly higher in HIV-positive (54%) compared to HIV-negative men (24.6%),  $p < 0.001$ .

## Conclusions

An effective response is needed in this setting to address the high prevalence of both sexually transmitted infections (STIs) and HIV amongst MSM. Programs that reach MSM and offer systematic screening for HIV and STIs, early entry in HIV antiretroviral treatment and effective treatment for STIs are urgently required to reduce HIV transmission among MSM themselves and in the general population.

**Keywords:** Sexually Transmitted Infections; HIV; Men Who Have Sex With Men; Prevalence; Tanzania

## Introduction

HIV continues to be a major public health concern especially in sub Saharan Africa (SSA). The setting has 66% of the 36.9 million people living with HIV and 70% of the two million new infections that occurred up to the end of 2014 [1]. A combination of multiple behavioral and medical interventions including antiretroviral treatment for HIV have led to a decline of new HIV infections amongst adults and children in SSA. In SSA between 2000 to 2014 adult HIV infection rates declined by 41% and by 48% amongst children [1,2]. In Tanzania the national adult HIV prevalence have also declined from 7% in 2003/04 to 5.3% in 2011/12 [2,3].

The reverse is true about HIV trends among men who have sex with men (MSM) and other key populations [1,4]. MSM are a high risk population and both the incidence and prevalence of HIV in this population is increasing in both high and low & middle income countries [4, 5]. Studies in SSA have shown that the HIV prevalence among MSM is 5-18 times higher compared to the general population [6]. In Senegal and Cameroon the HIV prevalence among MSM ranged from 22% - 44% compared to 6% in general population [7,8]. In Kenya high HIV prevalence of 43% and incidence of 35.2 per 100 person-years for men who have sex with men exclusively has been reported [9,10]. In Uganda studies report a 42.2% prevalence of HIV in MSM compared to 5.3% general population and in Tanzania 22.3% HIV prevalence amongst MSM compared to 5.1% in the general population [6,11].

The higher HIV prevalence among the MSMs in SSA may be explained by several factors. Biologically, there is a higher per act and per partner transmission probability of HIV transmission in receptive anal sex [4,5]. Individual factors including high risk sexual behaviors and a high prevalence of sexually transmitted infections (STIs) contribute [11-14]. Criminalization, stigma, discrimination of MSM and lack of national strategies for prevention and access to care for MSM in most of SSA countries are other factors shaping the trend of HIV in this group, Tanzania included [2,6,15].

The epidemiology of HIV amongst MSM differs substantially between countries and within countries, and between big and smaller cities. There is limited information in Tanzania on occurrence of HIV and other STIs among MSM outside the capital city of Dar es Salaam [2,11,15]. This study was conducted in Tanga region, in north-eastern Tanzania to provide baseline information on the prevalence of HIV, syphilis and hepatitis B virus amongst MSM as well as their knowledge of the HIV status.

## Methods

### *Study design and site*

A cross-sectional study was conducted from April to June 2015 among MSM in four districts of Tanga region. The region is administratively divided into eight districts, with a total population of 2,045,205 [16]. The study was conducted in four out of the eight districts; Tanga municipal, Muheza, Pangani and Korogwe. The Tanga municipal was purposely selected to represent the urban district and the other three were randomly selected from the seven remaining districts.

### *Study Population and sampling procedure*

The study population included MSM in the selected districts who were aged 18 years and older, residents of the selected districts and provided informed consent to participate. The MSM who were recruited in this study were clients of Tanga AIDS Working Group (TAWG), a non-governmental organization that has been working with "most at risk populations" (MSM, sex workers, and injecting drug users) in all the eight districts of Tanga region for the past 3 years prior the data collection (from 2013). The NGO offers sexual health education, counseling, VCT care, HIV/STI prevention services, and referral services to the nearest facilities for those found problems. By the end of March 2015, the organization had a total of 784 MSMs under its care.

Proportional to size sampling was used to determine the number of participants to be enrolled per district. Tanga municipal had a higher number of MSM (approximately 60% of the 784 MSM), hence 60% of the participants were planned to be recruited from this district while ~13% had to be recruited from each of the remaining three districts. During the study period any MSM either attending routine care/advice at TAWG information centers in all the 4 districts or met during the routine outreach programs were invited to join in the study.

### *Study Procedures*

Study information was provided to prospective participants prior to enrollment. All who agreed to take part provided written informed consent and those who were illiterate used a thumb print.

Face to face interviews with questionnaires were conducted with all participants. All the interviews were conducted in Kiswahili. This was followed by clinical examination and blood sample collection. Finger pickers' were used to draw blood for diagnosis of HIV, syphilis and hepatitis B surface antigen (HBsAg). Participants were requested to wait for 15 to 20 minutes to get their results.

HIV was diagnosed on site by using a rapid Determine TM HIV-1/2 test (Allere Medical Co., Ltd). Positive results were confirmed by a second test, Uni-Gold™ HIV-1/2 (Trinity Biotech Plc, Ireland). Syphilis screening was performed using SD Bioline syphilis and reactive samples were confirmed by Treponemal Particle Hemagglutination assay (TPHA; Omega Diagnostic, UK). Screening for the presence of HBsAg was done using HBsAg whole blood strip (Accul Biotech Co LTD) and reactive samples were confirmed using Micro particle Enzyme Immune-Assay (MEIA) (Abbott AxSYM, Germany).

Post test counseling was given by trained research assistants who were counselors and nurses or clinical officers. Participants who were positive (reactive) to syphilis were treated on the spot using Benzathine Penicillin. Participants who were HIV or HBsAg positive were referred to the nearest HIV Care and Treatment Clinic (CTC) for further management.

### Data analysis and ethics

Data was entered and analyzed using SPSS software version 23.0. Percentages were used to summarize categorical variables and mean or median with their respective measures of dispersion summarized continuous variables.

The study received an ethical clearance from Kilimanjaro Christian Medical University College ethical and research committee (CRERC), Ethical clearance number 827. Permission to conduct the study was sought from Tanga AIDS Working Group (TAWG) and from district medical officers (DMO) of respective districts. Only numbers were used in questionnaires and laboratory forms. Participants who had a positive HIV test results received post-test counseling and registered in TAWG HIV management system whereby he was supported by TAWG to facilitate his attendance to his preferred HIV Care and Treatment Centre clinic for further management of HIV.

### Results

A total of 266 MSM were enrolled in the study, 67% (180) from Tanga municipal, 14% (38) from Muheza, 8% (20) from Pangani and 11% (28) from Korogwe districts respectively. Their age ranged from 18 – 53 years; with mean age of 27.2 (SD ±6.7) years. Most of study participants had secondary or higher education (170/266; 64%), were not formally employed (239/266; 89.9%) and did not have children (201/266;

75.6%). Other socio-demographic characteristics of the participants are shown in Table 1.

**Table 1.** Demographic and behavior characteristics of the participants (N= 266).

Characteristic	N	%
<i>Age of respondents</i>		
15-24	90	33.8
25-34	134	50.4
35-54	42	15.8
<i>Education level</i>		
None/primary	96	36.1
Secondary 'O' level	147	55.3
Secondary 'A' level and above	23	8.6
<i>Sexual orientation</i>		
Homosexual	122	45.9
Bisexual	144	54.1
<i>Current marital status</i>		
Married	39	14.7
Cohabiting	88	33.1
Single	120	45.1
Separated/widowed	19	7.2
<i>Type of partner married/cohabiting have (n=127)</i>		
Male	96	75.6
Female	31	24.4
<i>Income per month*</i>		
None	37	13.9
< 30 USD	26	9.8
30 – 100 USD	156	58.6
> 100 USD	47	17.7
<i>Intake or using of:</i>		
Alcohol	141	53.0
Heroin/cocaine or inject drugs	30	11.2

\* During data collection 1 USD ~ 2,000 Tanzanian Shillings

The median age at sexual debut was 10.5 (IQR 8-13) years with the majority (231/266; 87%) reporting men as their the first partner. More than half (144/266; 54.1%) of the participants identified themselves as bisexual, but the proportion of bisexuals who had female partners (15/144; 13.4%) did not differ from those who identified as homosexual (14/122; 11.3%). The median reported number of male sexual partners in the past 12 months prior the interviews was 11 (IQR 5 – 14) and it was 2 for female partners (IQR 0-12). More than a third (96/266; 36%) of the participants reported they had never used a condom, Table 2.

Report of treatment for STIs symptoms (anal or urethral discharge, foul smelling discharge, dyspareunia, dysuria, genital ulcer or genital wart) in past 12 months was high (165/266;

62%), Table 2. Prevalence of hepatitis B virus, active syphilis and HIV among the 266 MSM was 28.2%, 31.2%, and 33.8% respectively. MSM with active syphilis had significantly higher HIV prevalence 54% (45/83) compared with those with no syphilis 24.6% (45/183);  $p < 0.001$ . Those positive for HBsAg also had slightly higher HIV prevalence 38.7% (29/75) compared to negative 31.9% (61/191) but this difference was not a statistical significant difference,  $p = 0.297$ .

**Table 2.** Sexual behavior, treatment for STI symptoms and STIs among the participants (N=266).

Characteristic	N	%
<i>Age at sexual debut (years)</i>		
6 - 10	133	50.0
11 - 14	94	35.3
15 - 17	25	9.4
18+	14	5.3
<i>Lifetime sexual partners (male)</i>		
≤ 10	68	25.6
> 10	198	74.4
<i>Lifetime sexual partners (females)</i>		
0	78	29.3
1 - 4	138	51.9
≥ 5	23	18.8
<i>Sex position practiced</i>		
Penetrative anal sex	19	7.2
Receptive anal sex	120	42.1
Both	127	47.7
<i>Condom use</i>		
Never	96	36.1
Occasionally	110	41.3
Every time have sex	60	22.6
<i>Ever counseled and tested for HIV</i>	175	65.8
<i>Treatment for STI symptom in past 12 months</i>	165	62.3
<i>HIV positive</i>	90	33.8
<i>Syphilis positive</i>	83	31.2
<i>HBsAg positive</i>	75	28.2

More than half (48/90; 53.3%) of the 90 HIV positive MSMs did not know their status before the study. Of those who knew their HIV status most (32/42; 76%) were on antiretroviral treatment.

## Discussion

The key finding of this study is the high prevalence of HIV and STIs among MSM in Tanga region. The prevalence of HIV in the general adult population of Tanzania is 5.3% and Tanga region is 2.4% [3]. This study shows a 33.8% prevalence of HIV among MSM in Tanga region; 9 times higher than the general population of Tanzania and 14 times higher than that of the general population of Tanga. The HIV prevalence currently observed is higher than that of earlier studies in Zanzibar 12.3% and in Dar es Salaam 22.3% respectively (conducted in 2010) [11,17], but similar to more recent results by Ross et al (2014) in Dar es Salaam of 30.2% [15]. It seems the HIV transmission is increasing in this population and this may partly result from a lack of nationally coordinated strategies for HIV interventions targeting key populations like MSM [2].

The prevalence of syphilis (31.2%) among MSM is extremely high compared to other populations in Tanzania; for example amongst pregnant women syphilis prevalence ranges from 0.9% - 7% [18, 19]. It is also high than previous reports amongst MSM in Dar es Salaam (0.1% - 2.5), and in Malawi (5.3%) [11,13,15]. MSM in this setting represent a high transmission network for syphilis, other STIs and HIV. An increase in syphilis prevalence and incidence among MSM has also been reported in Europe, USA and Canada [14,20,21]. Syphilis has been shown to increase the risk of HIV acquisition or transmission by 3 to 5 fold [4,21,22]. Programs that help with prompt diagnosis and treatment for STIs among MSM are urgently needed.

The high prevalence of HIV and STI maybe due to high risk behaviors and small sexual networks in which STIs can easily be transmitted. High risk behaviors were prevalent in this population; namely early sexual debut, more than ten lifetime partners and only 25% reporting consistent condom use. The need to design sensitive and tailored interventions that target MSM for HIV and STI prevention cannot be overemphasized in this setting. Interventions should aim increasing uptake of HIV testing for MSM and make sure they are linked and helped to access HIV Care and Treatment Clinics for timely antiretroviral (ART) use. Other programs integrating behavior and screening and prompt treatment for STIs should be considered. These programs will help to reduce the burden of HIV among MSM themselves and in general population given the number who are bisexual or whose partners may be bisexual; thereby acting as a bridging population.

There are a number of limitations to this study. Enrolling participants who were already part of a project designed to support those at risk may have resulted in over reporting of protective behaviors e.g. condom use. The MSM who are part of the project may be different to those not involved. However MSM is a difficult to reach or hidden population and by using an organization that deals with the population at risk (TAWG)

enabled us to get a sizeable number (266) of MSMs covering four districts in a relatively short period (two months).

## Conclusion

This study shows a very high prevalence of STIs and HIV amongst MSM. In order to achieve the 2030 goal of ending HIV epidemic as a public health problem, comprehensive strategies to reach MSM are desperately needed. Given the nature of their partners' the potential to act as a bridging population to the general population is high. Programs that aim to screen and treat STIs and HIV among MSM are urgently required. Interventions to improve communication, skills and self efficacy in order to promote consistent use of condoms in this population are also needed.

## Authors' contribution

HOK, SM and SEM designed the study and involved in first draft of the manuscript, MJM, JR and DJD contributed in study design, HOK, SM, MM, DJD and SEM participated in data collection, HOK, DJD, MJM analyzed data, MM, JR, DJD and SEM interpreted the results. All authors contributed to the final version of the paper.

## Conflict of interest

The authors declare that they have no competing interests.

## Acknowledgement

The authors thank the TAWG for allowing the researchers to use their clients and laboratory facilities to conduct the study. Second the participants for agreeing to participate. We also thank the District Medical Officers for permission to conduct the study in their respective districts and the research assistants for their time and effort during data collection.

## References

1. UNAIDS . Fast-Tracking Combination Prevention: Towards Reducing New HIV Infections To Fewer Than 500 000 By 2020. Geneva, Joint United Nations Programme on HIV/AIDS, 2015.
2. TACAIDS. Tanzania Third National Multi-sectoral strategic framework for HIV and AIDS (2013/14 – 2017/18). Prime Minister's Office, United Republic of Tanzania, November 2013.
3. THMIS. Tanzania HIV/AIDS and Malaria Indicators Survey 2011- 2012. ORC Macro and Tanzania Bureau of Statistics, 2013.
4. United Nations Population Fund, Global Forum on MSM & HIV, United Nations Development Programme, World Health Organization, United States Agency for International Develop-

ment, World Bank (2015). Implementing comprehensive HIV and STI programmes with men who have sex with men: practical guidance for collaborative interventions. New York (NY): United Nations Population Fund; 2015.

5. Beyrer C, Baral SD, van Griensven F, Goodreau SM, Chariyalertsak S et al. Global epidemiology of HIV infection in men who have sex with men. *Lancet*. 2012, 380 (9839): 367–377.
6. Beyrer C, Wirtz AL, Walker D, Johns B, Sifakis F et al. The Global HIV Epidemics among Men Who Have Sex with Men. The World Bank, Washington DC, 2011.
7. Wade AS, Larmarange J, Diop AK, Diop O, Gueye K. Reduction in risk-taking behaviors among MSM in Senegal between 2004 and 2007 and prevalence of HIV and other STIs. ELIHoS Project, ANRS 12139. *AIDS Care*.2010, 22(4): 409–414.
8. Park JN, Papworth E, Kassegne S, Moukam L, Billong SC et al. HIV prevalence and factors associated with HIV infection among men who have sex with men in Cameroon. *J Int AIDS Soc*. 2013, 16(3): 18752.
9. Sanders EJ, Graham SM, Okuku HS, Van der Elst EM, Muhaari A et al. HIV-I Infection in high risk men who have sex with men in Mombasa Kenya. *AIDS*.2007, 21(18): 2513-2252.
10. Sanders EJ, Okuku H, Smith AD, Mwangome M, Wahome E et al. High HIV-1 incidence, correlates of HIV-1 acquisition, and high viral loads following seroconversion among men who have sex with men in Coastal Kenya. *AIDS*.2013, 27(3): 437–446.
11. Leshabari MT, Mmbaga E, Mpembeni R, Moen K. Prevalence of the Human Immunodeficiency Virus, Other Sexually Transmitted Infections, and Health-related Perceptions, Reflections, Experiences and Practices Among Men Having Sex with Men in Dar es Salaam. Muhimbili University of Health and Allied Sciences (MUHAS) and University of Oslo, Oslo Norway, 2010.
12. Mmbaga EJ, Dodo MJ, Leyna GH, Moen K, Leshabari MT. Sexual Practices and Perceived Susceptibility to HIV Infection among Men who have Sex with Men in Dar Es Salaam, Mainland Tanzania. *Journal of AIDS & Clinical Research*. 2012, 3(S1): 2-6 .
13. Wirtz AL, Jumbe V, Trapence G, Kamba D, Umar E et al. HIV among men who have sex with men in Malawi: elucidating HIV prevalence and correlates of infection to inform HIV prevention. *J Int AIDS Soc*. 2013, 16 (3): 18742.
14. Burchell AN, Allen VG, Gardner SL, Moravan V, Darrell H. S et al. High incidence of diagnosis with syphilis co-infection among men who have sex with men in an HIV cohort in Ontario, Canada. *BMC Infect Dis*. 2015, 15: 356.

15. Michael WR, Nyoni J, Ahaneku HO, Mbwambo J, McClelland RS et al . High HIV seroprevalence, rectal STIs and risky sexual behavior in men who have sex with men in Dar es Salaam and Tanga, Tanzania. *BMJ Open*.2014, 4(8): e006175.
16. National Bureau of Statistics and Office of the Chief Government Statistics, Census Report, 2013.
17. Dahoma M, Johnson L, Holman A, Millar LA, Mussa M et al . HIV and related risk behavior among men who have sex with men in Zanzibar, Tanzania: results of a behavioral surveillance survey. *AIDS Behav*. 2011, 15: 186-192.
18. Watson-Jones D, Changalucha J, Gumodoka B, Weiss H, Ruzizoka M et al. Syphilis in pregnancy in Tanzania. I. Impact of maternal syphilis on outcome of pregnancy. *J Infect Dis*. 2002. 186(7): 940–947.
19. Msuya SE, Uriyo J, Hussain A, Mbizvo EM, Jeansson S et al. Prevalence of sexually transmitted infections among pregnant women with known HIV status in northern Tanzania. *Reprod Health*. 2009, 6: 4.
20. Centers for Disease Control and Prevention. Sexually Transmitted Disease Surveillance 2011. Atlanta: U.S. Department of Health and Human Services; 2012.
21. European Centre for Disease Prevention and Control. STI and HIV prevention in men who have sex with men in Europe. Stockholm: ECDC; 2013.
22. WHO. Guidelines: prevention and treatment of HIV and other sexually transmitted infections among men who have sex with men and transgender people: recommendations for a public health approach 2011. World Health Organization, Geneva, Switzerland.