





What factors contribute to behaviour-related stigma among men who have sex with men in Western Province - Sri Lanka

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Abstract

Introduction: Men who have sex with men (MSM) are one of the key population groups who have a high risk of transmitting and acquiring HIV. They are being stigmatized due to their behavior. Therefore, it is of prime importance to identify those correlates of stigma among MSM to take measures to minimize them. Objective: To determine the correlates of behaviorrelated stigma among MSM in Western Province, Sri Lanka. Methods: A cross-sectional study with an analytical component was conducted among MSM in the Western province, of Sri Lanka. The sample size was 564. Participants were recruited using respondentdriven sampling. Data collection was done using two interviewer-administered questionnaires, the "Behavior related stigma Scale", a tool developed and validated by the investigators was used to assess the level of stigma, and a separate questionnaire to assess the correlates of stigma which was also developed by the investigators. Correlates of behavior-related stigma among MSM were determined by multivariate analysis using an adjusted Odd's ratio. **Results:** Advancing age (>29 years) (p= 0.01), being educated up to grade 10 (p = 0.039), family and friends considering homosexuality as a psychiatric disease (p - 0.018), the experience of sexual abuse in childhood (p <0.001), the experience of nonverbal harassment from relatives (p < 0.001), being arrested by police during lifetime (p<0.001), not carrying condoms as they were not supplied (p=0.007)were positively associated statistical significance with a high level of behavior related stigma among MSM. Being educated regarding HIV/AIDS from the health sector and media were negatively associated. Conclusions:

There are modifiable factors associated with behaviorrelated stigma among MSM. Awareness programs should be conducted for the public to sensitize them regarding same-sex behavior, thus minimizing harassment from society.

Keywords: Behaviour related stigma. Men who have sex with men. HIV.

Introduction

Key Populations (KP) are the groups that have a high burden of acquiring Human immunodeficiency virus (HIV) in many settings. Men who have sex with men (MSM) are identified as one KP in both international and Sri Lankan settings (United Nations Programme on HIV/AIDS [1]. They have been classified due to their key sexual behavior, which has made them more prone to acquiring HIV.

Men who have sex with men are a hidden population in both international and Sri Lankan settings. Having unprotected anal intercourse with male partners mainly contributes to the high risk of contracting HIV by MSM [2]. A combination of behavioral, socioeconomic, and structural factors contributes to the increased risk, vulnerability, and/or burden of acquiring HIV infection. Access to relevant health care and other services is significantly lower in this group than in the rest of the population [3]. The stigma vested upon MSM due to their homosexual behavior is a key contributory factor for their reduced access to health care services [4].

Stigma is an attribute, behavior, or reputation that is socially discrediting in a particular way [5]. When stigma is acted upon, the result is discrimination [6].



Stigma and discrimination adversely affect the social, psychological, and medical aspects of the affected one's life. They get deserted from their families get rejected from school and become school dropouts. These factors lead them to a more vulnerable life. Further, multiple health complications also occur. They are anxiety, depression, self-harm, suicidal attempts, poor self-image, and low self-esteem. Stigma and discrimination are identified as key obstacles to universal access to HIV prevention, treatment, and care [7].

Also, stigma and discrimination lead to feelings of shame, worthlessness, and fear of being rejected. In Sri Lankan settings MSM are discriminated against by police, legal professionals, armed forces, and other government officers due to lack of understanding and existing legal provisions. There is global as well as local evidence that proves that MSM faces discrimination from society [8,9]. It has been evident in a local qualitative study that they are discriminated against by known people such as family, friends, and neighbors [10]. It has been understood that medical mistrust mediates the relationship between stigma and engagement in care [11].

Men who have sex with men are being stigmatized in society, mainly due to their sexual orientation. They are being forced into hetero-normative marriages, which ultimately leads to disruption of their family lives [12]. Their marital status plays a significant role in the stigma vested upon them. They face different types of harassment from society. They can be non-verbal, verbal, physical, and sexual. These harassments contribute to the development of self-stigma which keeps them separated from the mainstream [13].

Reducing stigma and discrimination is identified as one of the four critical enablers that help to overcome major barriers to service uptake, including social exclusion and marginalization, criminalization, stigma, and inequity among MSM [14]. Ending the AIDS epidemic in 2030 has been identified as a key mandate to achieve sustainable development goals [15]. Ministry of Health Sri Lanka is targeting to end the AIDS epidemic by 2025, five years in advance of the targets set by the United Nations [16]. Measures can be taken to reduce the behavior-related stigma among MSM by minimizing their exposure to modifiable determinants which are identified in the study.

To determine the correlates of behavior-related stigma among men who have sex with men in Western province.

Methods

Study Design

A cross-sectional analytical study was conducted among MSM in the Western province, of Sri Lanka.

Participants and Data Collection

Data collection was carried out from July to November 2018. The sample size was 564 which was calculated scientifically and the number from each district was taken proportionate to the MSM population in each district. Participants aged more than 18 years, residing in the study setting for more than six months, and who had a valid peer recruitment coupon were included in the study. Individuals diagnosed with a mental disorder were excluded.

Respondent-driven sampling was used as the sampling technique. Eleven seeds were selected. Data was collected to assess the correlates using an interviewer-administered questionnaire, developed and validated by the investigators. Behavior Related Stigma Scale (BRSS) which was developed and validated by the same investigators was used to assess the level of stigma. Data collection was done by four sociology graduates.

Data Analysis

Sample proportions and population proportions were analyzed using RDS -A version 7.0 package. Since they were almost similar, the unweighted analysis was done to identify the correlates of behavior-related stigma among MSM. For the analysis of correlates of behavior-related stigma, each correlate was analyzed using bivariate crosstabulations using SPSS version 22.0. The chi-square test was used to identify significant correlates. The possible variables were dichotomized and unadjusted odd's ratios were calculated. Multivariate analysis was used to identify the unconfounded correlates of behavior-related stigma by entering correlates with p-value <0.2 into a logistic regression model.

Ethical Approval

Ethical clearance was obtained from the Ethics review committee of the faculty of Medicine, University of Kelaniya, Sri Lanka, and administrative clearance was obtained from the provincial and the regional directors of health Services offices.

Results

The majority of the study participants were 30 years or older with a mean of 35.2 and SD of 12.3. Nearly three-quarters of the participants (72.5%, n= 361) were Sinhalese and 72.9% (n=329) were Buddhists. Socioeconomic, demographic, and special characteristics related to MSM are shown in Table 1.

Among them only advancing age was significantly associated with statistical significance. Factors such as ethnicity, religion, marital status, monthly personal income, residence, or being a formal worker were not

Characteristic



significantly associated with a high level of behavior-related stigma among MSM while having an educational level up to grade 10 was statistically significant (p = 0.006).

Table 1. Demographic, socio economic and special characteristics related to homosexuality among study participants.

MSM

Characteristic		MSM				
	No	%	PP*			
Age in Years				-		
	245	20.4	42.2			
18 – 29	215	38.1	42.3			
30 – 39	131	23.2	20.3			
40 - 49	133	23.7	22.9			
50 - 59	73	12.9	12.3			
≥ 60	12	2.1	2.2			
≥ 00	12	2.1	2.2			
Ethnicity						
Sinhalese	498	88.3	89.6			
Tamil	29	5.1	5.3			
Moor	25	4.4	3.5			
Other	12	2.2	1.6			
Religion						
	4 F1	00.0	01.1			
Buddhism	451	80.0	81.1			
Hinduism	25	4.4	3.5			
Catholic/	67	11.9	12.5			
Christian						
Islam	21	3.7	2.9			
Other	00	0.0	-			
Other	00	0.0	-			
Marital status						
Single	367	65.1	67.4			
Currently Married	159	28.2	26.7			
Divorced/ separated	30	5.3	4.8			
Widowed	8	1.4	1.1			
Residence						
Own house	291	51.6	50.3			
rented house	273	48.4	49.7			
Someone else's house	00	0.0	-			
Other	00	0.0	-			
Forced into hetero	(n=564	1)				
normative marriage	`		20.4			
Yes	219	38.8	38.4			
No	345	61.2	61.6			
Belief of Family	(n = 564))				
members/friends on	(•				
MSM behaviour as a						
psychiatric disorder						
	22	ГΛ	4.5			
Yes	33	5.9	_			
No	531	94.1	95.5			
Ever been taken to a	(n= 33)					
psychiatrist to cure it ⁺⁺						
Yes	02	6.1	6.4			
No	31	93.9	93.6			

Experience of sexual abuse in childhood	(n=564)		
Yes	64	11.3	13.1
No	500	88.7	86.9

++ The participants whose family/friends think that homosexuality is a psychiatric disorder were included. PP* population percentage.

Engagement in other work in the last six months was significantly associated with a high level of behavior-related stigma (p = 0.02). The majority of those who were forced into a hetero-normative marriage had a high level of behavior-related stigma (60.7%) and they were significantly associated (p < 0.001).

The belief of family members that homosexuality is a mental disorder (p = 0.01 experiencing childhood sexual abuse by MSM (p= 0.04), being harassed by society in their lifetime (p 0.01), verbal harassment from the police (p = 0.004) and being arrested by police during lifetime (p = 0.003) were statistically significant associations.

The proportion of MSM participants who had been having same-sex relationships within the past 10 years and had a high level of behavior-related stigma was 74.1% (n=318) with a statistically significant association of p=0.04. Having anal sex with a male partner and a high level of behavior-related stigma was associated with statistical significance (p=0.003).

Similarly, 61.5% of the participants who had oral sex with a male partner had a high level of behavior-related stigma with a statistical significance of p < 0.001. However, having more than one male partner was not statistically significant with a high level of behavior-related stigma (p = 0.5). There was a statistically significant difference between having vaginal sex with a female partner and a high level of behavior-related stigma (p= 0.001). Having oral sex with a female partner was also statistically significant with a high level of behavior-related stigma (p = 0.014). There was no significant association between receiving benefits for sex as money, goods, or drugs (p= 0.8, p= 0.2, and p = 0.3).

Not using condoms with a casual partner always when having sex during the past three months (p=0.001) and unaffordability as a reason for not carrying condoms were significantly associated with behavior-related stigma among MSM participants (p<0.001). Almost two-thirds of the participants who stated that they didn't carry condoms due to unaffordability had a high level of behavior-related stigma.

Among the different groups of people to whom the key behavior is revealed, there was a statistically significant association between revealing to healthcare workers at both STD clinic settings (p=0.001) and non-291 51.6 50.3



STD clinic settings (p=0.002). Among the participants who had ever heard of HIV/AIDS, the majority of them (72.1%, n=401) had high levels of behavior-related stigma. Nevertheless, the association between the status of ever heard of HV/AIDS was not statistically significant (p = 0.7). The association of getting knowledge regarding HIV/AIDS from health services was significantly associated with a high level of behavior-related stigma among MSM (p<0.001).

There was no statistically significant difference between the usage of counseling services (p = 0.4) and is useful to solve problems related to same-sex behavior (p = 0.3). Ever use of alcohol and using alcohol once a week (p<0.001) or more (p= 0.003), use of illicit psychoactive substances ever (p= 0.001), using illicit psychoactive substances orally (p=0.001), through inhalation (p= 0.003) were significantly associated with a high level of behavior related stigma among MSM.

There was no statistical association between not being aware of laws regarding homosexuality and a high level of behavior-related stigma among MSM (p = 0.9). All the participants who were aware of laws affecting MSM thought that they were being discriminated against by those laws.

Among the variables considered in the LR analysis, 13 factors were independently significantly associated with a high level of behavior-related stigma among MSM after controlling for confounders, as shown in **Table 2**. They were, age more than 29 years (aOR = 2.1, 95% CI: 1.2 - 3.8), being educated up to grade 10 (aOR= 1.73, 95% CI: 1.03 – 2.9) , engagement in a mode of income other than the main occupation (aOR= 0.34, 95% CI: 0.14 – 0.86), family and friends considering having sex as a mental illness (aOR= 5.4, 95% CI: 1.34 - 22.0), experience of sexual abuse in childhood (aOR= 8.03, 95% CI: 3.0 – 21.6), nonverbal harassment by relatives (aOR = 5.9, 95% CI: 2.2 - 15.6), being arrested by police in lifetime (aOR= 0.02, 95% CI: 0.003 - 0.17), having oral sex with a male partner (aOR= 0.27, 95% CI: 0.16 - 0.46), not using condoms because didn't receive them from anybody (aOR= 2.2, 95% CI: 1.23 -3.78), gaining knowledge regarding HIV/AIDS from health sector and media (aOR= 0.47, 95% CI: 0.26 -0.85), consuming alcohol once a week or more during the past one month (aOR= 2.7, 95% CI: 1.53 - 4.8), and inhalation of psycho active substances (aOR= 2.6, 95% CI: 1.4 – 4.7).

Table 2. Independent Correlates of Behaviour Related Stigma Among Men who sex with men in Western Province and Their Significance.

Independent variable	β	SE (β)	Wald	df	Sig.	Exp (β)	95% CI for Exp (β)	
							Low	Upper
MSM (n= 564)								
Age more than 29 years	.76	.3	6.63	1	.01	2.1	1.2	3.8
Being educated up-to grade 10	.55	.27	4.24	1	.039	1.73	1.03	2.9
Engagement in a mode of income other than the main occupation	-1.06	.46	5.21	1	.022	.34	.14	.86
Family and friends consider having sex with men as a psychiatric disease	1.69	.714	5.63	1	.018	5.4	1.34	22.0
Experience of sexual abuse in childhood	2.084	.505	17.02	1	.000	8.03	3.0	21.6
Experience of non-verbal harassment from relatives	1.78	.49	13.0	1	.000	5.9	2.2	15.6
Being arrested by police during lifetime	-3.86	1.08	12.7	1	.000	.02	.003	.17
Having oral sex with a male partner	-1.3	.27	23.2	1	.000	.27	.16	.46
Didn't carry condoms because didn't receive from anybody	.77	.29	7.23	1	.007	2.2	1.23	3.78
Gaining knowledge on HIV/AIDS from health sector	-1.3	.25	25.2	1	.000	.28	.17	.46
Gaining knowledge on HIV/AIDS from media	75	.303	6.2	1	.013	.47	.26	.85
Consumption of alcohol once a week or more during the past one month	1.001	.292	11.7	1	.001	2.7	1.53	4.8
Inhalation of psycho active substances	.96	.3	10.6	1	.001	2.6	1.4	4.7

β – regression coefficient;

SE (β) – Standard error of β ;

df – degrees of freedom;

Sig. - significance



Discussion

There were several significant factors associated with behavior-related stigma among MSM identified in the study. Most of them were modifiable. Among the socio-demographic characteristics studied, MSM who were educated up to grade 10 have been identified as being associated with a high risk of having behavior-related stigma (p=0.039) which is consistent with the finding of a study conducted in South Africa [17].

Although the advancing age of MSM (>29 years) was independently associated with a high level of behavior-related stigma among MSM in the current study (aOR = 2.1, 95% CI = 1.2-3.8, P<0.05) a similar study conducted among Vietnamese homosexuals in 2011 has not identified age as a significant correlate in multivariate analysis with significance values more than 0.05 [18].

Further, the Vietnamese study has identified that MSM who had ever been married (married/ separated or divorced) were more likely to have a high level of self-stigma (aOR = 2.49, 95% CI = 1.02-6.09, p<0.05), whereas the current study did not identify current marital status as a predictor variable for behavior related stigma among MSM (p>0.05). The possible reasons for the above-mentioned difference could be that the current study measured behavior-related personal stigma which is a combination of self and perceived stigma whereas the compared study has measured self-stigma only. Another possible reason could be the social and cultural differences in the two study settings. Homosexuality is considered a crime in Vietnam.

Although men having sex with men is criminalized by section 365A of the penal code [19], the conversation regarding repealing these laws is being carried out in Sri Lanka. Using alcohol once a week or more frequently and inhalation of psychoactive drugs other than alcohol have been significantly associated with high levels of behavior-related stigma in this study (p = 0.001). Even though, the use of alcohol and drugs has been assessed by Ha et al (2014) in Vietnam, they have not shown a significant association [18].

Men having sex with men is considered a mental illness by family/ friends (p= 0.018). Having experienced sexual abuse in childhood (p 0.05) were more likely to have a high level of behaviour-related stigma among MSM which was consistent with the findings of a Chinese study [20]. No studies have been conducted to assess the association between revealing the same sex behavior to either a family member, close friend, HCW at an STD clinic setting, or HCW at a non-STD clinic setting and a high level of behavior-related stigma among MSM. Therefore, the results of the current study could not be compared.

Among the MSM participants, those who have

gained knowledge of HIV either from the health sector (p<0.0001) or from media (p = 0.013) were less likely to have a high level of behavior-related stigma compared to those who did not gain knowledge on HIV from the sources mentioned above. Although Ha et al (2014) have assessed the association between knowledge of HIV and stigma (self, perceived, and enacted) among MSM in Hanoi, Vietnam, the source of knowledge has not been assessed. However, the most probable reason for the above finding of the current study could be that gaining knowledge regarding HIV/AIDS through the health sector is considered as the most reliable source for gaining knowledge regarding HIV/AIDS in Sri Lankan settings. In the meantime, gaining knowledge regarding HIV/AIDS through media increases awareness not only among the MSM but also among the general public as well.

Receiving counseling services to discuss problems related to same-sex behavior among men was not significantly associated with behavior-related stigma. Similarly, there were no previous studies that provided evidence for such association at both international and local level. Although there are punitive laws that criminalize same-sex behavior among men, awareness, and perception regarding these laws were not significantly associated with behavior-related stigma among MSM in this study. No studies have been published with evidence regarding above mentioned expected correlation as well.

Strengths and Limitations of the Study

Since a detailed study to explore the correlates of stigma among MSM has not been conducted in Sri Lanka, the findings of the study will be useful in planning programs to minimize stigma among MSM and improve their access to health care. This will eventually help to reduce the burden of HIV infection in the community.

The value of a cross-sectional study design is limited whenever there is a possibility that the dependent variable may change with the participants' risk behavior. Therefore, the absence of information on temporal relationships may render it difficult to separate the predictor variables from their outcomes [21].

Conclusions

Consideration of same sexual activities among men as a psychiatric illness by friends and family, experience of sexual abuse in childhood and nonverbal harassment by relatives, being arrested by police during a lifetime, not carrying condoms because they were not received from anybody, consumption of alcohol once a week or more frequently and inhalation of psychoactive substances were significantly associated with behavior related stigma among MSM. Gaining knowledge



regarding HIV/AIDS from the health sector and media was negatively associated with a high level of behavior-related stigma among MSM. Proper awareness and sensitization of the public regarding male homosexuality and appropriate education regarding HIV/AIDS through the health sector and media is of prime importance to minimize stigma among MSM.

Public Health Implications of the Study

Stigma due to homophobia in society reduces access to services by men who have sex with men. Therefore, proper awareness of the public regarding non-discriminatory interaction with the MSM is of prime importance. It should be emphasized that same-sex behavior is not identified as a psychiatric condition by mental health professionals. Further, age-appropriate education, sensitization on HIV/AIDS, and their relationship to unprotected anal intercourse are essential to minimize stigma among MSM.

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Ethical Approval

Ethics clearance was granted by the Ethics Review Committee of Faculty of Medicine, University of Kelaniya, Sri Lanka. Informed written consent was obtained from each patient prior to data collection..

Informed consent

Not applicable.

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Data sharing statement

No additional data are available.

Conflict of interest

The authors declare no conflict of interest.

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References

- Joint United Nations Programme on HIV/AIDS. Key populations, Geneva, Switzerland, 2023. Available from https://www.unaids.org/en/topic/key-populations. Accessed on September 06, 2023.
- 2. Hallett TB, Smit C, Garnett GP, de Wolf F. Estimating the risk of HIV transmission from homosexual men receiving treatment to their HIV-uninfected partners. Sexually transmitted infections. 2011 Feb 1;87(1):17-21
- 3. McKirnan DJ, Du Bois SN, Alvy LM, Jones K. Health care access and health behaviors among men who have sex with men: the cost of health disparities. Health Education & Behavior. 2013 Feb;40(1):32-41.
- Fay H, Baral SD, Trapence G, Motimedi F, Umar E, Iipinge S, Dausab F, Wirtz A, Beyrer C. Stigma, health care access, and HIV knowledge among men who have sex with men in Malawi, Namibia, and Botswana. AIDS and Behavior. 2011 Aug;15:1088-97.
- Goffman E. Stigma: Notes on the management of a spoiled identity. New York: Simon & Schuster, 1963.
- Joint United Nations Programme on HIV/AIDS (UNAIDS). UNAIDS terminology guidelines 2015, Geneva, Switzerland.
- Crowell TA, Keshinro B, Baral SD, Schwartz SR, Stahlman S, Nowak RG, Adebajo S, Blattner WA, Charurat ME, Ake JA, TRUST/RV368 Study Group. Stigma, access to healthcare, and HIV risks among men who sell sex to men in Nigeria. Journal of the International AIDS Society. 2017;20(1):21489.
- 8. National STD/AIDS Control Programme. Integrated biological and behavioural surveillance survey among key populations at higher risk of HIV in Sri Lanka (2014) report, Colombo: Ministry of Health, 2015.
- National STD/AIDS Control Programme. Integrated biological and behavioural surveillance survey among key populations at higher risk of HIV in Sri Lanka (2017/2018) – report. Colombo: Ministry of Health, 2018.
- Chandimal. D. Looking at the discrimination faced by LGBT persons in Sri Lanka, Equal ground, Sri Lanka, 2014.
- 11. Eaton LA, Driffin DD, Kegler C, Smith H, Conway-Washington C, White D, Cherry C. The role of stigma and medical mistrust in the routine health care engagement of black men who have sex with men. American journal of public health.



2015 Feb;105(2):e75-82.

- 12. Hopwood M, Cama E, de Wit J, Treloar C. Stigma, anxiety, and depression among gay and bisexual men in mixed-orientation marriages. Qualitative Health Research. 2020 Mar;30(4):622-33.
- 13. Kim HY, Grosso A, Ky-Zerbo O, Lougue M, Stahlman S, Samadoulougou C, Ouedraogo G, Kouanda S, Liestman B, Baral S. Stigma as a barrier to health care utilization among female sex workers and men who have sex with men in Burkina Faso. Annals of epidemiology. 2018 Jan 1;28(1):13-9.
- Joint United Nations Programme on HIV/AIDS, (2014). Reduction of HIV related stigma and discrimination, guidance note, Geneva, Switzerland.
- 15. United Nations. Transforming our world, The 2030 agenda for sustainable development, A/RES/70/1, retrieved on September 6, 2023, https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf
- 16. Ministry of health, nutrition & indegenous medicine. Programme for ending AIDS by 2025 in Sri Lanka, circular no 01 - 51/2016, Sri Lanka. Colombo: 2016.
- 17. Vu L, Tun W, Sheehy M. Levels and Correlates of Internalized Homophobia Among Men Who Have Sex with Men in Pretoria, South Africa. *AIDS Behaviour*, 16:717–723 (2012). DOI 10.1007/s10461-011-9948-4
- Ha H, Ross M, Risser JMH, Nguyen HTM. Determinants of HomosexualityRelated Stigma Among Men Who Have Sex with Men in Hanoi, Vietnam, *International Journal of Sexual Health*, 26 (3), 200 216, (2014). https://doi.org/10.1080/19317611.2013.858802
- 19. Democratic Socialist Republic of Sri Lanka. 365& 365A in Penal code, Colombo, Sri Lanka, (1995).
- 20. Zhu Y, Liu J, Chen Y, Zhang R, Qu B. The relation between mental health, homosexual stigma, childhood abuse, community engagement, and unprotected anal intercourse among MSM in China. Scientific reports. 2018 Mar 5;8(1):3984.
- 21. Abramson, J. H. & Abramson, Z. H. Survey methods in community medicine (5th ed.). Edinburgh, United Kingdom: Churchill Livingstone; 1999.

