Assessment of oral health status and treatment needs of HIV positive transgenders in Odisha - a cross-sectional study

GUNJAN KUMAR, SHILPA RAI

Department of Public Health Dentistry, Kalinga Institute of Dental Sciences, KIIT deemed to be University Bhubaneswar, Odisha, India

Summary

Introduction. *Human Immunodeficiency virus (HIV) causes the human immunodeficiency infection which is a major global health problem. Oral health status of people infected by HIV is also compromised. There is limited literature on oral health status of HIV/AIDS transgenders in Odisha.*

Aim. *This study was conducted to assess the oral health status of HIV-positive transgenders.*

Methodology. *A cross-sectional study was conducted among the HIV positive transgenders in Odisha. Snowball sampling technique was employed to reach the population. Oral health was recorded using modified WHO 2013 proforma. Clinical examination using disposable mouth mirror and explorer. Chi square statistics was used for finding the association between the sociodemographic variables and DMFT, CPI, and LOA scores.*

Results. *The study included 153 participants out of which seventy participants belonged to the age group 18-30 years. Majority of the participants were unemployed and most of them had spent around 6-10 years in school. Majority of the participants used toothbrush for cleaning their teeth and the average duration of cleaning tooth was less than two minutes. Toothpick was the most common method used for cleaning interdental areas and none of the participants used dental floss or interdental brushes. The mean DMFT score which was recorded to be 1.424. Around 28.10% (43) inmates had pockets of depth 4 mm to 5 mm. Loss of attachment of 6 mm to 8 mm was found in majority (57, 37.25%) of the participants. Most of the participants did not require any prosthesis both in the upper and lower arches. Around 32 participants (20.91%) had very mild fluorosis, 29 participants (18.95%) exhibited signs of moderate fluorosis. Age was found to be significantly associated with loss of attachment score (p = 0.023). Occupation had an association with the DMFT score (p = 0.002) while years in school was found to be significantly associated with CPI score (p = 0.045).*

Conclusion. *The oral health status of transgenders is poor and needs immediate attention.*

Introduction

Human Immunodeficiency virus (HIV) causes the human immunodeficiency infection which is a major global health problem. In India, the prevalence of HIV infection among adults was 0.22% in 2017 with 21.4 lakh people infected with HIV [1]. According to the recent HIV estimates report (2019) of the Government, India was estimated to have around 23.49 lakh people living with HIV/AIDS (PLHIV) in 2019 [2]. The aggregated overall HIV prevalence observed among transgenders was 7.5% in 2014-2015. As per the latest HIV estimates report (2019), HIV/AIDS prevalence in Odisha in 2018 and 2019 was 0.50 and 0.49 respectively [3].

HIV not only destroys the immune system but also results in an elevated tendency to acquire and manifest diseases that are usually resistible by the normal body [4]. Oral health status of people infected by HIV is also compromised. Studies show that HIV patients are more likely to have heavier oral burdens of lactobacilli and streptococci than others [1]. Poor oral health ultimately affects the quality of life by causing pain, discomfort, dry mouth, and eating restrictions and are a constant source of opportunistic infection [5]. There is limited literature on oral health status of HIV/AIDS transgenders in Odisha. The treatment of oral health problems can considerably improve quality of life and well-being of this group. Hence, this study was conducted to assess the oral health status of HIV-positive transgenders.

Materials and methods

A cross-sectional study was conducted among the HIV positive transgenders in Khurda, Cuttack, Angul and Ganjam districts of Odisha. All the HIV positive transgenders who had medical documentation of HIV infection,who took and did not take antiretroviral drugs and gave their consent to participate were included in the study. The transgenders who did not give consent and tobacco associated oral lesions were excluded from the study. Snowball sampling technique was employed as transgenders are a difficult group to reach and HIV status not only adds social stigma but also discriminates making them more vulnerable. Oral health was recorded using modified WHO 2013 proforma. Data collection

Tab. I. Socio-demographic profile of the participants.

Socio-demographic Variables		n	%
Age (years)	≤ 18	4	11.76%
	> 18 & ≤ 30	70	45.75%
	> 30 & ≤ 40	53	34.64%
	> 40 & ≤ 50	16	10.46%
	> 50	10	6.54%
Occupation	Professional	0	0.00%
	Semi-professional	2	1.31%
	Clerical	15	9.80%
	Skilled	12	7.84%
	Semi-skilled	45	29.41%
	Unskilled	11	7.19%
	Unemployed	69	45.10%
Years in school	≥ 16 years & ≤ 20 years	4	2.61%
	≥ 11 years & ≤ 15 years	28	18.30%
	≥ 6 years & ≤ 10 years	88	57.52%
	≤ 5 years	33	21.57%

was carried out during four consecutive months from November 2019 to March 2020. It was initiated in ART centre; Khurda where the first HIV positive transgender and the outreach worker were encountered. With the help of this participant further clusters of HIV positive transgenders were reached in Bhubaneswar. Subsequently other transgender groups in Berhampur and Bhanjanagar (Ganjam), Angul and Cuttack districts were reached. Clinical examination using disposable mouth mirror and explorer, was performed on a total of 153 participants by the chief investigator in the presence of a recording assistant who was trained and calibrated in the department. A maximum of 25 inmates were examined in every visit.

Permission to conduct the study was obtained from the Odisha State AIDS Control Society. Ethical clearance was obtained from the Institutional Review Board.

Statistical Analysis

The collected data was analyzed using SPSS version 21.0 (IBM SPSS statistics for Windows, Version 21.0, Armonk, NY:IBM Corp). Chi square statistics was used for finding the association between the socio-demographic variables and DMFT, CPI, and LOA scores. The level of statistical significance was set at 0.05 with a confidence interval of 95%.

Results

The study included 153 participants out of which seventy participants belonged to the age group 18-30 years. Majority of the participants were unemployed and most of them had spent around 6-10 years in school (Tab. I).
Majority of the participants used toothbrush for cleaning their teeth and the average duration of cleaning tooth was less than two minutes for around 88 (57.52%) number of participants. Around 56.86% of the participants cleaned their teeth only once a day. Toothpick was the most

common method used for cleaning interdental areas and none of the participants used dental floss or interdental brushes. Warm saline was used by around twenty eight participants while majority did not use any additional cleaning aid (Fig. 1).

The mean number of filled, decayed, and missing teeth was found to be 0.078, 1.424, and 0.176 respectively. The mean DMFT score which was recorded to be 1.424 (Tab. II).

28.10% (43) inmates had pockets of depth 4 mm to 5 mm. Fifty eight participants only presented with bleeding while 36 (23.53%), had deep pockets. Loss of attachment of 6 mm to 8 mm was found in majority (57, 37.25%) of the participants. Around 49 participants (32.03%) had loss of attachment of 4-5 mm (Tab. III).

Around 27 participants (17.65%) had partial denture in the upper arch and around 13 participants (8.49%) had partial denture in the lower arch. Most of the participants did not require any prosthesis both in the upper and lower arches (Tab. IV).

The study participants exhibited signs of enamel fluorosis. Around 32 participants (20.91%) had very mild fluorosis, 29 participants (18.95%) exhibited signs of moderate fluorosis while two of the participants exhibited severe enamel fluorosis (Fig. 2).

Age was found to be significantly associated with loss of attachment score ($p = 0.023$). Occupation had an association with the DMFT score ($p = 0.002$) while years in school was found to be significantly associated with CPI score ($p = 0.045$) (Tab. V). The distribution of CD4+ T cell among the study participants has been depicted in Figure 3.

Discussion

The present study was carried out on the transgenders residing in Odisha. Around 153 transgenders participated in the study, out of which the majority belonged to the age group 18-30 years, were unemployed and had spent around 6-10 years in school. In a study done by Sivabakya and Srinivas [6], the mean age of the particpants was found to be 37.58 ± 10.44. Similar findings was reported by Kumar et al. [7].

In the present study, majority of the participants used toothbrush for cleaning their teeth and the average duration of cleaning tooth was less than two minutes. In a study done by Kumar et al., 65.9% were using toothbrush and paste for oral hygiene maintenance [7].

Aleixo et al. [8] had reported a high number of decayed teeth detected among patients undergoing ART which resulted in a mean DMFT of 16.9 teeth. In a study done by Chaudhary the mean decayed, missing, and filled teeth (DMFT) score was 4.03 ± 1.54 and only 12% of the patients had healthy periodontium [9]. The mean DMFT in the present study was 1.424 and 10.46% of the participants had healthy periodontium.

In the present study, 28.10% inmates had pockets of depth 4 mm to 5 mm. Loss of attachment of 6 mm to 8 mm was found in majority of the participants in the

Fig. 1. Oral health practices among the participants.

Oral hygiene practices
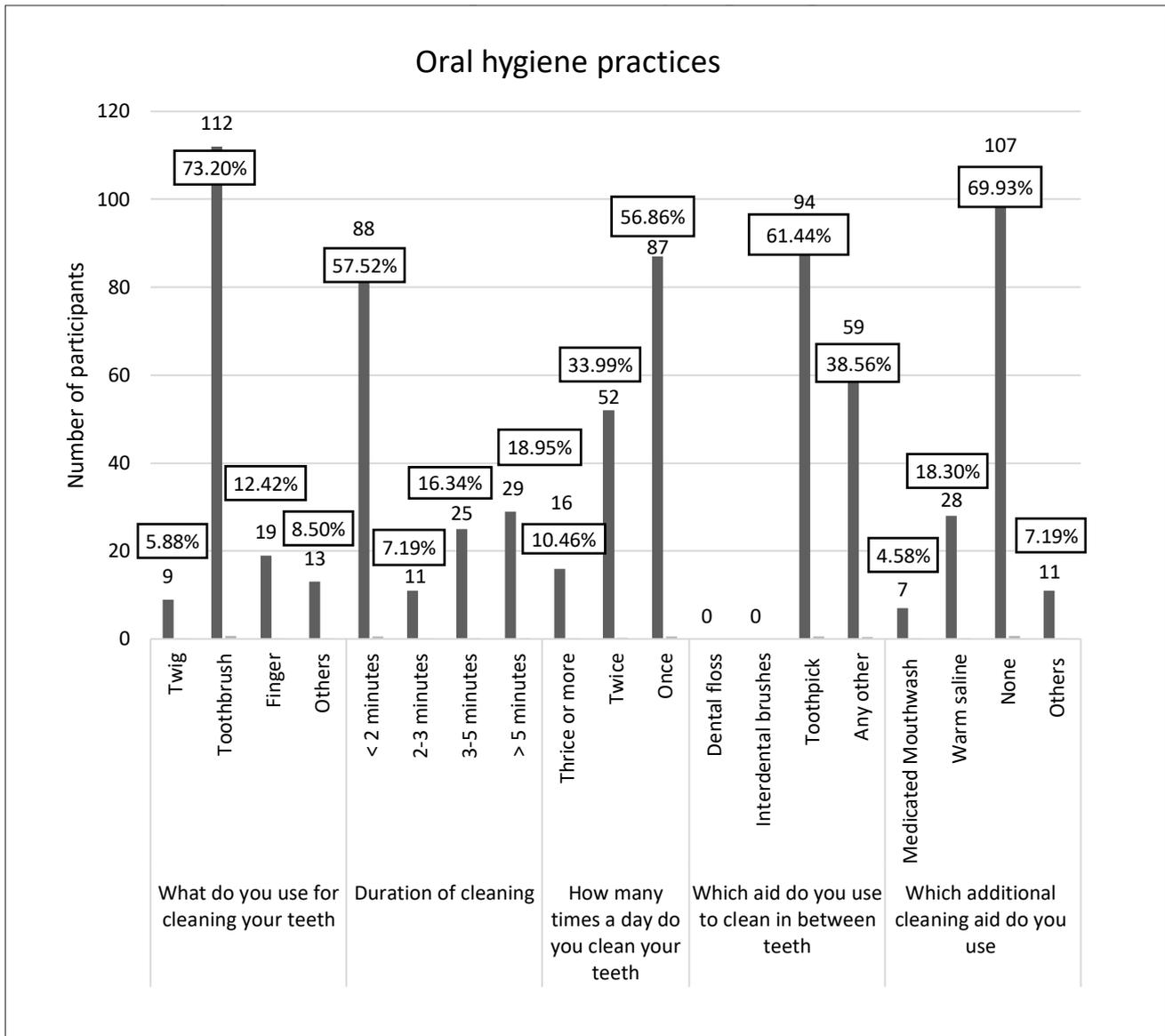
Tab. II. Dentition status of the participants.

Category (n = 153)	Minimum	Maximum	Mean	SD
Decayed teeth	0	8	1.424	1.707
Missing teeth	0	4	0.176	0.551
Filled teeth	0	4	0.078	0.493
DMFT score	0	9	1.679	1.958

DMFT: Decayed, missing, and filled teeth; SD: Standard deviation.

Tab. III. Periodontal status of the participants.

Periodontal status	CPI highest score n (%)	Healthy periodontium	16 ; 10.46%
		Bleeding only	58 ; 37.91%
		Shallow pocket (4 mm-5 mm)	43 ; 28.10%
		Deep pocket (≥ 6 mm)	36 ; 23.53%
	LOA highest score n (%)	LOA 0-3 mm	16 ; 10.46%
		LOA 4-5 mm	49 ; 32.03%
		LOA 6-8 mm	57 ; 37.25%
		LOA 9-12 mm	26 ; 16.99%
		LOA ≥ 12 mm	5 ; 3.27%

Tab. IV. Prosthetic status of the participants and their prosthetic needs.

Presence of denture n (%)	Upper arch	No denture	126 ; 82.35%
		Partial denture	27 ; 17.65%
	Lower arch	No denture	140 ; 91.50%
		Partial denture	13 ; 8.49%
Prosthetic needs n (%)	Upper arch	No prosthesis needed	58; 37.91%
		Need for 1 unit prosthesis	37 ; 24.18%
		Need for multi-unit prosthesis	43 ; 28.10 %
		Need for a combination of 1 &/multi-unit prosthesis	15 ; 9.80 %
	Lower arch	No prosthesis needed	44 ; 28.76%
		Need for 1 unit prosthesis	56 ; 36.60%
		Need for multi-unit prosthesis	31 ; 20.26%
		Need for a combination of 1 &/multi-unit prosthesis	22 ; 14.38%

Tab. V. Association between age, education and years in school with various oral health status components.

Category	DMFT Score (p-value)	CPI Score (p-value)	LOA Score (p-value)
Age	0.492	0.186	0.023*
Occupation	0.002*	0.943	0.121
Years in school	0.671	0.045*	0.829

* $p < 0.05$ is considered as statistically significant. CPI: Community periodontal index; LOA: Loss of attachment; DMFT: Decayed, missing, and filled teeth.

present study. Muralidharan et al., reported that a higher percentage of people with 4 to 5 mm of pockets was seen with those who cleaned their teeth with a finger [10]. Kumar et al. reported that nearly 50% of people suffering from HIV had CPI score and LOA score > 27. These findings indicated poor periodontal health among patients suffering from HIV.

In this study, around 17.65% of the participants had partial denture in the upper arch and around 8.49% of them had partial denture in the lower arch. Most of the participants did not require any prosthesis both in the upper and lower arches. Soares GB reported that around 35.0% of HIV positive participants used dentures, 41.5% needed denture in the maxilla, and 62.0% in the mandible [11].

Around 32 participants in the present study had very mild fluorosis, 29 participants exhibited signs of moderate fluorosis while two of the participants exhibited severe enamel fluorosis. In a study done by Sivabakya TK, it was found that only 20.9% of the HIV patients had questionable fluorosis, followed by 7% with very mild and 7% with moderate dental fluorosis [6]. About 2.3% of the study participants had severe fluorosis [6].

Our study has few limitations. The sample size was small and as we used a crosssectional design the accurate temporal sequence of exposure and effect could not be established. There was no HIV uninfected population to compare the frequency of comorbidities.

Conclusion

The oral health status of transgenders is poor and needs immediate attention. Oral health education needs to

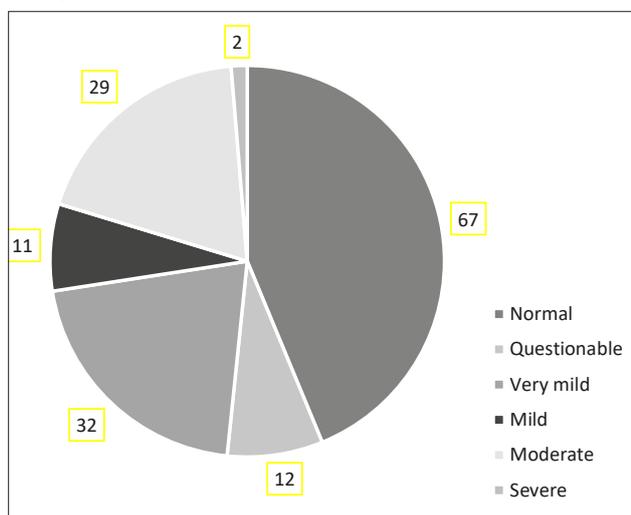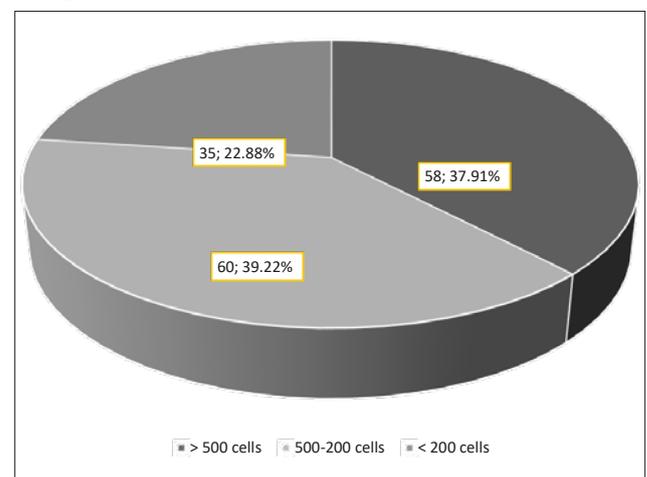**Fig. 2.** Enamel fluorosis among the participants.

Fig. 3. Distribution of CD4+ T cell count.

imparted among this socially deprived group and their oral health needs must be met to ensure good and equitable oral health for all. Effective policies need to be drafted to take care of the oral health of this highrisk group.

Acknowledgements

Financial support and sponsorship

Conflict of interest statement

There are no conflicts of interest.

Authors' contributions

All authors reviewed the results and approved the final version of the manuscript.

References

[1] Annual Report 2010-2011. Department of AIDS Control Ministry of Health & Family Welfare. Accessed from: http://naco.gov.in/sites/default/files/NACO%20Annual%20Report%202010-11.pdf

[2] HIV/AIDS Patients in India. Ministry of health and family welfare. Accessed from: https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1657057

[3] National AIDS Control Organization (2016). National Integrated Biological and Behavioural Surveillance (IBBS), Hijras/Transgender People, India 2014-15. New Delhi: NACO, Ministry of Health and Family Welfare, Government of India. Accessed from: http://naco.gov.in/sites/default/files/IBBS%20Report%202014-15.pdf

[4] Patton LL, Phelan JA, Ramos-Gomez FJ, Nittayananta W, Shiboski CH, Mbuguye TL. Prevalence and classification of HIV-associated oral lesions. Oral Dis 2002;8 (Suppl 2):98-109. https://doi.org/10.1034/j.1601-0825.2002.00020.x

[5] Ranganathan K, Hemalatha R. Oral lesions in HIV infection in developing countries: an overview. Adv Dental Res 2006;19:63-8. https://doi.org/10.1177/154407370601900113

[6] Sivabakya TK, Srinivas G. Oral health status among human immunodeficiency virus-positive patients visiting ART center in Chennai: A cross-sectional study. Indian J Oral Health Res 2020;6:38-41. https://doi.org/10.4103/ijohr.ijohr_19_20

[7] Kumar S, Mishra P, Warhekar S, Airen B, Jain D, Godha S. Oral health status and oromucosal lesions in patients living with HIV/AIDS in India: A Comparative Study. AIDS Res Treat 2014;2014:480247. https://doi.org/10.1155/2014/480247

[8] Aleixo RQ, Scherma AP, Guimaraes G, Cortelli JR, Cortelli SC. DMFT index and oral mucosal lesions associated with HIV infection: crosssectional study in Porto Velho, Amazonian region - Brazil. Braz J Infect Dis 2010;14:449-56. https://doi.org/10.1016/S1413-8670(10)70092-1

[9] Chaudhary P, Manral K, Gupta R, Bengani AKS, Chauhan BI, Arora D. Oral health status and treatment needs among HIV/AIDS patients attending antiretroviral therapy center in Western India: A cross-sectional study. J Family Med Prim Care 2020;9:3722-8. https://doi.org/10.4103/jfmpc.jfmpc_411_20

[10] Muralidharan S, Acharya AK, Margabandhu S, Kalekhan S, Ahsan S, Kulkarni D. Prevalence of Periodontitis and Soft Tissue Lesions among Human Immunodeficiency Virus-positive Patients on Antiretroviral Therapy in Raichur Taluk, Karnataka, India. J Contemp Dent Pract 2018;19:42-46. https://doi.org/10.5005/jp-journals-10024-2209

[11] Soares GB, Garbin CA, Moimaz SA, Garbin AJ. Oral health status of people living with HIV/AIDS attending a specialized service in Brazil. Spec Care Dentist 2014;34:176-84. https://doi.org/10.1111/scd.12056