

Caries status and opinions of people living with HIV/AIDS on oral health care providers' desired behaviour

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Abstract

Aim: The aim of this study was to investigate the dental caries status and opinions of the People Living with HIV/AIDS (PLHA) on how they should be handled by oral health care providers. **Design:** A cross sectional study. **Study subjects and Methods:** The study was carried out among PLHA in Dar es Salaam, Tanzania. Data was collected using a face to face interview utilizing a structured questionnaire which inquired on participants' views on how they should be handled by oral health care providers. An intra oral examination to assess dental caries status was done according to WHO recommendation. **Results:** The response rate was 43.9%. Majority of the participants suggested that dental professionals should have empathy to PLHA (95%), should avoid stigmatization of PLHA (94%) and should observe sterile procedures to control cross infection. The mean decayed component was 2.45, mean missing 3.63, mean filled 0.25 and the mean decayed missing and filled teeth (DMFT) 6.34. Only 8.9% of the participants were caries free, 15.8% had one decayed tooth, 13.9% had one missing tooth, 5.9% had one filled tooth and 10.9% had one DMFT. The most affected teeth were third molars, observed on the upper right jaw of 42.5% of the participants and on the lower left jaw of 56.4%. Extensive destruction of the tooth structure was frequently observed. **Conclusion** We conclude that the study group of PLHA has a higher caries experience than the general Tanzanian population, requires dental professionals to observe social requirements and to offer them professional services.

Key words: HIV/AIDS, PLHA, Dental caries, Dental services

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Introduction

Records show that between 70% and 90% of people living with HIV/AIDS (PLHA) will have at least one oral manifestation at sometime during the course of their disease (1). The common manifestations reported to occur in PLHA are oral candidiasis, oral hairy leukoplakia, oral ulcers, non-tender bilateral swelling of the parotid glands, and Kaposi's Sarcoma (2-9). Other manifestations include Herpes Zoster, Erythema multiforme, facial palsy, angular cheilitis, cancrum oris, non-Hodgkin's lymphoma, necrotizing gingivitis and linear gingival erythema (4, 10-11). Moreover, Ogunbode (1) stated that about 40 oral manifestations of HIV/AIDS have been reported.

Besides the above mentioned oral manifestations, dental caries occurrence among PLHA has been reported in different scenarios. First, Tukutuku et al. (12) reported lower prevalences of dental caries among PLHA than the general population and second Mulligan et al. (13) found no differences in the occurrence of dental caries between PLHA and the general

population. Third, an increased occurrence of dental caries among PLHA compared to the general population was reported by Goddard et al (14). Studies done among children living with HIV/AIDS reported the following; children with HIV/AIDS had a higher dmfs score than the general child population (15), and Gelbier et al (16) reported that 69% of the children with HIV/AIDS had caries experience. Flaits et al. (17) found severe dental caries in the majority of children living with HIV/AIDS (dfs/dft 16.9/3.7 and DMFS/DMFT 8.1/3.1) where as Pongsiriwet et al (18) reported that the prevalence of dental caries among children living with HIV/AIDS was relatively higher with the mean DMFT and DMFS scores of 2.1 (SD = 2.3) the dft and dfs scores of 4.1 (SD = 5.0) and 10.9 (SD = 14.8) respectively.

In Tanzania, the infection rate of HIV/AIDS is said to be 7% (19). Consequently, special clinics to offer health services to PLHA have been established. None of these clinics offer dental services. Moreover, the dental disease status among PLHA in Tanzania has not been studied.

The results of such studies may form a basis for setting up special dental clinics for PLHA or offering dental services under the umbrella of the already existing clinics. Therefore the aim of this study was to investigate the dental caries status among PLHA and their opinions on the way they wish to be handled by oral health care providers.

Study population and methods

Study population.

In 2004 an awareness study was conducted among PLHA in Dar es Salaam, Tanzania (unpublished findings). The same participants were invited to participate in the current study. Invitation letters requested each individual to attend at Muhimbili Dental School. Distribution of these letters was done through 19 Non Governmental Organisations (NGOs) that provide free services to PLHA in Dar es Salaam.

Interview

The proposal was submitted to National AIDS Control Programme (NACP) which granted

permission to conduct the study. A verbal consent was obtained from participants before embarking on the interview. A structured questionnaire inquired on participants' demographic data and on their opinion about the way they wish to be handled by oral health care providers. Two dentists conducted the interview.

Clinical examination

Two dentists conducted intra oral examination to assess dental caries status with participants seated on a dental chair, utilizing artificial light. Diagnosis of dental caries was done according to WHO recommendation, 1997 (20). Inter-examiner agreement for the caries score was good, with Kappa value of 0.68 – 0.75.

Results

Out of 230 PLHA who were invited to participate, 101 (43.9%) showed up of whom, 13.9% were males and 86.1% were females. Their age ranged from 23 to 65 years (Table 1).

Table 1: Distribution of study population by age and sex

Age group \ Sex	Male		Female		Total	
	n	%	n	%	n	%
23 to 39 yrs	3	3.0	47	46.5	50	49.5
40 to 65 yrs	11	10.9	40	39.6	51	50.5
Total	14	13.9	87	86.1	101	100

In table 2, participants' opinions on what the dental professionals should do to PLHA are presented. The opinions of the majority were that the dental professionals should have empathy to PLHA (95%), avoid stigmatization of PLHA (94%) and observe sterile procedures to control cross infection of HIV (93%). Other views were that professionals should avoid discrimination of PLHA (92%), set up a special clinic to serve the PLHA who have oral health problems (85%) and to collaborate with the already existing HIV/AIDS clinics in providing services to PLHA, (60.4%). There were no significant differences between the sexes in the opinions given.

Dental caries status

The mean decayed component was 2.45, missing component was 3.63, filled component was 0.25 and the mean decayed missing and filled teeth (DMFT) was 6.34. Most of the participants had their affected teeth left untreated as signified by the decay component of 2.45. A substantial proportion of the participants (82%) had missing teeth while only a few participants (12%) had filled teeth.

Only 8.9% of the participants were caries free, 15.8% had one decayed tooth, 13.9% had one missing tooth, 5.9% had one filled tooth and 10.9% had one DMFT. The proportion of participants who had 6-9 decayed teeth was 6.9%, missing teeth 16.9%, and total DMFT, 26.8%. There were 26.9% participants with 10-27 total DMFT, (Table 3).

Table 2: Participants' suggestions on desired dental professionals' behaviour towards PLHA

Suggested desired behaviour	n	%
Have empathy to PLHA	96	95.0
Avoid stigmatization of PLHA	95	94.1
Observe sterility	94	93.1
Avoid discrimination of PLHA	93	92.1
Start a special clinic for PLHA	86	85.1
Collaborate with the already existing HIV/AIDS clinics	61	60.4

The most affected teeth were third molars. Caries was observed on the upper right third molars of 42.5% of the participants and on the lower left third molars of 56.4%. Fewer participants had caries on the lower left posterior quadrant compared to the other three posterior quadrants. Of the anterior quadrants, the lower anterior was less affected than the upper, (Table 4).

Only 54.5% of the participants had all their four third molars sound, 69.3% all the four second molars sound and 70.3% all the four first molars sound. The canines were the least affected teeth, only one participant had caries on three canines, the remaining 99% of the participants had all their four canines sound (Table 5).

Table 3: Percentage distribution of participants' decayed, missing, filled and DMFT scores by number of affected teeth

Number of teeth	Decayed		Missing		Filled		DMFT	
	n	%	n	%	n	%	n	%
0	34	33.7	18	17.8	89	88.1	9	8.9
1	16	15.8	14	13.9	6	5.9	11	10.9
2	14	13.9	18	17.8	3	3.0	11	10.9
3	12	11.9	10	9.9	2	2.0	5	5.0
4	8	7.9	9	8.9	0	0	6	5.9
5	7	6.9	7	6.9	0	0	6	5.9
6-9	7	6.9	17	16.9	1	1.0	26	26.8
10-27	3	3.0	8	8.0	0	0	27	26.9

In table 6, the distribution of participants with decayed teeth by tooth surface is shown. Extensive destruction of the tooth structure involving more than one surface was the most often observed occurrence found on all teeth except the upper right canines. This was followed by root caries. The least surface affected by caries were labial, mesial and distal surfaces. Labial caries was seen on molars and central incisors only whereas mesial and distal caries was seen on nearly all teeth. The lower anterior sextant was less affected, exhibiting no single occurrence of labial, mesial, incisal or root caries.

Discussion

The low response rate (44%) may have been due to unmet expectations during the study that was carried out to investigate these PLHA's awareness about the oral manifestations of HIV/AIDS and the prevalence of these manifestations (unpublished findings). Some participants revealed that their participation in different programmes is done in anticipation of financial or material support. For this reason majority attend to new programmes in large numbers, the attendance dwindles with time depending on what the programme offers.

Table 4: Percent distribution participants decayed, missing, filled, DMFT score per tooth type

	Decayed (D)	Missing (M)	Filled (F)	Total DMF
Upper right jaw				
Third molar	26.7	20.8	0	47.5
Second molar	15.8	9.9	1.0	26.7
First molar	9.9	12.9	1.0	23.8
Second premolar	5.0	5.0	0	10.0
First premolar	5.0	6.9	2.0	13.9
Canine	0	2.0	1.0	3.0
Lateral incisor	5.9	4.0	0	9.9
Central incisor	9.9	1.0	1.0	11.9
Upper left jaw				
Central incisor	10.9	3.0	0	13.9
Lateral incisor	3.0	3.0	2.0	8.0
Canine	1.0	3.0	1.0	5.0
First premolar	11.9	5.0	1.0	17.9
Second premolar	7.9	9.9	1.0	18.8
First molar	11.9	14.9	0	26.8
Second molar	14.9	9.9	0	24.8
Third molar	16.8	25.7	0	42.5
Lower left jaw				
Third molar	16.8	38.6	1.0	56.4
Second molar	10.9	31.7	2.0	44.6
First molar	8.9	27.7	3.0	39.6
Second premolar	3.0	5.0	1.0	9.0
First premolar	1.0	5.9	0	6.9
Canine	1.0	1.0	0	2.0
Lateral incisor	2.0	0	0	2.0
Central incisor	1.0	2.0	0	3.0
Lower right jaw				
Central incisor	1.0	2.0	0	3.0
Lateral incisor	2.0	1.0	0	3.0
Canine	1.0	0	0	1.0
First premolar	3.0	5.9	1.0	9.9
Second premolar	7.9	5.9	1.0	14.8
First molar	8.9	29.7	2.0	40.6
Second molar	6.9	29.7	3.0	37.6
Third molar	13.9	40.6	1.0	55.5

Most participants indicated a social rather than professional need from the dental professionals. Majority (95%) required the dental professionals to have empathy to the PLHA. This was closely followed by those who required the dental professionals to avoid stigmatization, to observe sterility and to avoid discrimination. On the other hand, 85% and 60% required the dental professionals to set up a dental clinic or collaborate with the already existing HIV/AIDS clinic to give health care to PLHA with oral health problems respectively. These observations may represent several scenarios. First, they could be reflecting the true requirement of the PLHA

in Dar es Salaam, to be mainly on the social care rather than on the oral health care. Second, it could be a result of lack of appreciation of oral health and its contribution to the wellbeing of PLHA. Third, it could be a sign of poor handling of the PLHA by oral health care providers.

Lastly, it could point toward the community and professional behaviour of discrimination and stigmatization of the PLHAs, consequently masking the PLHA's need for oral health care. Moreover, some participants expressed their dissatisfaction with the measures taken by some

dental personnel in the dental clinics in Dar es Salaam towards observing sterile measures. In view of the World Health Organisation, oral health is an integral part of general health and an essential component of quality of life. Furthermore, oral manifestations of HIV/AIDS are considered a most important challenge to improved health in the future, particularly in

developing countries (21). WHO has thus outlined some basic principles for developing a country-specific approach to capacity building to control HIV/AIDS related oral diseases (22). Therefore, it is imperative for Tanzanian dental professionals to adopt the WHO recommendation and address the PLHA oral health requirements

Table 5: Percentage distribution of number of teeth affected by caries by tooth type

Tooth type	Number of affected teeth		1		2		3		4		All 4 teeth sound	
	n	%	n	%	n	%	n	%	n	%	n	%
Central Incisors	7	6.9	6	5.9	0	0	1	1.0	87	86.1		
Lateral Incisors	6	5.9	2	2	1	1.0	0	0	92	91.1		
Canines	0	0	0	0	1	1.0	0	0	100	99		
First premolars	15	14.9	1	1.0	0	0	1	1.0	84	83.2		
Second premolars	14	13.9	5	5	0	0	0	0	82	81.2		
First Molars	24	23.8	3	3	2	2	1	1.0	71	70.3		
Second Molars	20	19.8	6	5.9	3	3	2	2	70	69.3		
Third Molars	26	25.7	12	11.9	7	6.9	1	1.0	55	54.5		

The mean DMFT of 6.34 among the current group of PLHA as well as the individual components (Decay = 2.45, Missing = 3.63 and Filled = 0.25) were very much higher than that for the general Tanzanian population reported by Mosha et al. (20), in the national oral health survey (DMFT = 1.8, Decay = 1.11, Missing = 0.7 and Filled = 0.0). The big difference in the caries status is likely to be caused by a possibility that PLHAs with dental problems formed a larger proportion of those who turned up for this study because they were assured of getting free treatment. Moreover, it could be attributed by unfavourable conditions in the oral cavity for example dryness of the mouth or changes in the oral microflora as was reported earlier by Lin et al. (23).

Only about 9% of the participants were caries free, about 21% had 1-2 DMFT and more than half of them had 6-27 DMFT. Our findings are contrary to those of Tukutuku et al. (12) who reported that the prevalence of dental caries was lower among AIDS patients than among healthy control and Mulligan et al. (13) who reported that sero-positive and sero-negative women were

similar in the numbers of DMF teeth and surfaces. However, they are similar to those reported by Goddard et al. (14) among American-Indian and Alaska Natives with HIV and AIDS. If the current findings represent a picture towards a true dental caries status of the PLHA in Dar es Salaam, an urgent action is required to tackle this problem as well as to assess other oral conditions such as dental plaque and calculus.

Our results revealed further that third molars were the most affected teeth, unlike the results by Mosha et al. (24) who reported the first molars to be the mainly affected teeth. Regarding the surfaces affected by caries, gross destruction was more common. The labial/buccal surfaces were affected in very few people and was seen only on the molars and the upper incisors. This is contrary to the expectation of observing labial caries mimicking radiation caries as a consequence of dryness of the mouth which is a predisposing factor to dental caries (25) and has been reported to be common in PLHA (23, 26, 27).

Caries was common on the upper central incisors which are usually rarely affected among Tanzanians without HIV infection. The results may suggest an increased frequency of sugar consumption or a consequence of dryness of the mouth since this was self reported by 24% of the participants during the investigation on the prevalence and awareness of oral manifestations of HIV/AIDS among this group of PLHA (unpublished findings).

Participants in this study had more filled teeth than the general population. It sounds logical to state that those who turned up were mainly those with dental problems and therefore most likely had attended dental clinics for treatment before. Moreover, this could be attributed to a free treatment service that was offered to participants during the previous investigation (unpublished findings) since participants were not asked as to where they received the treatment.

Table 6: Percent distribution of tooth surfaces affected by dental caries per tooth type

	Occlusal, incisal	Mesial	Distal	More than one surface	Labial/ Buccal	Root caries
Upper right jaw						
Third molar	2.0	1.0	4.0	4.0	2.0	9.9
Second molar	1.0	2.0	2.0	2.0	0	8.9
First molar	1.0	2.0	1.0	4.0	0	2.0
Second premolar	0	1.0	1.0	1.0	0	2.0
First premolar	0	0	1.0	1.0	0	3.0
Canine	0	0	0	0	0	0
Lateral incisor	0	0	4.0	1.0	0	1.0
Central incisor	1.0	4.0	1.0	3.0	1.0	0
Upper left jaw						
Central incisor	0	3.0	3.0	3.0	1.0	1.0
Lateral incisor	0	1.0	0	2.0	0	0
Canine	0	0	0	1.0	0	0
First premolar	0	0	5.0	2.0	0	5.0
Second premolar	0	1.0	1.0	2.0	0	4.0
First molar	2.0	2.0	0	2.0	0	5.9
Second molar	4.0	0	3.0	6.0	0	2.0
Third molar	4.0	0	4.0	3.0	0	5.9
Lower left jaw						
Third molar	2.0	1.0	2.0	4.0	2.0	5.9
Second molar	3.0	0	0	4.0	1.0	4.0
First molar	0	0	1.0	1.0	0	6.9
Second premolar	0	0	1.0	1.0	0	1.0
First premolar	0	0	0	1.0	0	0
Canine	0	0	0	1.0	0	0
Lateral incisor	0	0	0	1.0	0	0
Central incisor	0	0	0	1.0	0	0
Lower right jaw						
Central incisor	0	0	0	1.0	0	0
Lateral incisor	0	0	1.0	1.0	0	0
Canine	0	0	0	1.0	0	0
First premolar	0	1.0	1.0	1.0	0	0
Second premolar	1.0	0	2.0	4.0	0	1.0
First molar	1.0	1.0	0	5.0	1.0	1.0
Second molar	3.0	0	0	1.0	0	3.0
Third molar	5.9	1.0	0	3.0	2.0	2.0

Conclusion

From the results of this study we conclude that PLHA in Dar es Salaam would like the dental professionals to observe social requirements such as to have empathy as well as to offer professional services to PLHA. Furthermore, we conclude that the current group of PLHA has a higher caries experience than the general Tanzanian population.

Recommendations

We recommend that further studies be conducted to establish causal relationships of dental caries among PLHA. We further recommend that the dental professionals should address the social requirements raised by PLHA and collaborate with the existing HIV/AIDS clinics in providing care to PLHA who have oral health problems.

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You always kept saying, "Can't read" even on my showing bigger letters, without realizing that you had not been to any school. It's a shock to me.