Self-perceived Oral Malodour among Secondary School Youths in Kinondoni Municipality, Dar es Salaam, Tanzania

Mugonzibwa EA[1], Khamis O[2]

[1]Department of Preventive and Community Dentistry, Muhimbili University of Health and Allied Sciences
[2]Muhimbili National Hospital (MNH)

Mugonzibwa EA, Khamis O: Self-perceived Oral Malodour among Secondary School Youths in Kinondoni Municipality, Dar es Salaam, Tanzania. Tanz Dent J 2008; 15 (1): 5 - 10

Abstract

The aim of the study was to investigate the frequency of self-perceived oral malodour (oral malodour or halitosis) among secondary school youths aged 14-19 years in Kinondoni municipality, Dar eS salaam. A total of 198 secondary school youths were involved in the study, of whom 43% were males. Information on the respondents' perception on Oral malodour was collected using a pre-structured questionnaire. The Chi-square and Fisher's Exact tests were used to compare different subgroups. Oral malodour was self reported in 74% of the respondents while 73% of the respondents had an opinion that oral malodour is a problem in the society around them. Half of the respondents reported that oral malodour affects both males and females equally. Most of the respondents suggested that, there is a need to give more information on oral malodour to the public. In conclusion, most youths perceived that oral malodour is an existing problem in their settings and most of them recommend more information on the condition to the public. More studies on the scope, clinical assessment, perception and prevalence of oral malodour in different urban and rural Tanzanian communities are recommended.

Correspondence: EA Mugonzibwa, Muhimbili University of Health and Allied Sciences, P. O. Box 65104, Dar es Salaam, Tanzania Phone: +255 22 2151135, Fax:+255 22 2150465, Cellular:+255 787 606581, Emails: emugonzibwa@muhas.ac.tz

Introduction

Oral malodour or halitosis is any unpleasant odour emerging from the mouth that is detected by others regardless of whether the bad breath originates from oral or non-oral sources. Other names used are bad or foul breath, breath malodour, fetor ex ore, and fetor oris (1).

Reviews of research reports now agree that, in the vast majority of cases, halitosis (80 to 90%) originates within the oral cavity, where anaerobic bacteria degrade sulphur-containing amino acids to the foul smelling volatile sulphur compounds (VSC), namely hydrogen sulphide and methylmercaptan. An estimated 10 to 20 % of halitosis has non-oral causes (2,3).

Oral malodour is mainly associated with oral conditions such as poor oral hygiene, periodontal disease, dental plaque, dental caries, gingivitis, stomatitis, tongue coating, food impaction, unclean dentures, faulty teeth restorations, dry mouth, oral carcinoma and by other non-oral systemic and psychological conditions (4-9). On the other hand, dry mouth is often inevitable during sleep, resulting into morning mouth, which is that noxious aroma that is observed up on awakening. Salivary glands functions are slowing down during sleep and thus reduction in fresh saliva. This allows bacteria overgrowth and consequently the bad smell (2, 7).

Smoking of cigarette and use of other tobacco products tends to dry out the mouth more often, causing the oral malodor. Other pathological states that may be associated with oral malodour might emanate from adjacent structures such as the ears, nose, throat, or from distant structures namely: gastrointestinal tract and the liver. Also bronchopulmonary, and psychiatric conditions have been associated with oral malodour.

Generally, oral malodour occurs in males and females, the rich and the poor, the young and the old of all races. It tends to get worse and more frequent as one gets old. Prevalence of oral malodour has been recently reported to range from 8% to 44% in different populations (10-12). In Tanzania, self-perceived bad breath in Muhimbili hospital based samples of 14-44 years aged post-partum mothers and dental out-patients has been reported to range from 14% to 44% (13,14).

About ninety percent (90%) of oral malodour is of oral origin, coming from the bad breath caused by bacterial decay of food particles and other debris in the oral cavity (15,16). Most of the conditions associated with oral malodour are preventable while management of the problem involves simple measures such as maintaining proper oral hygiene including tongue cleaning, mouth rinsing, and periodontal treatment. Oral malodour may cause extreme discomfort and embarrassment to some individuals. While oral malodour is a social stigma,

no studies on self-perception of oral malodour among youths had been conducted in Tanzania. Sensitizing youths about oral malodour condition, its scope in the society and possibly involving them in intervention programmes may have far reaching benefits. Hence, the purpose of the present study was to investigate about self-perceived oral malodour among secondary school youths in Kinondoni municipality, Dar es Salaam, Tanzania**.**

Subjects and Methods

The present cross-sectional descriptive study involved 198 randomly selected youths aged 14 to 19 years of whom 43% were males and 57% were females (Tables 1). The schools were conveniently selected due to financial limitations. However, a pre-investigation calculation of the required sample size was done to find a difference of 10% in risk at alpha = 0.05 and a power of 90%. The results indicated that at least 182 children could be enrolled. A random sample of 198 youths was taken from the selected schools. The sampling frame was the students list at the selected schools. All students present at the school on the day of data collection were eligible.

Table 1: Respondents' distribution by age and sex

Age	Sex*				Total	
	Male		Female			
	n	%	n	%	n	%
14	18	9.1	45	40.2	63	31.8
15	18	9.1	39	34.8	57	28.8
16	22	11.1	22	19.6	44	22.2
17	10	5.05	3	2.7	13	6.6
18	8	4.0	3	2.7	11	5.6
19	10	5.05	0	0	10	5.1
Total	86	43.4	112	56.6	198	100

*** p<0.000**

A self-administered questionnaire in a common, locally well-understood and spoken language Kiswahili was administered to all 198 respondents who were randomly selected, requested and accepted to participate in the study. The respondents completed the questionnaire in the presence of the investigator (KO). They were instructed to ask for any clarification whenever they could not understand anything in the questionnaire. The questionnaire consisted of 20 items that were divided into two sections. The first section inquired on the demographic characteristics of the respondents that included age, gender and place of living. The second section assessed the respondent's self-perception of oral malodour.

While the Kinondoni municipal education officer gave the permission for data collection, respondents were included in the study if they were willing to participate. A written consent was obtained from the study subjects' parents. Also a student had an option to withdraw from the study after giving consent if he/she so wished.

Data analyses were carried out using SPSS computer pragramme. Frequency distributions were generated and proportions between boys and girls compared. For detecting differences in proportions between boys and girls, both x^2 and Fisher's Exact tests were used. The statistical significant level was set at $p<0.05$.

Results

Most of the respondents (91.4%) resided in Kinondoni Municipality. No statistically significant difference was found between boys and girls and consequently data was pooled. Furthermore, parents' education level showed no influence on the youths' responses.

The respondents' Parents' educational level is shown in tables 2. Forty percent of the respondents did not indicate their parents' educational level. On the other hand, 46% of the fathers and 36% of the mothers were reported to have secondary education level. The proportion of parents with University education level was about 7% among fathers and 5% among the mothers.

Table 2: Respondents' Parents' educational level

Educational Level*	Father		Mother	
	n	%	n	%
Primary	31	15.7	58	29.3
Secondary	73	36.8	65	32.8
University	36	18.2	16	8.1
Unreported	58	29.3	59	29.8
Total	198	100	198	100

***p<0.0001**

Table 3 shows responses on perception of oral malodour. Almost three quarters (74%) of the respondents judged themselves to have good sense of smell. About 41% of the respondents could sometimes sense bad breath from their own mouth. Over one third of the respondents, 34% reported that they could sense oral malodour from their colleagues. About 31% of the respondents indicated to have a close friend with bad breath problem.

Majority of the respondents, 93% agreed that improper tooth brushing could cause bad breath. Many respondents, 73% indicated that bad breath was a public problem in their social settings. Half of the respondents (50.5%) perceived that bad breath was equally distributed between men and women. A high proportion of respondents (91%) indicated the need for providing more information on bad breath to the Tanzanian community.

Table 3: Frequencies of responses to questions on bad breath

Perception on halitosis	Yes		No		Don't know	
	n	%	n	%	n	%
Do you have good sense of smell?	147	74.2	13	6.6	38	19.2
Do you sometimes self-perceive bad breath?	83	41.9	81	40.9	34	17.2
Do you usually smell bad breath from friends?	67	33.8	103	52.1	28	14.1
Do you have a close friend who has bad breath?	61	30.8	102	51.5	35	17.7
Do you think improper tooth brushing may cause bad breath?	185	93.4	4	2.1	9	4.5
Do you think bad breath is public health problem?	145	73.2	28	14.1	25	12.6
Do you think bad breath affects more male?	24	12.1	96	48.5	78	39.4
Do you think bad breath affects more female?	16	8.1	113	57.1	69	34.8
Do you think bad breath affects male and female equally?	100	50.5	37	18.7	61	30.8
Do you think more information of bad breath should be given to the public?	180	90.9	6	3	12	6.1

Distribution of responses on how to help a friend with oral malodour is shown in table 4. While it was indicated that 59% of the respondents would advise friends suffering from bad breath to consult a dental practitioner, 37% indicated that they would advise friends with bad breath to brush their teeth.

Distribution of respondent's proposed remedy for oral malodour is shown in table 5. About 8% of the respondents suggested nine various traditional remedies for oral malodour, clove being most frequent.

Discussion

The sample in the present study was partly convenient and may not be representative for all Tanzanian, Dar es Salaam or Kinondoni Municipal youths of the studied ages. However, the present findings give an overview of the youths's self-perception and awareness on oral malodour in the respective society settings.

Parental educational level may have an influence on their children's perception of oral malodour. However, the present data did not show any significant influence may because 40% of the respondents did not indicate their parents' educational level. On analyzing respondents who did not indicate parents' educational level, no clear difference was found with those who responded to the question. Hence, the non-responding subjects to the question did not appear to bias the results on this variable. Surprisingly, the parents' educational level proportions correspond well with previous findings from two community and hospital based studies in Dar es Salaam (17, 18).

The self-perception and reported oral malodour is subjective information that needs to be evaluated carefully as there are concerns about the reliability of the information. The reported information may be false. Some individual who report their own oral malodour status may belong to the category of psychosomatic oral malodour [non-real] (19, 20). This means individuals perceiving they have malodour but they actually do not have the condition. Also those not perceiving and reporting their own oral malodour might be found to have the condition if other objective (clinical) test methods would be employed. On the other hand, available cross-sectional findings do suggest that certain self-reported oral and dental information is valid (21). Given the known social desirability effects associated with self reported information, we believe that the questionnaire responses are more "honest" than those provided through direct interviews or over the telephone.

Despite the limitations of reported self-perception of oral malodour, the findings may provide a basis for enhancing the knowledge of self-perception of oral health among youths who are the future society and parents. Moreover, youths as members of learned society should be an oral health symbol and ambassadors, keeping their mouths free from oral malodour.

Table 4: Distribution of responses on how to help a friend with oral malodour

Response	n	%
Advise a friend to consult a dental practitioner	116	58.6
Advise to brush the teeth	74	37.4
I don't know	8	4.0
Total	198	100

About 41% of the respondents in our study reported that they could sometimes sense their own oral malodour. The frequency of self-perceived bad mouth in the present community based study is higher than 14% reported by Mumghamba and colleagues (14) but close to 44% reported by Fadhil and Mugonzibwa (15). The findings indicate that oral malodour prevails and is perceived in different settings in the Tanzanian society. The findings are correspoding to a Saudi Arabia study where 32% to 44% of the investigated dental youths reported self perception of bad breath (10). The prevalence of both self-perceived and diagnosed oral malodour has been reported to range from 2% to 50% in various other populations (10-12, 22-24) indicating that the condition is universal and perceived in different cultures and societies.

Over one third of the respondents, 34% often sensed bad breath of the colleagues' mouths and 31% indicated to have a close friend with bad breath problem. Unfortunately people suffering from bad breath often remain completely unaware of the condition. Oral malodour suffering individuals are frequently pushed to seek therapy by people living in close contact with them such as a spouse, family member or friend (25). In the present study, more than half of the respondents, 59% indicated that they would advise friends suffering from bad breath to consult a dental practitioner.

Although the majority of the respondents, 93% agreed that improper tooth brushing could cause oral malodour, surprisingly only 37% of the respondents indicated that they would advise friends with bad breath to brush their teeth. This may be one of the areas of focus for intervention. Moreover, more than 73% of the respondents agreed that oral malodour was a public problem in the society.

Half of the respondents (50.5%) perceived that bad breath was equally distributed between males and females. Generally, this study reported that oral malodour was equally distributed between men and women.This finding corresponds well with the results of the study conducted by Fadhil and Mugonzibwa (13). Literature from elsewhere shows no gender-based differences with regard to prevalence and severity of halitosis (26).

Table 5: Distribution of respondent's proposed remedy for oral malodour

Medication	n	%
Tooth paste		
AHA	2	1.0
Colgate	2	1.0
Whitedent	4	2.0
Local herbs		
Karafuu	5	2.5
Ashes	3	1.5
DFP	1	0.5
Magadi	1	0.5
Charcol	1	0.5
Mtambetambe	1	0.5
Mpajuju	1	0.5
Ngetwa	1	0.5
Sweets	1	0.5
I don't know	175	88.4
Total	198	100

Most of the respondents (91%), indicated the need for providing more information on bad breath to the Tanzanian community. The findings may form a basis for emphasis of integration of oral malodour information in the national oral health education agenda.

Traditional remedies for common illnesses are not uncommon in different cultures, Tanzanian being not an exception. In the present study, about 8% of the respondents suggested nine various traditional remedies for bad breath. Clove was the most frequent. Generally clove is widely used as a food flavouring substance and is present in spices such as basil, cinnamon and nutmeg. It is also used in dentistry as an antiseptic and analgesic (27-29). Reported use of clove as a traditional remedy for oral malodor may provide areas of possible collaborative research with traditional oral health providers regarding local plants or herbs that may be useful in management of oral malodour.

In conclusion, the results showed that most of the youths in the present community based sample perceived, were aware and reported their oral malodour state. Most of the respondents perceived that oral malodour was an existing problem in their settings and most of them recommended more information on the condition to the public. More studies on the scope, clinical assessment, perception and prevalence of oral malodour at community level are recommended.

Acknowledgement

Authors thank the authorities of Kinondoni municipality for allowing the study to be carried out in the respective schools. Thanks to the Department of Preventive and Community Dentistry, School of Dentistry, Muhimbili University of Health and Allied Sciences (MUHAS) for organizing this programme. Last but

not least thanks to the Higher Education Student's Loan Board for the financial support of the study.

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