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Knowledge and perception attributes about halitosis and its treatment modalities among undergraduate students of dentistry and medicine: An analytical cross-sectional study

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Abstract--Background: A worldwide halitosis frequency of 10% - 30% is a common oral health complaint. Bad breath is described as a persistent condition in which a person's oral emissions are unpleasant or disagreeable. It not only hinders the person's ability to go about their routine activities, but also causes them shame and lowers their self-esteem, which in turn lowers their overall quality of life. Objective: The purpose of this study is to investigate how students majoring in dentistry and medicine see their own halitosis. Methodology: The students inducted in Bachelors in Medicine & Bachelors in Surgery (MBBS), and Bachelors in Dental Surgery (BDS) programs at various Teaching Institutes in Rawalpindi participated in this descriptive cross-sectional analytical epidemiological study. Around 500 undergraduates were given a self-administered questionnaire. Results: In our study, 96 (22.54%) were male students and 330 (77.46%) were female students respectively. 62 (64.6%) male and 255 (77.3%) female students from a variety of disciplines were familiar with the term 'Halitosis'. 29 students (6.8%) said that halitosis had a mild impact, 189 students (44.36%) said that it had a moderate effect whereas 206 students (48.35%) rendered it as a major severe significant factor affecting their social life deleteriously. 83 (19.48%) of the students were using a mouthwash, 51 (11.97%) were in habit of using a tongue scrapper, 31 (7.29%) were using an inter-dental brush, 108 (25.35%) were using aids other than those already mentioned before and 153 (35.91%) were not using any oral hygiene maintenance aid altogether. 369 students (86.61%) had the knowledge that a dentist is the best health care provider for combating halitosis. Conclusion: Since there are many potential causes of bad breath (halitosis), elaborated research on its incidence and correlation with other etiological factors is needed in the form of longitudinal studies which might include objective assessment of malodor. The curricula of many disciplines should also be adjusted to incorporate this elementary yet crucial concept.

Keywords--bad breath, halitosis, interdependence of factors, perception of oneself.

Introduction

A worldwide frequency of 10%-30%, halitosis is a common oral health complaint [1-3]. The Latin word halitus and the Greek word osis, both of which mean "bad breath," were combined to form the English word halitosis. A person with chronic bad breath has an odour that is unpleasant or offensive originating from their mouth. Halitosis is also known as bad breath, breath odour, dirty breath, fetor ex ore, or oral malodor [4]. A variety of factors, both extrinsic (such as tobacco, alcohol, or odoriferous foods) and intrinsic (such as stress or genetics), contribute to the development of halitosis [5]. Conditions in the mouth (oral causes) and elsewhere in the body (systemic causes) can contribute to this peculiar problem. Eighty percent to ninety percent of halitosis is caused by oral problems like poor oral hygiene, xerostomia, dental caries, periodontal diseases, impacted

food/debris, malfunctioning prosthesis, ulcers, infected surgical oral wounds, and coated tongue. Systemic diseases such as gastrointestinal problems (GERD, diaphragmatic hernia, etc.), hepatic failure, renal failure, diabetic ketoacidosis, or upper respiratory infections are other possible intrinsic causes of halitosis [6-8].

A decline in the quality of life is a direct outcome of this social stigma and low self-esteem that accompanies it as well. There was a lack of information in Nepal regarding how college-level medical students in various disciplines view their own levels of bad breath. Bad breath, or halitosis, cannot be cured by using flavored chewing gums, mouthwash, or brushing your teeth. Halitosis is unlike other lingering odors that could be an indication of anything more serious, such as morning breath or a strong odour that lasts for more than a day. Undergraduates in the health care professions have an especially high prevalence of halitosis. Basic dental problems like cavities and periodontal pockets from gum disease provide extra hiding spots for bad breath germs in the mouth, making it harder to remove them while brushing and flossing [9-10]. It's possible that a person's dry mouth is the result of a combination of factors, including taking medications, having a medical condition, using tobacco products, drinking alcohol, or drinking excessive amounts of coffee. All of these factors can ultimately lead to initiation of halitosis [11]. This study aimed to have a survey among undergraduates from various medical disciplines about their own experiences with bad breath/halitosis.

Methodology

Undergraduate students in the MBBS and BDS programs at various Teaching Institutes in Rawalpindi participated in this descriptive cross-sectional epidemiological survey for three months beginning from 1st July 2020 and ending on 30th September 2020; after an institutional review board gave the clearance for this research to be conducted. Participants were given detailed information about this survey which was to be conducted before obtaining their consent. To assure the questionnaire's usability, a pilot research was conducted with 30 randomly selected respondents to test its validity and adjustments were made where necessary or as needed. Five hundred surveys were sent out to a random sample of undergraduates, including 115 males and 385 females. The Windows version of the Statistical Package for the Social Sciences (SPSS Version 21) was used to analyze the data. Frequency distributions and percentages were generated as simple descriptive statistics for the study variables.

Results

There was an 85.2 percent response rate from the 500 questionnaires sent out, with 426 returned in whole. Out of these 426 responses, 96 (22.54%) were of male students and 330 (77.46%) were of female students respectively.

Table 1
Displays the demographic breakdown (by branch, year, and gender) of respondents who completed the questionnaires

Branches	Year	Gender		Year wise	Total
		Male	Female		
MBBS	Third	46	89	135	231 (54.23%)
	Fourth	27	69	96	
BDS	Second	06	59	65	(45.77%)
	Third	09	55	64	
	Fourth	08	58	66	
Total		96 (22.54%)	330 (77.46%)	426 (100%)	

Table 2 shows that among the 426 respondents, 62 (64.6%) male and 255 (77.3%) female students from a variety of disciplines were familiar with the term 'Halitosis'.

Gender	Male		Female	
	Yes	No	Yes	No
MBBS	50	23	12 0	38
BDS	12	11	13 5	37
Total (426)	62	34	255	75

Table 3 displays the awareness level about the devastating effect that halitosis has on the overall social life of an individual as per the data obtained from our target population i.e. 426 students from various disciplines of health sciences. In this regard, 29 students (6.8%) said that halitosis had a mild impact, 189 students (44.36%) said that it had a moderate effect whereas 206 students (48.35%) rendered it as a major severe significant factor affecting their social life deleteriously.

Branches	Year	The devastating effect that halitosis has on one's social life				Total
		Mild	Moderate	Severe	Not answered	
MBBS	Third	10	65	60	00	135
	Fourth	06	42	48	00	96
BDS	Second	05	27	33	00	65
	Third	02	30	32	00	64
	Fourth	06	25	33	02	66
Total		29	189	206	02	426

As per the findings of Table 4, it was shown that 83 (19.48%) of the students were using a mouthwash, 51 (11.97%) were in habit of using a tongue scrapper, 31 (7.29%) were using an inter-dental brush, 108 (25.35%) were using aids other

than those already mentioned before and 153 (35.91%) were not using any oral hygiene maintenance aid altogether.

Branches	Year	Mouth wash	Tongue Scrapper	Inter-dental Brush	Others	No other oral hygiene aids	Total
MBBS	III	30	15	10	35	45	135
	IV	18	09	05	28	36	96
BDS	II	12	08	03	14	28	65
	III	11	09	06	18	20	64
	IV	12	10	07	13	24	66
Total		83	51	31	108	153	426

Table 5 shows that 369 students (86.61%) had the knowledge that a dentist is the best health care provider for combating halitosis.

Branches	Year	The most effective treatment for halitosis is provided by;					Total
		General physician	ENT specialist	Dentist	Others	Don't know	
MBBS	Third	05	09	111	08	02	135
	Fourth	07	05	82	02	00	96
BDS	Second	02	03	59	01	00	65
	Third	01	01	60	02	00	64
	Fourth	02	05	57	02	00	66
Total		17	23	369	15	02	426

Discussion

Halitosis is an end result of multiple causative factors making it difficult to treat. It's among the chief complaints of both sexes around the globe [12]. The American Dental Association (ADA) reported that 50% of the adults have temporary halitosis whereas 25% experience chronic halitosis [13]. It's not just an indication of bad oral hygiene; there are also involved multiple social, economic, and psychological implications as well in its pathophysiology. Insecurities, shyness, isolation, fewer friends, strained relationships, and fewer meaningful exchanges are all symptoms of social anxiety [14]. Earlier research by Loesche and Kazor had established that most cases of bad breath have got an oral cause [15]. Oral halitosis is caused by a combination of volatile sulphide compounds (VSCs) such hydrogen sulphide, methyl mercaptan, and dimethylsulphide, and other molecules like butyric acid, propionic acid, putrescine, and cadaverine. These compounds are largely created by anaerobic Gram-negative oral microorganisms via the proteolytic degradation of various sulfur-containing substrates found in food debris, saliva, blood, and epithelial cells [16-18].

There is a severe lack of information on halitosis awareness and self-perception in various teaching institutes in Rawalpindi. As a result, we decided to conduct a survey among undergraduates across the medical fields to gauge their knowledge and understanding of halitosis. Multiple investigations have showed previously

that a 50% incidence of halitosis with varying degrees of severity (self-reported halitosis or objective measurement of VSCs) is prevalent [19]. This was found in conjunction with the findings of our study. Studies conducted in the past did not include a variety of subjects from various disciplines of health sciences. Our study, in contrast, involved undergraduate students from a variety of medical disciplines, both MBBS and BDS students [20]. Regardless of the medical specialty of the participants in the study, self-perception of halitosis might vary from person to person. This led to the limitation of our study, which was that no objective assessment of VSCs or else an oral examination by a subject specialist was done.

Conclusion

In conclusion, given the multi-factorial complexity of halitosis, further longitudinal studies, including objective assessment of malodor, are needed to determine its prevalence and to further examine the link between this condition and other etiological factors in the setting of various teaching institutes of Rawalpindi. Adding this simple but vital idea into the curriculums of many different fields is a necessary step as well. Not only will it educate the next generation on the value of good dental and oral hygiene, but it may also aid in the detection and prevention of a wide range of systemic illnesses.

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