Knowledge, attitude and practice of undergraduate medical students in Madurai regarding oral health: A cross sectional survey

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Abstract

Introduction: Proper Knowledge of oral diseases is crucial in medical practice due to the following reasons, periodontal diseases are associated with multiple systemic conditions of medical interest, a large number of systemic diseases have oral manifestations, and many drugs are associated with oral adverse drug reactions and majority of the population approach medical practitioners for their oral health problems.[1]

Aim: To assess Knowledge, Attitude and Practice among Undergraduate Medical Students of Madurai regarding Oral Health.

Materials and Methods: 313 subjects took part in the questionnaire survey. A descriptive cross sectional survey was conducted using a self-administered questionnaire, in English language containing 22 close ended questions. The questions are related to awareness about oral hygiene practices including brushing technique, brushing time, importance given to oral screening & referral of patients with dental problem to dentists and regarding the intellect of medical students about premalignant lesions/conditions, awareness of risk factors and prevention of oral diseases. Test-retest reliability revealed an accepted value of Cronback's alpha >0.6. The results were analyzed by descriptive statistics and Chi square test using SPSS version 22.

Result: 64.89% of final year students, 65.21% of third year students and 60.61% of second year students had responded correctly to oral health knowledge, attitude and practice based questions.

Conclusion: Oral health awareness among undergraduate medical students was found to be satisfactory. Educational curriculum requires more extensive oral health programs.

Keywords: Cross-sectional study, Dental health awareness, Medical students, Madurai, Oral hygiene practices and knowledge.

Introduction

Oral Health is multifaceted and includes the ability to speak, smile, smell, taste, touch, chew, swallow, and convey a range of emotions through facial expressions with confidence and without pain, discomfort, and disease of the craniofacial complex.[2] Loster and Likeman believe that a basic knowledge of dentistry in medical students enables better communication between medical professionals and dentists. In future, Medical students will come across patients with oral and dental problems. Also, medical students have their own experiences of visiting a dentist and have definite attitude towards oral health rooting from their ethnicity, financial background and ways of living.[3]

Systemic diseases have oral manifestations and oral diseases have systemic predisposition, therefore, cordial approach of both dental and medical professional is imperative to improve the oral health and to reduce associated morbidity and mortality. Deleterious habits like smoking, tobacco chewing etc., cause systemic diseases as well as oral diseases like oral cancer. Hence oral screening of patients with history of deleterious habits or with any other symptoms related to the habits (chest pain, cough etc.,) is essential for early diagnosis of potentially malignant lesions thereby saving many lives.

Symptoms of dental origin need to be differentiated from other symptoms to provide appropriate treatment. Most of the symptoms related to dental diseases are seen on the oral and Maxillo-facial region. For example, Pain in the ear region and head region are few symptoms of impaction of wisdom teeth which can be misleading to ear related diseases. Proper differentiation, diagnosis and referral to dentists are mandatory in such cases.

The World Health Organization has set the goals for the year 2020 as recommended oral self-care (ROSC) which includes tooth brushing more than once a day, lesser consumption of sugar-containing snacks once daily or rarely, and regular use of fluoride-containing toothpaste.[4] Dentist: population ratio in urban parts and rural parts of India are 1:8000 and 1:50000 when compared to medical doctor: population ratio 1:1800 and 1:10000 respectively, indicates better availability of medical graduates in urban parts of India.[6] People more commonly refer to medical doctors than to dentist, and this can be an opportunity to promote their oral health.[7] Employment of oral health programs among medical students will not only boost their personal oral health care, but also possibly credit their ability to motivate patients to undertake preventive oral health measures.

The knowledge and oral hygiene behavior of medical students play an influential role in oral health education of individuals and group, and act as role models for their patients and community at large. Therefore, the objective of this survey was to assess the Knowledge, Attitude and Practice of Medical students of Madurai regarding oral health.

Materials and Methods

Study Design

In the month of September 2018, a descriptive cross sectional survey was conducted among the medical students

of Madurai. A self-administered questionnaire was prepared in English language, consisting of 22 close-ended questions, out of which 10 were practice related, 8 were knowledge related and 4 were attitude related questions. The questionnaire includes the demographic details of the participants. The questionnaire was evaluated by experts for content validity and the questions in the questionnaire were rated as relevant. The questionnaire was pretested in a pilot survey on 10%(31) of sample population, the students had been asked to fill in the questionnaire twice over a period of two weeks prior to the study. The Cronbach's alpha was used to measure test-retest reliability. The majority of items demonstrated a good level of reliability for medical students with Cronbach's alpha scores greater than 0.8. The questions:" Any other oral hygiene aids you use with brushing:" (Cronbach's alpha = 0.627); "Which of the following is/are potentially malignant condition/lesions?" (Cronbach's alpha = 0.163) and "Do you refer a patient with a dental related complaint to a dentist?" (Cronbach's alpha = 0.788) demonstrated lower reproducibility and the questions were reframed.

Sampling Size and Sampling Method

313 Undergraduate medical students studying in second, third and final year were participating in the study. Participation in the survey was anonymous and voluntary.

Ethical consideration and consent

Out of two medical colleges in Madurai, one was selected by random selection. The study protocol was approved by the Institutional Review Board of the selected medical college of Madurai. The students were informed about the purpose and nature of the study and written informed consent was obtained from the students. Only students who voluntarily participated in the study are included. Reluctant participants were excluded from the study.

Collection of Data

Data collection was done for three consecutive days in the month of September 2018. The questionnaire was distributed to the voluntary participants after their morning theory class, before leaving to the clinical postings and then collected within 15 minutes. The questionnaire was filled in without supervision.

Statistical Analysis

The answers to each question were numerically coded, and the data were entered in the IBM statistical package for social sciences (SPSS) software 22.0 version. The results were analyzed by descriptive statistics including frequencies, percentages, and Mann-Whitney U test. All tests were set at a 0.05 significance level.

Results

313 students of age ranging between 19-24 years, 194 female students and 119 male students from one of the Medical Colleges in Madurai, Tamil Nadu participated in this survey. Out of 313 students, 88 belonged to final year, 108 belonged to third year and 117 belonged to second year. Majority of the students (70.9%) agreed that oral health and general health are interlinked, 20.8% students thought that oral health leads to general health, 3.5% thought general health leads to oral health and 4.8% students don't know. It was not surprising to know that majority of the students (98.7%) use tooth paste and tooth brush to clean their tooth and only 1.3% use tooth powder and tooth brush. More than half of the students (66.5%) reported that they brushed once daily, only 33.2% brushed twice daily and very few (0.3%) brushed more than twice a day. About 54% students use medium brush, 37.7% use soft brush, 6.1% use ultra-soft brush and 2.2% use hard brush. 40.3% students reported that they use fluoridated toothpaste, 22% reported use of non-fluoridated tooth paste while many students (37.7%) did not know whether their tooth paste contains fluoride. It was pleasant to know more than half of the students (51.1%) had knowledge about the significance of fluoride in their toothpaste that it prevents dental caries, 17.7% thought that it prevents periodontal disease which is true based on few studies, 4.5% thought it prevents bleeding gums, 3.5% thought it prevents halitosis and 23.2% did not know about the significance of fluoride.[25] About time spent on brushing, 67.5% students brushed for about 1-3 minutes, 28.6% brushed for about 3-5 minutes and very few (3.9%) brushed more than 5 minutes. Concerning the frequency of changing the brush, 74.2% reported that they change it every 3 months, 23.6% change every 6 months and only 2.2% change it after more than six months. The question "Any other oral hygiene aids you use along with brushing:" had multiple answers, the options given were: mouthwash, dental floss, toothpick, tongue cleaner, interdental brush and none. 43.5% reported the use of one oral hygiene aid along with brushing most commonly mouthwash, 14.1% reported the use of two additional oral hygiene aids, 3.5% reported the use of three additional oral hygiene aids, tooth pick and tongue cleaner were second more common answer after mouthwash, 38.9% reported that they use no oral hygiene aids along with brushing. It was very surprising to know that no one reported the use of dental floss and interdental brush. Majority (80.5%) felt that cleaning the tongue regularly was necessary, 10.9% felt it is not necessary and 8.6% did not know.

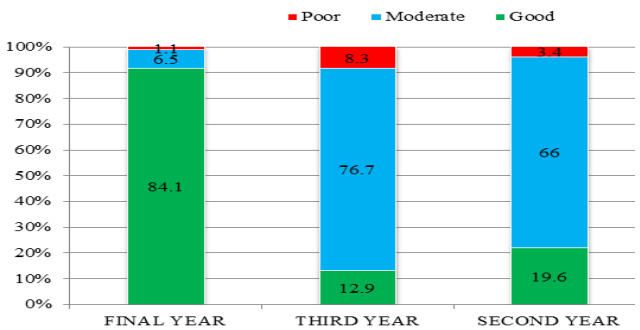

Fig. 1: comparison- knowledge about oral premalignant lesions

The question: "Which of the following is/are potentially malignant condition/lesion?" had multiple correct answers, the options were: oral sub-mucous fibrosis, leukoedema, leukoplakia, smoker's palate, erythroplakia and candidiasis, out of which oral sub-mucous fibrosis, leukoplakia, smoker's palate and erythroplakia were considered as correct answers. Only 5.1% answered all four correct options, 30.5% answered three correct options, majority 36.2% answered two correct options, 23.7% answered one correct option and 4.5% gave no correct answer (Fig. 1). Most commonly reported option was leukoplakia followed by erythroplakia, oral sub-mucous fibrosis and smoker's palate respectively. 90.1% students advice their patients about adverse effects of tobacco while 9.9% don't. When asked about screening their patients for oral cancer, more than half of the students (57.4%) don't screen for oral cancer and 42.6% screen for oral cancer.

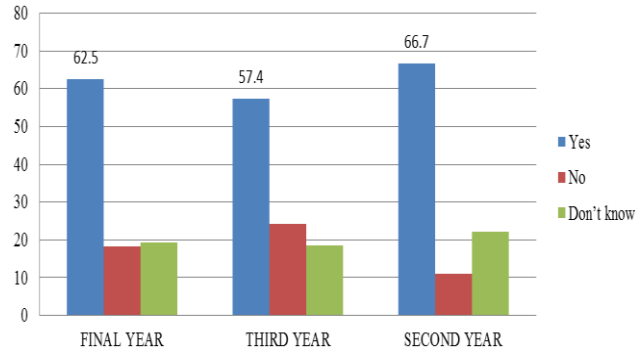

Fig. 2: Comparison- competence of medical students in differentiation of dental pain from other pain.

More than half of the students (62.3%) report that they have the competence to differentiate dental pain from other pain in head and neck region while 17.6% reported that they don't have the competence and 20.1% don't know (Fig. 2). 58.5% thought that an individual should visit dentist every 6months/1 year and 41.5% thought that an individual should visit dentist only when an oral problem arises. Majority (81.4%) students answered biscuits/cookies/chocolate have high risk to develop dental caries while 14.1% answered coffee/tea/milk and 4.5% answered cereals/rice/wheat had high risk to develop dental caries. Only 21.5% students knew calculus/plaque causes bleeding gums, 37.4% answered dental caries, 5.8% answered halitosis and 35.3% did not know. 77.6% students gave oral hygiene instructions to their patients and 93.2% students referred their patient with oral problem to dentist. Approximately half of the students (54.3%) have never undergone any dental procedure and 25.3% students have never visited a dentist. 66.1% of the students advice their patients to visit dentist on a regular basis.

Out of 22 questions, 7 questions were knowledge related questions; 4 questions were attitude related question and 11 questions were practice related questions. Based on the responses, among the second year students, 62.5% answered knowledge related questions correctly, 56.5% answered attitude related questions correctly and 63.1% answered practice related questions correctly. Among the third year students, 58.8% were knowledgeable about oral health, 66.6% answered attitude related questions correctly and 63.24% answered practice related questions correctly. Among the final year students, 71.29% answered knowledge related questions correctly, 60.8% answered attitude related questions correctly and 62.61% answered practice related questions correctly.

Discussion

The study results are in accordance with the study conducted by Rodakowska et al among Scandinavian and Polish medical students.[3] The results of the present study are not in agreement with the study conducted by Sujatha et al and Usman et al where medical and paramedical students showed poor oral health knowledge.[1,9] Third year undergraduate medical students have better knowledge about oral health when compared to final and second year students, though final year students have more clinical exposure and more experience than third year students. This is not in accordance to the study conducted by Sujatha et al where final year undergraduate medical students were found to have better oral health awareness than second and third year students.[1] Only 0.9% third year students gave all four correct answers for question related to premalignant lesion, while 10% second year students gave all four correct answers. This may be due to the exposure of dental subjects in the second academic year.

In our study, 98.7% of study participants use tooth brush and tooth paste to clean their teeth, whereas 100% of study participants are using tooth brush and paste in study conducted by Kamble et al.[14] Students who reported to brush twice daily were only 33.2% in our study which was much lesser than that reported by Gopikrishna et al (95.7%) and Harish Kumar et al (77.3%).[11,12] On the other hand in some parts of the world the frequency of twice daily brushing is quite low even among dental professionals, for instance in Nigeria 47.5% and Iran 57%.[3] Medical students who participated in our study change their tooth brush once in every 3 months were 73.8%, which was in approximation to the results of the study conducted by Elavarasu et al (77%).[15] 66.5% of our participants brush their teeth once daily, which was lesser than the results of study conducted by Ankur (74.5%).[6] Around 74.7% of students who participated in survey had visited dentist atleast once in their lifetime, this is comparatively high than the study conducted by Gopikrishna et al which is found to be 38.7%.[11]

Usage of other oral hygiene aids was very minimal among the madurai medical students, almost no one used interdental brush and floss, which is in contrary to the study conducted by Rodakowska et al where Polish medical students used various additional dental devices.[3] While use of dental floss among Indian dentists was considerably low (9.2%) according to Gopinath V.[4]

Table 1: Academic year wise comparison among medical students based on responses

S. No	Questions followed by options	Final year	Third year	Second year	Total
1	Relationship of Oral health with general health:	%	%	%	%
	a. Oral health leads to general health	20.5	16.7	24.7	20.8
	b. General health leads to oral health	5.6	2.8	2.6	3.5
	c. **Oral health and general health are interlinked**	70.5	77.7	65	70.9
	d. Don't know	3.4	2.8	7.7	4.8
2	Fluoridated tooth paste is beneficial in preventing:				
	a. Periodontal disease	21.6	22.4	10.3	17.7
	b. Halitosis	3.4	3.7	3.8	3.5
	c**. Dental caries**	56.8	54.2	43.6	51.1
	d. Bleeding gums	10.2	0.1	3.8	4.5
	e. Don't know	8	19.6	38.5	23.2
3	**Do you think cleaning tongue regularly is a necessity?**				
	a. **Yes**	86.4	75	76.9	80.5
	b. No	8	12.1	11.1	10.9
	c. Don't know	5.6	12.9	12	8.6
4	**Which of the following is/are potentially malignant condition/lesion?**				
	a. **Four correct answers**	6.8	0.9	8.5	5.1
	b. **Three correct answers**	77.3	12.1	11.1	30.5
	c. **Two correct answers**	10.3	31.5	59.6	36.2
	d**. One correct answer**	4.5	47.2	16.2	23.7
	e. No correct answer	1.1	8.3	4.6	4.5
5	**Which of the following has high risk to develop dental caries?**				
	a. Coffee/tea/milk	6.8	15	19	14.1
	b. **Biscuits/cookies/chocolate**	90.9	84.1	73.3	81.4
	c. Cereals/rice/wheat	2.3	0.9	7.7	4.5
6	**Common reasons for bleeding gums:**				
	a. Dental caries	31.8	30.6	48.3	37.4
	b. **Calculus/ plaque**	33	20.4	13.8	21.5
	c. Halitosis	2.2	8.3	6	5.8
	d. Don't know	33	40.7	31.9	35.3
7	**Do you think you have competence to differentiate dental from other pain in head & neck region?**				
	a. **Yes**	62.5	57.4	66.7	62.3
	b. No	18.2	24.1	11.1	17.6
	c. Don't know	19.3	18.5	22.2	20.1
8	**When should an individual visit a dentist?**				
	a. **Every 6months/1year**	60.2	63.9	52.1	58.5
	b. When there is oral problem	39.8	36.1	47.9	41.5
9	**Have you undergone any dental procedure?**				
	a**. Yes**	47.7	47.2	42.7	45.7
	b. No	52.3	52.8	57.3	54.3
10	**Have you visited dentist?**				
	a**. Yes**	73.9	82.4	68.1	74.7
	b. No	26.1	17.6	31.9	25.3
11	**Do you advice your patients to visit the dentist on a regular basis?**				
	a**. Yes**	61.4	73.1	63.2	66.1
	b. No	38.6	26.9	36.8	33.9
12	**How do you clean your teeth?**				
	a. **Tooth paste and tooth brush**	100	98.1	98.3	98.7
	b. Tooth powder and toothbrush	0	1.9	1.7	1.3
13	**How often do you brush your teeth?**				
	a. Once a day	71.6	64.8	64.1	66.5
	b. **Twice daily**	28.4	35.2	35	33.2
	c. More than two times			0.9	0.3
14	What kind of brush do you use?				
	a**. Medium**	52.3	54.6	54.7	54
	b. Hard	1.1	1.9	3.4	2.2
	c. Soft	45.5	36.1	33.3	37.7
	d. Ultra soft	1.1	7.4	8.6	6.1

15	**Do you use fluoridated toothpaste?**				
	a**. Yes**	46.6	41.7	35.1	40.3
	b. No	18.2	25	22.2	22
	c. Don't know	35.2	33.3	42.7	37.7
16	**Time you spend on brushing:**				
	a. 1-3 minutes	71.6	76.8	56.4	67.5
	b. **3-5 minutes**	25	20.4	37.6	28.6
	c. More than 5 minutes	3.4	2.8	6	3.9
17	**Frequency of changing your brush:**				
	a. **Once in 3 months**	75	73.2	74.3	74.2
	b. Once in 6 months	21.6	25.9	23.1	23.6
	c. More than 6 months	3.4	0.9	2.6	2.2
18	**Any other oral hygiene aids you use with brushing: (you can tick multiple answers if required)**				
	a. One aid	40.9	45.3	43.5	43.5
	b. Two aid	13.6	13	15.4	14.1
	c. More than two aid	1.2	3.7	5.2	3.5
	d. None	44.3	38	35.9	38.9
19	**Do you advice your patients about adverse effects of tobacco?**				
	a**. Yes**	95.5	92.5	83.8	90.1
	b. No	4.5	7.5	16.2	9.9
20	**Do you regularly screen OP patients for oral cancer?**				
	a**. Yes**	48.9	47.2	34.5	42.6
	b. No	51.1	52.8	65.5	57.4
21	**Do you give oral hygiene instructions to your patients?**				
	a. **Yes**	69.3	74.1	87.2	77.6
	b. No	30.7	25.9	12.8	22.4
22	**Do you refer a patient with a dental related complaint to a dentist?**				
	a**. Yes**	92	96.3	90.6	93.2
	b. No	8	3.7	9.4	6.8

Note: Bolded options are considered as correct responses

Table2: Academic Year wise comparison in terms of knowledge, attitude and practice regarding oral health among medical students by Mann Whitney U test.

S. No	Question	Second year		Third year		Final year	
		Mean	P value	Mean	P value	Mean	P value
	Knowledge						
1	Relationship of oral health with general health	110.85	0.516	100.9	0.375	102.35	0.87
2	Fluoridated toothpaste is beneficial in preventing	127.15	0	99.48	0.767	84.81	0
3	Do you think cleaning tongue regularly is a necessity	114.24	0.681	101.1	0.286	98.26	0.147
4	Which of the following is /are potentially malignant condition/lesion	131.79	0	65.54	0	136.41	0
5	Which of the following has high risk to develop dental caries	114.35	0.653	94.52	0.06	106.39	0.304
6	Common reasons for bleeding gums	103.81	0.019	102.2	0.285	109.19	0.169
7	Do you think you have competence to differentiate dental pain from other pain in head and neck region	109.78	0.371	100.1	0.602	104.33	0.742
Mean		115.9	0.32	94.85	0.339	105.96	0.318
	Attitude						
8	When should an individual visit a dentist?	119.35	0.075	96.89	0.6	98.27	0.25
9	Have you undergone any dental procedure	115.42	0.5	98.72	0.944	100.08	0.478
10	Have you visited dentist?	120.58	0.015	94.74	0.148	99.79	0.394
11	Do you advice your patients to visit the dentist on a regular basis?	118.35	0.113	93.31	0.08	104.1	0.783
Mean		118.42	0.175	95.91	0.443	100.56	0.476
	Practice						
12	How do you clean your teeth	112.92	0.936	99.31	0.201	102	0.219
13	How often do you brush your teeth	113.55	0.874	101.4	0.314	98.48	0.244
14	What kind of brush do you use?	112.91	0.981	98.6	0.975	103.02	0.996
15	Do you use fluoridated tooth paste	118.13	0.189	99.6	0.746	96.28	0.131
`16	Time you spend on brushing	124.92	0.001	96.19	0.404	93.17	0.016

17	Frequency of changing your brush	112.59	0.898	99.01	0.854	102.76	0.947
18	Any other oral hygiene aids you use with brushing	115.28	0.555	101.5	0.372	96.61	0.149
19	Do you advice your patients about adverse effects of tobacco	115.99	0.203	99.07	0.407	98.11	0.061
20	Do you regularly screen op patients for oral cancer	120.21	0.042	99.02	0.869	94.41	0.035
21	Do you give oral hygiene instructions to your patients	106.22	0.017	96.53	0.49	112.99	0.003
22	Do you refer a patient with a dental related complaint to a dentist	115.62	0.134	96.63	0.2	102.65	0.879
Mean		115.54	0.389	98.76	0.563	99.84	0.346

Conclusion

The oral health literacy of the students can be promoted by inclusion of oral health courses in their education. Eduactional curiculum requires more extensive oral health programs. This can promote the oral health of the public as well, as these students are the future health care providers of the community.[4]

Drawbacks

The present study was subjective (self-reported by students), therefore, future clinical studies are required to confirm this finding and to validate the accuracy of self-reports by students.

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Conflict of Interest: None.

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