A Pilot Study on Attitudes, Knowledge and Behaviour Towards Dental Diseases Among Grade Medical Officers in the Kandy District, Sri Lanka

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Abstract: *Introduction*: Oral health is an integral part of the overall health. Schism between the mouth and body might be due to the fact that dentistry is not considered typically as part of the medical system and lack of interest by the physicians towards dental diseases.

Objectives: Therefore the objectives of this pilot study were to assess the attitudes, knowledge and behavior towards dental diseases among grade medical officers in the Kandy district, Sri Lanka.

Methods: This study was a self administered, questionnaire survey which was done among 42 grade medical officers in the Kandy district. The questionnaire assessed the knowledge and the awareness of common dental problems such as dental caries, periodontitis and cancer among the grade medical officers and their behavior towards patients having dental conditions.

Results: This study showed that 76.2% and 78.6% of all the participants knew that oral microorganism and plaque and calculus are responsible for dental caries and periodontitis, respectively. There appeared to be a low awareness of the systemic diseases which are linked to periodontitis. Only 28.6% of all participants knew that periodontitis is associated with preterm birth. While 66.6% of the medical officers would examine the oral cavity, 33.3% of the participants said that they did not perform a routine oral examination.

Conclusion: This pilot study indicates the importance of increasing the knowledge of medical practitioners regarding dental diseases, so that we can utilize their support in identifying, referring and treating those conditions earlier and for the promotion of prevention of dental diseases and oral cancer.

Keywords: Dental disease, caries, periodontitis, dental knowledge, medical practitioners.

1. INTRODUCTION

Common dental diseases including caries and periodontal disease are preventable diseases and rank high in prevalence among chronic health conditions. Dental disease is considered a 'silent epidemic' which maintains a significant burden in all the countries around the world especially among the elderly, children and lower income populations. In Sri Lanka, the prevalence of dental caries among 5 year olds and 12 year olds are 65.31% and 39.17%, respectively [1]. The unmet oral health needs of children, especially those who are at higher risk question the effectiveness and capacity of the dental and auxiliary health care professionals in the treatment of children [2]. However, despite the advances in oral health care and oral disease prevention, the prevalence of caries has not decreased in the past decade [2, 3].

While dental disease itself is a discrete health concern, similar to many other chronic diseases, dental disease has broader impacts. Poor oral health and periodontal disease have been linked to systemic conditions including diabetes [4], pregnancy complications [5], cardiovascular disease [6], respiratory disease [7], osteoporosis [8], rheumatoid arthritis [9] and cancer [10]. Moreover, loss of natural teeth without prosthodontic rehabilitation in elderly patients shows poor nutritional status due to inadequate consumption of fresh fruits, vegetables, meats, etc [11-12]. Poor oral health in children has been shown to result in decreased academic performance and adversely affect their behavioral and social development [13].

Oral cancer is also considered one of the highly prevalent diseases with a high mortality rate in Sri Lanka. Oral cancer is the most prevalent cancer in males [14]. Although a fairly large number of dentists are knowledgeable, a certain percentage shows lack of knowledge in cancer screening [15]. Though there is a trend in declining of incidence of oral cancer, targeted goals, particularly in controlling the oral cancers have not been achieved yet [15]. Hence the opportunistic screening plays an important role as early lesions may

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not be present as a lump or ulcer, but rather be a painless pre-cancerous lesion. Given the fact that oral cavity is readily accessible to examination, more importantly, oral cancer has become more amenable to early detection. If the initial precancerous lesions can be detected at an earlier time point, with proper management and treatment, some percentage of lesions might be cured completely indicating that early detection must constitute an important step in reducing the high morbidity and mortality as a result of oral cancer.

Given the importance of oral health as an integral part of overall health and a fundamental factor of quality of life, the WHO Global Oral Health Program (ORH) [16] has beseeched the world community to prioritize the integration of oral health with other community general health programs. Promotion of prevention of oral diseases plays a significant role in a developing country like Sri Lanka, especially, due to the fact that the government has to spend a lot of money to treat these preventable diseases and the lack of adequate dental clinics in most of the rural areas. Moreover, the high-risk patients are least likely to visit a dentist on a regular basis than a medical practitioner and there is a lack of awareness of the importance of serial consultation of dentists. Therefore, medical institutions/hospitals such as institutions for admissions for major or minor illnesses, follow-up clinics, well baby clinics, antenatal clinics and private consultations by general practitioners can be considered the best possible place for early detection and screening for dental conditions in non-dental settings.

There is a line of studies which has focused on looking at alternative approaches to increase access to dental care. One such avenue is to recruit primary care physicians to play a more active role with regard to oral health issues [17-22]. The fact that they are more likely to see children at a young age [17, 23] and visits occurring in a more regular fashion [24-25] permit them to play a vital role in the oral health of children. There is a line of evidence to show the lack of training in treating dental diseases among medical practitioners as a barrier in providing needed oral health care services [26]. Oral health literacy is associated with oral health status, frequency of dental visits, and knowledge and understanding of preventive measures. A study showed that despite having dental clinics in the neighborhood, many medical practitioners did not perceive the importance of regular dental check-ups and the knowledge of medical doctors with regard to periodontitis is lacking [27]. Furthermore, despite the strong evidence linking periodontitis with systemic diseases, most medical doctors are unaware of the potential benefits of maintaining good oral health [27]. There are training programs focused on preparing physicians to perform oral health screenings, preventive strategies, and aid in appropriate referrals to dentists. If successful, these programs may be able to reverse the century-and-a-half long schism between the mouth and body. Furthermore, medical schools have introduced and developed voluntary dental rotations and mandated curricular classes focused on oral health education for medical practitioners. A Few studies have looked at the effectiveness and outcome results of medical students' education and training in oral health as well.

In the light of the aforementioned observations this pilot study had been carried out in Sri Lanka for the first time to assess the basic knowledge, attitudes and behaviors towards dental disease and oral cancer in grade medical officers in the Kandy district.

2. MATERIAL AND METHODS

The study population consisted of 42 grade medical officers (which included grade I and grade II medical officers except interns and consultants) in the Kandy district, Sri Lanka who were registered at the office of Provincial Director of Health Services, Central Province and who were willing to participate in the study. Ethical clearance was obtained of the Ethics and Review Committee of the Faculty of Dental Sciences, University of Peradeniya, Sri Lanka.

A questionnaire (supplementary data) consisting of 35 questions divided into five sections namely basic information, oral health behaviors, knowledge of dental diseases, attitudes regarding dental diseases, practice and referrals was used to assess the knowledge, attitude and awareness on systemic conditions related to oral health. The questionnaire was mailed to the medical practitioners who gave prior consent. It was mentioned to the medical practitioners that their responses would remain confidential. Data obtained was analyzed using the SPSS (Statistical Package for Social Sciences) version 14. Results were expressed in terms of percentages and frequencies to be able to compare them with the published literature.

3. RESULTS

Table **1** shows the study population based on their gender, age and their duration of service. The demographic data showed that out of the 42 participants 32

Table 1: Basic Characteristics of Study Population

Characteristics	No. of Subjects n=42	Percentage (%)
Sex		
Male	32	76.2%
Female	10	23.8%
Age		
27-40 yrs	26	61.9%
41-50 yrs	6	14.3%
>51 yrs	10	23.8%
Service		
1-10yrs	23	54.8%
11-20yrs	10	23.8%
>20 yrs	9	21.4%
Received lecture hours		
0 hrs	17	40.5%
1-10 hrs	20	47.6%
>10 hrs	5	11.9%

[76.2%] were male grade medical officers and 10 [23.8%] were female medical officers. In this study population, 40.5% (17) had no exposure to oral health lectures, where-as 47.6% (20) and 11.9% (5) had been exposed to less than 1-10 hrs and more than 10 hrs of oral health lectures, respectively, suggesting that more than half of the participants had some exposure to oral health related lectures. Most of the study participants identified dentists and the internet as the main sources where they gleaned information regarding dental diseases (Supplementary Figure **1**).

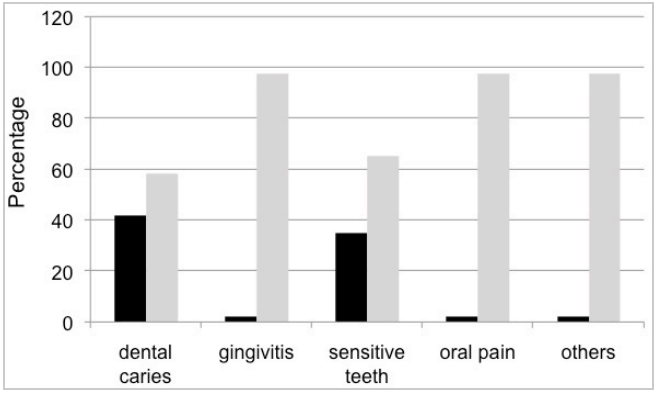

Figure 1: Prevalence of dental diseases among medical practitioners. Black and gray bars denote yes and no, respectively.

3.1. Oral Health Behaviors of Medical Practitioners

With regard to their personal experience in dental treatments, 83.7% doctors have received dental treatment during their life time and only 16.3% have not got any dental treatment at the time the study was conducted. Moreover 41.9% and 34.9% had dental caries and sensitivity, respectively (Figure **1**). All the study participants used a toothbrush to clean their teeth while some used mouth washes (Figure **2**). Regarding the frequency of brushing teeth the majority (69.8%) revealed that they brushed their teeth twice daily while 18.6% and 9.3% brushed after every meal and once daily, respectively. Only 2.3% had brushed their teeth when convenient (Supplementary Figure **2**). When inquired about the frequency of visits to dentists for their personal treatments, 14.29% revealed that they visited the dentists every 6 months whereas 38% said they visited them rarely (Figure **3**).

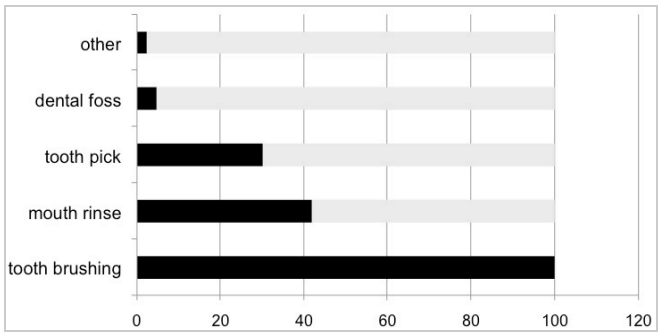

Figure 2: Oral hygiene practices among medical practitioners. Black and gray bars denote yes and no, respectively.

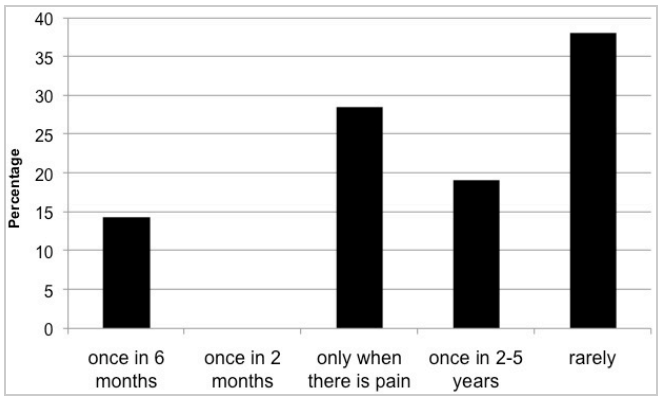

Figure 3: Frequency of visiting dentists by medical practitioners.

3.2. Knowledge Among Medical Practitioners Towards Dental Diseases

Table **2** shows the knowledge of common dental diseases among the medical officers. In this study 76.2% have correctly identified oral microorganisms as a causative factor for dental caries and also 78.6% and 66.7% have said that frequent intake of sugary food and sugar-containing food are causative factors for

Table 2: Dental Knowledge among Medical Officers

No.		Frequency (tot=42)		Percentage (%)	
1.	Factors causing dental decay	Yes	No	Yes	No
	Oral microorganisms	32	10	76.2	23.8
	Sugar contained food	28	14	66.7	33.3
	Freq of intake of sugar foods	33	9	78.6	21.4
	Smoking	20	22	47.6	52.4
2.	Factors responsible for periodontal disease				
	Dental caries	31	11	73.8	26.2
	Plaque and calculus	33	9	78.6	21.4
	Teeth with fractures restoration	13	29	31	69
	Stomatits	15	27	35.7	64.3
3.	Periodontitis linked to systemic disease				
	Endocarditis	32	10	76.2	23.8
	Preterm births	12	30	28.6	71.4
	Diabetes	23	19	54.8	45.2
	Osteoporosis	03	39	7.1	92.9
	Rheumatoid arthritis	07	35	16.7	83.3
	Others	01	41	2.4	97.6
4.	Common premalignant lesions				
	Leukoplakia	36	6	85.8	14.2
	Erythroplakia	9	33	21.4	78.6
	Oral submucous fibrosis	9	33	21.4	78.6
	Lichen planus	6	36	14.2	85.8
	Apthae	2	40	4.8	95.2
5.	Confidence in detecting in oral pre malignant lesions				
	Very confident	2		4.7	
	Confident	24		57.1	
	Not confident	16		38.1	

dental decay, respectively. 47.6% have incorrectly identified smoking as a causative factor for dental caries (Table **2**). With regard to periodontitis, 78.6% [33] have said that plaque and calculus are the main factors responsible for periodontal disease whereas 73.8% [31] have said that dental caries is responsible for periodontal disease. However, 31% have identified teeth with fracture restoration as responsible for periodontal disease. Only 35.7% [15] have said that stomatitis can give rise to periodontal disease.

Regarding systemic diseases which are linked to periodontal disease, 76.2% have said that endocarditis is linked to periodontal disease. Although preterm birth is associated with periodontitis, only 28.6% have answered it correctly. However 55.8% and 16.7% knew that there is an association between periodontal disease with diabetes and, rheumatoid arthritis, respectively. Only 7.1% knew the association between periodontitis and osteoporosis (Table **2**).

In the current study the majority of participants (85.8%) the correctly identified leukoplakia as a premalignant lesion whereas, only 21.4% knew that erythroplakia and oral submucous fibrosis are also premalignant lesions. 95.2% accurately, mentioned that aphthae is not a premalignant lesion (Table **2**). Out of the 42 participants, 4.7% were very confident and 57.1% were confident in detecting oral premalignant lesions whereas 38.1% mentioned that they were not confident in detecting the lesions (Table **2**).

3.3. Attitudes of Grade Medical Officers Towards Oral Diseases

Among the study participants, 76.2% have answered that they would suggest their patients to visit the dentist at least once in six months whereas, 88.1% had suggested that they would refer the patient to a dentist when they encounter a patient with a dental abscess (Table **3**). On the other hand, 38.1% suggested that they would treat the condition with antibiotics and analgesics. Almost all (97.6%) agreed that periodic dental visits improve the quality of life and therefore, that they would advise on periodic dental visits for children and dental screening for pregnant women as well. Most of the medical officers encounter a considerable number of patients with oral health issues. In the current study, 64.2% had identified busy workload and their busy clinics as the limiting factors which preclude them from examining for oral diseases (Supplementary Figure **3**). Despite the busy workload, most perceived that examination for dental disease is part of their work and they believed that oral health is important. Moreover, 66.6% medical officers mentioned that they would perform oral examinations (Table **3**).

Table 3: Attitudes Towards Dental Health Among Medical Officers

No.	Attitudes	Frequency	Percentage (%)
1.	Advice to visit the dentist		
	a. at least once in six month	32	6.2
	b. once in two months	2	4.8
	c. only when there is pain	3	7.1
	d. once in a years	2	4.8
2.	Patient with dental abscess		
	Refer to a dentist	37	88.1
	Treat with antibiotics and analgesics	16	38.1
	Ignore as it is self limiting	0	0
3.	Dental visits improve quality of life		
	Yes	41	97.6
	No	01	2.4
4	Do pregnant women need dental screening		
	Yes	41	97.6
	No	01	2.4
5	Advice on periodic dental visits for Children		
	Yes	41	97.6
	No	01	2.4
6.	Do you examine the patients for oral diseases		
	Yes	14	66.6
	No	28	33.4

4. DISCUSSION

Oral health is an integral part of overall health and a fundamental factor of quality of life. Poor oral health and periodontal disease have been linked to systemic diseases including life-threatening conditions and adverse pregnancy outcomes. In Sri Lanka medical practitioners are the key providers of primary health care and most of the time they encounter patients having oral health related problems than dentists.

The present study showed that the attitudes towards the professional dental care among the medical practitioners are not adequate. Only 14.29% visited the dentists once in every six months whereas 38% revealed that they would rarely go to a dentist (Figure **2**). This was reflected well in the oral health conditions of the study participants (Figure **1**). This observation is in corroboration with a study done in Riyadh which showed that 54.5% doctors visited the dentist occasionally [28]. Despite the use of a toothbrush to improve dental hygiene, the use of other dental aids is low. Consistent with this a recent study showed that medical professionals use of inder-dental aids such as dental floss is very minimal [29].

Regarding factors causing dental decay, most of the participants correctly identified frequent intake of sugary food (78.6%) and oral microorganisms (76.2%) as the main etiological factors contributing to tooth decay. In a similar study conducted in Kanpur city, India, it was found that only 47.6% identified frequent consumption of sugar as a causative factor for caries and 14.1% had identified smoking as a causative factor for caries [30]. In the present study 47.5% of medical officers incorrectly answered that smoking as a causative factor for dental caries (Table **2**). Similarly, a study done by Srinidhi *et al*. [31] in Chennai showed that 90.3% of total participants identified frequent intake of sugary food as a major factor causing tooth decay and only 4% answered smoking can predispose to tooth decay.

This study showed that most of the medical practitioners (78.6%) were aware that plaque and calculus are responsible for the periodontal diseases. In the aforementioned study [31], 73.3% of the total

number of participants identified plaque and calculus as responsible for periodontal disease. Corroborating the above observation, the study done by Ashish Bhalla and Anuruddha [30] found that 55.4% of medical practitioners identified plaque and calculus as the causative factor for periodontal disease. In their study 26.1% inaccurately said that dental caries is responsible for periodontal disease whereas it was 73.8% in this study (Table **2**). A pilot study done using family physicians in Nigeria showed that only 54% and 45.7% physicians were able to give a correct description of dental caries and periodontal disease, respectively, showing the importance of a training curriculum for practitioners in their oral health education programs [32].

Recent evidence indicates an interrelationship between periodontal disease and other systemic conditions like hypertension, stroke, atherosclerosis, poor pregnancy outcome, etc. Among the medical officers 76.2% were aware that periodontitis is a risk factor for infective endocarditis, which is a life threatening condition. This was similar to the study conducted by Srinidhi *et al*. [31] where 83% of total participants were aware that periodontitis is linked to endocarditis. Another similar study showed that 51.2% knew about the association between periodontitis, and cardiovascular diseases [33]. But the knowledge on other medical conditions and periodontal disease is not illuminating among the study participants in the present study. Though preterm births are associated with periodontitis only 28.6% answered it correctly. It was 26% in the aforementioned study which was done in Turkey [33]. Reasons for this unawareness could be due to the lack of oral health related lectures integrated to the MBBS curriculum and lack of clinical exposure to dental diseases including caries and periodontal diseases. Since the association of poor oral health of pregnant females with adverse pregnancy outcomes have been well established, it has become essential for medical practitioners to be aware of risk factors for timely intervention and prevention. Several studies on medical doctors knowledge on the association between oral health and pregnancy outcomes showed that knowledge and awareness of physicians about gingival conditions and preterm birth are generally poor (54%) [33-34].

According to the present study, the majority of the participants (85.8%) were aware that leukoplakia is a premalignant lesion (Table **2**). On the other hand, most of them were not aware of other premalignant lesions and on top of that, 38.1% said that they are not confident enough to detect oral premalignant lesions. It has been shown that dentists and family doctors are equally consulted in the case of oral mucosal lesions in Netherlands [35]. Furthermore, half of the patients seen by the family doctors have been referred to medical specialists not dentist where they required management by dental surgeons/maxillofacial surgeons. Lack of knowledge by the lay persons about the medical practitioners having less knowledge on oral related conditions due to less exposure in their medical curriculums could be the reason for patients attending to family doctors regarding oral mucosal lesions [35]. In addition, the study conducted on oral cancer awareness of general medical and general dental practitioners found that general medical practitioners are less confident in detecting oral cancers from clinical appearance than their dental counter parts [36]. On the other hand in this study 4.7% were very confident and 57.1% were confident in detecting oral premalignant lesions (Table **2**). Patients with oral lesions often present to their general medical practitioners, and since incident of oral cancer is rising in Sri Lanka, the role of medical practitioners in prevention and detection of oral cancer is becoming ever more important.

In the present study 76.2% of medical officers have answered that they would suggest their patients to visit the dentist once in six months showing the positive attitudes of medical practitioners toward prevention of dental disease. In the study by Srinidhi *et al*. [31] reported that 76.3% of medical practitioners advice regular dental visits of once in six months for their patients. In the present study 88.1% have said that in the presentation of dental abscess they would refer the patient to a dentist and almost all (97.6%) agreed that dental visits improved quality of life and that all pregnant women and children should receive dental screenings. This further reflects the positive attitude among medical practitioners towards dental health. In a study by Morgan *et al*. [37] showed that the majority of doctors (84%) felt it was important to examine older patients' mouths, however only 19% did so. On the other hand 66.6% medical officers in the present study mentioned that they would perform oral examinations despite their busy clinics.

5. CONCLUSIONS

Though it is not conclusive, in fine, the current pilot study clearly indicates that the awareness regarding the impact of oral diseases on general health among medical officers was not adequate though they do examine the oral cavity as part of the general physical

examination. These findings highlight the need to improve the education of medical professionals about oral health and its relevance. Incorporation of basic knowledge about dentistry in medical curricula, inter-disciplinary symposia/lectures and continuing medical education programs on dental diseases, are few of the strategies which can be incorporated to enhance the dental knowledge among medical practitioners.

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CONFLICTS OF INTERESTS

Authors declare no conflicts of interests

SUPPLEMENTAL MATERIALS

The supplemental materials can be downloaded from the journal website along with the article.

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