Medical and Dental Practitioners' Awareness about Oral-Systemic Disease Connections

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OBJECTIVE: Health professionals are expected to support oral health and encourage the patients to follow appropriate dental care. Awareness and practices related to oral-systemic disease connection was assessed among medical and dental practitioners.

METHODOLOGY: A cross-sectional study on medical and dental practitioners of city Faisalabad, Pakistan was conducted. Two hundred and forty (n=240) medical and dental practitioners were approached for study, all practitioners rendering a consent were recruited in study and their response was collected on a close-ended questionnaire.

RESULTS: Eighty three (n=83%) of respondents knew that a relationship exists between oral and systemic health, but application of this knowledge is limited. 59% medical practitioners were in practice to look for dental conditions in medical patients in comparison to 79% dental practitioners who look into medical conditions while examining dental patients. Medical and dental professionals with post-graduate qualification had better awareness and were applying their knowledge in daily practice. Females were better in status of awareness and practice in this study sample.

CONCLUSION: Level of awareness and practice about relationship of oral-systemic disease connections was moderate among the study sample, dentists showed better awareness and practice. A need is felt to improve collaboration between dental and medical profession in order to enhance patient care.

KEY WORDS: Oral-Systemic diseases, awareness, medical and dental practitioners.

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INTRODUCTION

In recent years, researchers are keenly interested to understand the connection between oral and systemic diseases and its influence on patient care. World Health Organization (WHO) has reported about 200 oral manifestations of systemic diseases.¹ Studies have documented relationship of oral diseases with non-communicable diseases such as chronic respiratory diseases, diabetes, osteoporosis, cardiovascular diseases, and chronic renal failure.² A key role in this association is played by commonality of risk factors shown by changes in systemic inflammatory mediators and body metabolism.³ However

existing status of knowledge shows a scarcity of information and research, from developing countries, regarding the burden and association of oral and systemic diseases.⁴ Acute dental problems had greater impact on community in terms of work loss and restricted activity as compared to medical problems.⁵ Outcome of oral & dental problems is important for both medical as well as dental professionals. Medical professionals have limited knowledge about dental aspects of general health.⁶ Although physicians have sufficient knowledge regarding the role of dental diseases in aggravating medical conditions but they seldom use this knowledge in their clinical practice.⁷

Studies have shown that most of the medical or dental problems have better prognosis if diagnosed at an early stage.⁸ Dental practitioners should get training to diagnose systemic problems and refer to physicians for an in time treatment. Medical professionals need to be trained to diagnose and report the dental problems so that they can resolve them at an initial stage to rule out the chances of functional restriction in individual's routine examination.

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Health professionals' knowledge and awareness about oro-dental problems and their connection with systemic conditions and some life threatening dental conditions is insufficient.⁹

Health professionals may play a role in promoting oral hygiene habits by spreading oral health messages, exhibiting exemplary oral health related behaviours, encouraging the patients to follow appropriate dental care. Medical professionals may participate in oral-health related activities along with their own duties.¹⁰

In social settings of developing countries, dental and medical professionals practice independently and there is very little collaboration between them regarding patient treatment except in few cases. A demand exists for additional research to appreciate status and significance of oral-systemic disease connections and prepare guidelines for their control in unindustrialized countries.^{9,11}

Assessment of status of awareness and practice about oral-systemic disease connections among medical and dental professionals will help us to make an appropriate plan for a multi-professional approach towards an improved level of patient-care.

OBJECTIVE

Objective of this study was to assess status of awareness and practices about oral-systemic disease connections among medical and dental professionals.

METHODOLOGY

Study design and Setting

This cross-sectional study based on a standardized questionnaire was carried out among medical and dental professionals in May-June 2015. Ninety (n=90) dental professionals and 150 medical professionals were randomly approached at their clinics. Two trained dental personnel explained the study objectives to potential dental / medical practitioners and who rendered their consent were enrolled in study. Institutional review board of The University of Faisalabad granted ethical approval vide letter #TUF/BASR-2014/277 dated 12.02.2014

Assessment tool for evaluation of awareness and Practice

A structured closed-ended questionnaire having 3 sections was developed. Section 1 for dental professionals that comprised of questions about their awareness with respect to systemic conditions such as skin conditions, metabolic disorders, CVD and medications; section 2 for medical professionals included questions related to their knowledge about oral conditions such as dental caries, periodontal

diseases, oral trauma and tooth loss and section 3 for both dental and medical professionals regarding their awareness about oral-systemic disease connections such as periodontitis with diabetes, periodontitis with CVD and oral or systemic effect of medications. (Annex 1) Questionnaire was piloted and validated on 7 dentists and 8 physicians of Madina Teaching hospital and kappa test was noted as 87%.

Statistical Analysis:

Demographic, dental and medical variables were calculated in frequencies. Systemic and oral Conditions were labeled as 'a' and 'b'. Response of dental and medical practitioners was categorized into Poor (yes to $\leq 50\%$ conditions); Fair (yes to 51-75% conditions); and Good (yes to $>75\%$ conditions) level of awareness and practice. Data was entered and analyzed in SPSS 20.0. Regression analysis was accomplished to see influence of gender and post-graduation. Alpha was set at $p \leq 0.050$

RESULTS

Demographic Parameters:

Two hundred and forty (n=240) medical and dental practitioners were approached for the study. One hundred and twenty seven practitioners who consented to be part of the study were enrolled (Response rate was 53%). 58(46%) medical practitioners and 69(54%) dental practitioners participated in the study. Respondents' age ranged from 21-75 years and mean age was 39.3 ± 13.9 year. 82 (65%) were males and 45(35%) females. 93(73%) were graduates (BDS/MBBS) and 24(27%) were having postgraduate qualification such as diploma / certification 14(11%), master degree 9(7%) and 11(9%) fellowships. (Table 1)

Table 1: General Characteristics of Medical / Dental Practitioners			
Variables	Medical Practitioners 58(46%)	Dental Practitioners 69(54%)	Total 127(100%)
Age			
Mean $\pm$ SD	44.6 $\pm$ 12.8	34.8 $\pm$ 13.3	39.3 $\pm$ 13.9
Range	21-68	21-75	21-75
Gender			
Males	45(78%)	37(54%)	82(65%)
Females	13(22%)	32(46%)	45(35%)
Postgraduation			
No	34(59%)	59(85%)	93(73%)
Certificate/Diploma	8(14%)	6(9%)	14(11%)
Masters	6(10%)	3(4%)	9(7%)
Fellowship	10(17%)	1(1%)	11(9%)

Dental Practitioners Looking for Medical Conditions:

Seventy-nine percent (79%) dentists (85% graduates and 15% postgraduates) participants reported that they look

for medical conditions while examining dental patients. Postgraduate dentists were having better level of awareness and practice about systemic diseases as compared to the graduate dentists. The highest level of awareness (98%) was about hypertension and diabetes mellitus while the lowest level (49%) was about Skin diseases and arthritis. Statistical significant level of difference of awareness between graduates and postgraduate was observed only for Arthritis. ($p \leq 0.05$) (Fig 1)

According to 'poor', 'fair', and 'good' categories of awareness and practice, dental practitioners were 8(11.5%), 25(36.2%), and 36(52%). Dental postgraduates had better awareness and practice (75% in good category) as compared to graduates (49% in good category, while no postgraduate was in poor category. In gender comparison, males had shown better awareness and practice in good category whereas females were better in fair category (Table 3).

Medical Practitioners Looking for Dental Conditions:

Fifty nine percent (59%) were looking for dental

conditions. Postgraduate doctors comparatively showed a better level of awareness against graduate doctors but statistical difference was not significant regarding any disease. The highest level of awareness (86%) was about mouth ulcers while the lowest level (38%) was about oral sinus / fistula. (Fig 2)

According to 'poor', 'fair', and 'good' categories of

Table 2: Medical/Dental Practitioners (%) who understand that oral and systemic conditions affect each other

Oral/Systemic Conditions and Medications	Systemic conditions/Drugs affect oral conditions		Oral conditions/Drugs affect systemic conditions	
	Medical Practitioners 58(100)	Dental Practitioners 69(100)	Medical Practitioners 58(100)	Dental Practitioners 69(100)
Chronic Gingivitis	41	41	48	55
Chronic periodontitis*	38	35	43	59
Periapical Infections*	43	36	38	56
Facial Space Infections*	36	27	36	61
Diabetes	60	71	31	27
Pregnancy	62	70	22	25
Menstruation*	38	62	34	24
Arthritis	51	60	29	21
Kidney Diseases*	46	68	38	20
Anticonvulsants	62	52	24	26
Antibiotics	59	62	30	24
Antihypertensives*	36	68	41	22
Anticoagulants	43	56	36	29
Anticholinergics	58	60	18	17
Antidepressants	43	58	41	23
Steroids	51	68	37	24
Antidiabetics	45	57	29	23

- 36-62% Medical practitioners whereas 27-71% Dental Practitioners understand that systemic conditions/drugs affect oral conditions.
- 18-48% medical practitioners whereas 17-55% Dental Practitioners understand that oral conditions /drugs affect systemic conditions.
- 17% (8-27%) medical practitioners and 14% (4-26%) Dental Practitioners had no idea about this oral-systemic relation
- *Significant ($p \leq 0.048$)

awareness and practice, distribution of medical practitioners were 20(34.4%), 15(25%), and 23(40%). Medical graduates had better awareness and practice (44% in good category) as compared to postgraduates (31% in good category), while less postgraduates were in poor category. In gender comparison, females had shown better awareness and practice in good category whereas males were better in fair category (Table 3).

Comparison between medical and dental practitioners for having awareness related to connection of Oral and Systemic Conditions:

Medical and dental practitioners showed a significant difference between their concepts related to chronic periodontitis, periapical infections, facial space infections,

menstruation, kidney disease and anti-hypertensive medicines. ($p \leq 0.048$) 46.7% (range 36-62%) medical and 62% (range 27-71%) dental practitioners understand that systemic conditions / drugs affect oral conditions. 35% (range 18-48%) medical practitioners whereas 23% (range 17-55%) dental practitioners understand that oral conditions / drugs affect systemic conditions. 17% (8-27%) medical practitioners and 14% (4-26%) dental practitioners had no idea about the oral-systemic disease relationship. (Table 2)

According to 'poor', 'fair', and 'good' categories of awareness and practice, medical practitioners were 28(22%), 40(31.4%), and 59(85%). Graduates had slightly better awareness and practice (47% in good category) as compared to postgraduates (44% in good category). In gender comparison, females had shown better awareness and practice in good category (49%), fair category (33%) and poor (18%) as compared to males (45%), (30%), and (24%) respectively (Table 3).

Binary logistic regression analysis for having / not having knowledge of oral and systemic conditions among males and females showed a significant ($p \leq 0.017$) difference for medication, oral lesions. Tooth loss, periapical infection, kidney disease and arthritis. Binary logistic regression analysis for having / not having knowledge of oral and systemic conditions among graduates and postgraduates showed a significant ($p \leq 0.017$) difference for only systemic condition of pregnancy and oral lesions.

Table 3: Number (%) of Respondents in Poor, Fair, and Good Categories										
	Poor Category (Looking for $\leq 50\%$ conditions)			Fair Category (Looking for 51-75% Conditions)			Good Category (Looking for $>75\%$ Conditions)			
	Grad	Post grad	Total	Grad	Post grad	Total	Grad	Post grad	Total	Grand Total
Section1: Dental practitioners	8(11.5)	0(0)	8 (11.5)	22(32)	3(4.3)	25 (36.2)	29(42)	7(10.1)	36 (52%)	69 (100)
Section2: Medical practitioners	13(22)	7(12)	20 (34.4)	6(10.3)	9(15.9)	15 (25.8)	15(25.8)	8(13.7)	23 (40)	58 (100)
Section3: Dental & Medical practitioners	21(9.4)	7(5.5)	28 (22)	28(22)	12(9.4)	40 (41.4)	44(34.6)	15(11.8)	59 (46.4)	127 (100)
	Males	Females	Total	Males	Females	Total	Males	Females	Total	Grand Total
Section1: Dental practitioners	4(5.7)	4(5.7)	8 (11.5)	13(18.8)	12(17.3)	25 (36.2)	20(29)	16(23)	36 (52)	69 (100)
Section2: Medical practitioners	16(27)	4(6.8)	20 (34)	12(20.6)	3(5.1)	15 (25.8)	17(29.3)	6(10.3)	23 (39.6)	58 (100)
Section3: Dental & Medical practitioners	20(15.7)	8(6.2)	28 (22)	25(19.6)	15(11.8)	40 (31.4)	37(29.1)	22(17.3)	59 (46.4)	127 (100)
Legend: Grad=Graduates, Postgrad=Postgraduates; *Significance ($p \leq 0.050$)										

DISCUSSION

Oral health is involved in systemic conditions through the centuries, however, an understanding of the connection between oral-systemic conditions is still emerging.¹² In contemporary years, the connection between oral and systemic diseases has become an important topic for research.¹³ Regardless of the growing information about oral-systemic connections, practicing physicians and dentists have little knowledge and poor attitude about this topic and their information needs are negligible.¹³ However limited studies have explored status of awareness among medical professionals regarding the relationship between oral diseases and systemic health.¹⁴ Our literature search have seen that many more studies regarding the oral health awareness of medical professionals is focused on periodontal disease.

Physicians may have a fundamental role in oral health if they are managed to have basic dental knowledge and examine oral cavity regularly for identification of many conditions at initial stages.^{15,16} Dentists also have some unmet medical information when they treat dental patients having systemic conditions in daily practice. Studies report that about half of the dentists observed clinical-guidelines or appropriate interventions to treat dental patient with medical co-morbidities.^{11,13} Oral health problems are frequently overshadowed by other health needs, which are perceived to be more obvious and urgent by the attending physician, the individual patients themselves, and their relatives.¹⁷

We have observed lack of published literature assessing the knowledge of medical and dental practitioners regarding the oral-systemic disease connections in Pakistan. This study has observed the current level of awareness about the link between oral and systemic conditions among health professionals and highlighted its importance with respect to patient care. The level of awareness shown by the respondents in this study for the yes/no knowledge questions is comparable with other studies.

Response rate (62%) of our study well corresponds with that of a local study¹⁸ that reported a response rate of 65%. A contemporary study¹⁹ also reported that most of the medical doctors had insufficient awareness regarding the association between periodontal disease and other systemic conditions and only 24% had sufficient level of awareness regarding the inter-relationship between dental and systemic diseases. In comparison to our findings, higher number of participants (90.8%) from another study¹⁹ agreed that there was a connection between periodontal disease and systemic health.

Ninety three percent (93%) of medical practitioners agreed that poor oral health may surge risk of cardiovascular diseases (CVD), which was however close to the percentage

observed in the American study (89%).³ These results are comparable to an Indian study conducted in Chennai where 83% of medical practitioners knew that periodontal disease is a risk factor for infective endocarditis.³ However, a study conducted in India showed only 14% of physicians who believed that periodontal disease may cause cardiac heart diseases.²⁰ In concordance with our study, most physicians had general knowledge about periodontal disease.²¹

In a study²² from India, stated that general practitioners & Gynecologists had good level of awareness regarding relationship between periodontal disease and preterm low birth weight babies. A Nigerian study revealed that it was only in the cases of DM, rheumatic heart disease, valvular heart disease, and HIV/AIDS that more than 50% of the doctors strongly agreed that there is a possible causal link between oral diseases and systemic condition of individual patient.²³ This is against the widely reported possible links between many of these conditions and the oral health. In this study, majority of the female respondents claimed ignorance of any possible relationship between oral disease and myocardial infarction.

The Nigerian study²³ has concluded that doctors' perception of the influence of dental disease/condition on the general state of patients' health was deficient and, therefore, requires improvement through health education and awareness. Patel and Driscoll²⁴ has shown limited dental knowledge by the physicians. In another study from India,²⁵ dental knowledge of physicians was however considered to be good and the authors concluded that this could have been due to the inclusion of dental posting in the curriculum of medical students, moreover postgraduates have shown better knowledge. Therefore, it is quite reasonable that health professionals such as physicians, family doctors should participate in oral health promotion programs. Medical professionals evidently need practical and theoretical training in oral health, predominantly targeting the prevention and identification of periodontal disease being chronic, infectious and inflammatory in nature. MBBS curriculum in India contains a dental component, which gives an introduction to oral health aspects that increases the knowledge and awareness about dentistry; therefore Indian medical practitioners show a good attitude about dentistry.²⁵ Training programs should ideally be offered during graduation and post-graduation programs, particularly in multi-professional internship programs. Another factor that has been put forward as being helpful in creating dental awareness among the physicians is the continuing medical education programs jointly organized for both the medical and dental practitioners in order to update their knowledge.^{25,26}

General medical practitioner is the first contact for most of the patients.¹⁵ Examination of oral cavity by a doctor is

an accepted part of physical examination for a long time, and if it is carried out in routine it can substantially reduce the morbidity and mortality resulting from oral conditions.²⁶ Morgan et al.¹⁵ observed that majority of doctors of their study considered it important to examine the patients' mouths. But in our study, only 19% of the doctors ($p=0.0001$) routinely did so. A moderate level of oral health awareness among the medical practitioners has been reported,²⁷ however an insignificant difference was noted between the practitioners with different qualifications and extents of experience. Potential effects of many systemic ailments on periodontal tissues are well recognized, through current evidence suggests that periodontal infections can significantly raise risk for many systemic disorders and/or modify the natural way of systemic illnesses.^{28,29}

In our study, 83 % of respondents knew that a relationship exists between oral and general health, but application of this knowledge is limited. Therefore, need for a multi-professional approach and integration of health promoting strategies have been emphasized³⁰ and oral health promotion has been desired within health care practices of physicians.²⁰

A study has reported that 78% physicians admitted that their general knowledge about oral health is insufficient and neither gender nor age difference was noted in that study.³¹ Age difference was not observed in this study, females have shown better level of awareness and practice in this study sample. A statistical difference of $p=0.032$ was noted among medical and dental practitioners for having awareness and practicing oral-systemic disease connection, however there was no difference with respect to graduates and postgraduates.

CONCLUSION

Level of awareness and practice about relationship of oral-systemic disease connections was moderate among the study sample, dentists showed better awareness and practice. This indicates that there is need to improve collaboration between dental and medical profession in order to enhance patient care and recommend inclusion of dental health related items in MBBS curriculum.

CONFLICT OF INTEREST

None declared

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