

'Attitude and knowledge among Medical Students Towards Collaboration of Dental and Medical Practice: A Cross Sectional Survey in Southern India'

Harshit Atul Kumar

Manipal Academy of Higher Education

David Kadakampally

Manipal Academy of Higher Education

Ashita Uppoor (✉ ashita.uppoor@manipal.edu)

Manipal Academy of Higher Education

B Unnikrishnan

Manipal Academy of Higher Education

Prasanna Mitra

Manipal Academy of Higher Education

Research Article

Keywords: Dental-Medical Collaboration, Attitude and knowledge, Medical students, Interprofessional practice

Posted Date: September 28th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-845988/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Background:

Enhancing oral health care services provided through inter-professional collaboration between medical and dental practitioner is important, and even essential. Purpose of this study is to assess the attitude and knowledge among medical students towards Medical-Dental collaborative practice.

Methods:

A cross sectional questionnaire survey was done on medical students of 3rd year, 4th year and interns of medical colleges in coastal South India. 234 responses obtained and correlated with age, gender and year of study of participants. The questionnaire consisted of 11 questions with 5-point likert scale response to elicit their attitude and knowledge regarding medical-dental collaborative practice.

Results:

Most of the students agreed that oral health was an integral part of systemic health, but statistically significant ($p < 0.05$) participants disagreed on attending compulsory rotation in dentistry, moreover participants did not agree to physician's active role in motivating their patients for regular dental check-up. 82 % of the medical students are of opinion that dental check-up should be included in the health packages under health insurance. Statistically significant ($p < 0.05$) difference seen among 3rd year & 4th year students, interns and also it was seen that females have given better response towards medical-dental collaboration.

Conclusion:

Even though medical students showed fairly positive attitude and knowledge towards dentistry, the analysis within the study groups showed that knowledge and attitude regarding the collaborative practice worsened over the academic years among the medical students. To break the stereotypes, continuing education is very useful means to foster collaboration to improving resource efficiency and the standard of care.

Background:

Oral health is a neglected global and local health issue, and the burden of oral diseases has significant consequences for individuals, populations, and health systems worldwide¹. Despite a century of reforms, professional health education has not kept pace with global health challenges and inequalities, shifts in societal demographics and burden of diseases, advances in scientific knowledge and technology, and increasing complexity of health care systems^{2,3}. Moreover, health professionals and dental professionals have been educated separately, thus promoting the separation of oral health from general health^{2,3}.

Academic institutions need to enhance curricula to address the global challenges of oral health and local oral health care needs of a population who are more prone to medical emergencies.

In order to achieve greater resource efficiency and upgrade the standard of care and comprehensiveness by reducing duplication and gaps in services, interprofessional collaboration is a main key to success⁴. All parties will benefit from this improved professional cooperation between medical and dental practitioners and better educate the public. Overlooking underlying health problems while treating a patient is what most dentists do while they focus on the diagnosis and treatment of oral diseases. Likewise, doctors may fail to notice their patient's oral health problems which could result in initiation of a long-lasting medical illness. Enhancing health care services through inter-professional collaboration between medical and dental practitioner is therefore important, and even essential⁵. Yet there is limited literature on it, an article was published after the First Systemic Health Round Table Discussion to advocate for better medical-dental collaborative practice. Inter-professional collaboration enhances communication and decision-making, enabling a synergistic influence of grouped knowledge and skills⁶.

Hence the purpose of this study is to evaluate the attitude and knowledge among the medical students towards collaboration between medical and dental practice in South India and to understand the shortcomings and address them with a better strategy.

Methodology:

Ethical approval:

Approval was obtained from the Institutional ethics committee (IEC) of Manipal College of Dental Sciences, Mangalore. Necessary permissions and the consent of participants were taken and all methods are in accordance with relevant guidelines and regulations for carrying out the survey.

Study design:

This cross-sectional self-administered questionnaire survey with a minimum calculated sample size of 180 participants for the study was carried out among the 3rd year, 4th year students and interns (5th year) of medical colleges in and around Mangalore, a coastal urban area in the south Indian state of Karnataka. Medical students were invited to participate in the study and they were visited for data collection on a pre informed date.

Statistically calculated sample size of 180 students were needed to obtain valid results for this study. The questionnaire was validated by a medical and dental faculty each. Questionnaire contained 11 objective questions which were pre texted and structured and were in filled in pencil/paper format. Answers were recorded based on 5-point Likert scale (1- strongly disagree, 2- Disagree, 3-Neutral, 4- Agree, 5- Strongly

agree). Knowledge and attitude were compared with 3 parameters; Age (below 20 years of age, 21-24 years, above 20 years of age), Gender (Male and female) and Study year (3rd year, 4th year, Interns).

Score calculation and interpretation:

For the study to be more statistically valid and comprehensible we calculated the score for each question and statistical analysis done with median of scores received as measure of central tendency and evaluate the statistical significance.

The collected data were coded and analysed using statistical package of social sciences (SPSS) version 11.5. Results were expressed as proportion and summary measures (median with inter quartile range) using appropriate tables and figures. For comparison across the groups Mann Whitney U test was employed. A p value of 0.05 was considered as statistically significant.

Results:

A total of 250 questionnaires were distributed and 234 responses were obtained from 3rd year, 4th year and interns from medical colleges in coastal South India with response rate of 93.6%. Those who returned a blank questionnaire or incomplete questionnaire were excluded. The mean age of the participants being 21.5 years with 58.36% respondents being female and 41.64% males. Out of total respondents, 43.77% were 3rd years, 39.9% were 4th years and rest 17% accounted for interns.

There was no statistically significant difference in knowledge and attitude based on gender except that female students were significantly more (p value-0.00) aware of interprofessional referral practice before elective medical surgeries (Table1). Overall analysis of gender-based difference in responses indicated that females have slightly better knowledge and attitude than males regarding the intended collaboration

Most of the students agreed that oral health was an integral part of systemic health with analysis leading to median score of 5, (Table-2) but statistically significant difference in attitude of medical students based on study year was seen when asked about attending compulsory rotation in dentistry with senior students showing negative attitude. Almost more than half the participants had adequate knowledge regarding the medical-dental relationship, whereas almost 47% were clueless about the existing relationship, which was assessed by question number 2, 3, 4 and 5. Statistical significant difference in knowledge was seen (Table-2) with p value of 0.003, when asked about importance of salivary bio markers. Also, statistically significant number of participants had a difference in attitude based on study year with p value of 0.013 when about physician role in motivating their patients for regular dental check-up with senior students showing worse attitude. However, 82 % of the medical students were of the opinion that dental check -up should be included in the health packages under health insurance.

Most students were aware about the possible collaboration but only 61.8% agreed to the foster integral collaboration; 12.8% disagreed, out of which 4% strongly disagree and the rest were unsure. Medical

students (61%) gave a median score of 4, and agree upon regular interaction required with dental students to mutually exchange knowledge. Interestingly 25% of them have replied neutral, which again indicates lack of interest with regards to the same.

Statistically significant difference based on age was seen with a p value of 0.014 when asked about relation of HIV patient and dental treatment. Participants belonging to 21-25 years age groups showed lesser knowledge regarding the same.

TABLE 1

Based on gender

Characteristic	Gender		Total Median (IQR)	p value
	Male(n=97) Median (IQR)	Female(n=137) Median (IQR)		
Oral health is an integral part of general health	5.0(4.0-5.0)	5.0(4.0-5.0)	5.0(4.0-5.0)	0.989
Periodontitis is the 6 th complication of diabetes	3.0(3.0-4.0)	4.0(3.0-4.0)	3.0(3.0-4.0)	0.402
oral check-up for all woman in pre-natal care	4.0(3.0-4.0)	4.0(3.0-4.0)	4.0(3.0-4.0)	0.093
HIV pt. with CD4 count > 200 cells/mm blood is suitable for dental treatment	3.0(3.0-4.0)	3.0(3.0-4.0)	3.0(3.0-4.0)	0.627
Salivary biomarkers used in diagnosis of oral and systemic diseases	4.0(3.5-4.0)	4.0	4.0	0.642
Physician should advise and motivate their patients to undergo dental check-up regularly	4.0(4.0-5.0)	5.0(4.0-5.0)	4.0(4.0-5.0)	0.117
Medical students should attend compulsory rotation in dentistry	4.0(3.0-4.0)	4.0(3.0-4.0)	4.0(3.0-4.0)	0.716
Complete dental check-up should be covered in health insurance	4.0(3.0-5.0)	4.0(4.0-5.0)	4.0(4.0-5.0)	0.238
Referral for dental check-up before any elective surgeries	3.0(3.0-4.0)	4.0(3.0-4.0)	4.0(3.0-4.0)	*0.000
Integral collaboration between medicine and dentistry	4.0(3.0-4.0)	4.0(3.0-4.0)	4.0(3.0-4.0)	0.809
Interact with dental students and mutually exchange knowledge	4.0(3.0-4.0)	4.0(3.0-4.0)	4.0(3.0-4.0)	0.997

TABLE 2**Based on study_year**

Characteristic	Study Year			Total Median (IQR)	p value
	3 rd	4 th	Intern		
Oral health is an integral part of general health	5.0(4.0-5.0)	5.0(4.0-5.0)	5.0(4.0-5.0)	5.0(4.0-5.0)	0.382
Periodontitis is the 6 th complication of diabetes	4.0(3.0-4.0)	3.0(3.0-4.0)	3.0(3.0-4.0)	3.33(3.0-4.0)	0.341
oral check-up for all woman in pre-natal care	4.0(3.0-4.0)	4.0(3.0-4.0)	3.0(3.0-4.0)	3.66(3.0-4.0)	0.140
HIV pt. with CD4 count > 200 cells/mm blood is suitable for dental treatment	3.0(3.0-4.0)	3.0(3.0-4.0)	3.0(3.0-4.0)	3.0(3.0-4.0)	0.652
Salivary biomarkers used in diagnosis of oral and systemic diseases	4.0(4.0-5.0)	4.0(3.0-4.0)	3.0(3.0-4.0)	3.66(3.0-5.0)	*0.003
Physician should advice and motivate their patients to undergo dental check-up regularly	5.0(4.0-5.0)	4.0(4.0-5.0)	4.0(4.0-5.0)	4.33(4.0-5.0)	*0.013
Medical students should attend compulsory rotation in dentistry	4.0(3.0-4.0)	3.0(2.0-4.0)	3.0(3.0-4.0)	3.33(2.0-4.0)	*0.017
Complete dental check-up should be covered in health insurance	4.0(4.0-5.0)	4.0(4.0-5.0)	5.0(4.0-5.0)	4.33(4.0-5.0)	0.665
Referral for dental check-up before any elective surgeries	4.0(3.0-4.0)	4.0(3.0-4.0)	4.0(3.0-4.0)	4.0(3.0-4.0)	0.656
Integral collaboration between medicine and dentistry	4.0(3.0-4.0)	4.0(3.0-4.0)	4.0(3.0-4.0)	4.0(3.0-4.0)	0.056
Interact with dental students and mutually exchange knowledge	4.0(3.0-4.0)	4.0(3.0-4.0)	4.0(3.0-4.0)	4.0(3.0-4.0)	0.084

TABLE 3**Based on age group**

Characteristic	Age group			Total Median (IQR)	p value
	20 and Below 20	21-24	Above 25		
Oral health is an integral part of general health	5.0	5.0(4.0-5.0)	5.0	5.0(4.0-5.0)	0.075
Periodontitis is the 6 th complication of diabetes	4.0(3.0-4.0)	3.0(3.0-4.0)	3.0(3.0-4.0)	3.33(3.0-4.0)	0.056
oral check-up for all woman in pre-natal care	4.0(3.0-4.0)	4.0(3.0-4.0)	3.0(3.0-4.0)	3.66(3.0-4.0)	0.232
HIV pt. with CD4 count > 200 cells/mm blood is suitable for dental treatment	4.0(3.0-4.0)	3.0(3.0-4.0)	4.0(4.0-5.0)	3.66(3.0-5.0)	*0.014
Salivary biomarkers used in diagnosis of oral and systemic diseases	4.0	4.0(3.0-4.0)	4.0(3.0-4.0)	4.0(3.0-4.0)	0.360
Physician should advice and motivate their patients to undergo dental check-up regularly	5.0(4.0-5.0)	4.0(4.0-5.0)	4.0(3.0-5.0)	4.33(3.0-5.0)	0.374
Medical students should attend compulsory rotation in dentistry	4.0(3.0-4.0)	3.0(2.0-4.0)	3.0(3.0-5.0)	3.33(2.0-5.0)	0.085
Complete dental check-up should be covered in health insurance	4.0(4.0-5.0)	4.0(4.0-5.0)	5.0(4.0-5.0)	4.33(4.0-5.0)	0.806
Referral for dental check-up before any elective surgeries	4.0(3.0-4.0)	4.0(3.0-4.0)	3.0(3.0-4.0)	3.66(3.0-4.0)	0.676
Integral collaboration between medicine and dentistry	4.0(3.0-4.0)	4.0(3.0-4.0)	4.0(3.0-4.0)	4.0(3.0-4.0)	0.191
Interact with dental students and mutually exchange knowledge	4.0(3.0-4.0)	4.0(3.0-4.0)	4.0(3.0-4.0)	4.0(3.0-4.0)	1.000

Discussion

This study was used to evaluate the attitude and knowledge of medical students towards collaboration of medical and dental practice. We included only medical students in the survey as it would suffer a response bias from dental students as participants may simply have positive disposition towards the study objective, as shown by a study which was conducted by Zhang in 2015⁷.

Overall, the medical students showed fairly good attitude and knowledge towards medical and dental collaboration in congruence with the results obtained in the study by Zhang.⁷ But analysis of groups within each parameter showed a significant difference. Based on year of study, it was found that student from third and final year had more positive attitude, than the Interns, unlike results obtained by Zhang.⁷

More than half the number of participants, particularly the interns did not agree to attend compulsory rotation in dentistry with p value of 0.017, contrary to finding in which Hendricson and Cohen⁸ concluded this relationship not only beneficial but essential.

Although nearly 50% participants had fair knowledge regarding the oral-systemic link, many participants were confused when asked if it was mandatory to undergo an oral check-up before pregnancy. Sufficient research has shown that severe periodontal disease in pregnant women predisposes her to a higher risk to deliver preterm and/or low-birth weight new born¹⁰. Offenbacher¹¹ found mothers with periodontal disease are at a risk seven times more than the normal. When asked about diabetes and oral health link students seemed to have some vague knowledge regardless of year of study. In addition, previous investigations have established an association between either type 1 or type 2 diabetes and periodontal diseases to the extent that Periodontitis has been called the “sixth complication of diabetes”^{12,13}. Interestingly analysis among gender revealed statistically significant difference with more knowledge among females with regard to questions pertaining to criteria to undergo treatment among HIV patients. Though it does not provide any supporting evidence to prove poor knowledge, but it indicates the level of confusion among the medical students about HIV patients and dental treatment.

While assessing the attitude, we found significant data that junior students advised and motivated their patients to undergo dental check-up regularly, compared to senior students who gave a more of neutral response. One of the reasons for such an attitude from senior students can be because of the concept of social hierarchy which can be due to lack of interprofessional communication and patient management⁴.

In the United States, utilization of oral health care services and the incidence of oral disease are strongly linked to dental insurance coverage¹⁴. In India though the dental insurance sector has not yet taken off, 40-50% of the medical students strongly feel that dental check-up and some part of treatment must be covered in general health packages.

Around 50-60% participants on average responded positively towards the integral collaboration and interprofessional communication, although 25-30% students were not sure and the rest disagreed to it. Analysis showed that the third and final year students were more positive than interns which is in contrary to result obtained from study by Zhang et al⁷. The exposure at clinics along with the interest of students affect the perception of oral health and its importance among the medical students, which when applied to Indian scenario the egocentric power relations among healthcare workers which instead of creating new ways, is threatening this interprofessional collaboration¹⁵.

Student's attitude is associated with factors such as gender, regular dental check-up, and curriculum. Results of a previous study reported that gender could affect a student's attitude towards medical dental collaboration⁹. Questions pertaining to the attitude towards collaboration such as insurance benefits for dental treatments received positive response from females than males. When asked about importance of interprofessional communication for exchange of knowledge and better patient care, females gave a greater positive response than males, which can be attributed to higher ego among males¹⁵.

In clinical practice, Interprofessional continuing education is a useful means of regulating and stabilizing a professional's identity and improving teamwork ⁴. Guidelines must be set to improve confidence in provider's ability with regard to cases pertaining to both the fields and have access to updated knowledge about the collaboration between medical and dental practice. Medical and Dental professional body plays an important role here. They can lay guidelines for the indications, timing, protocols, and responsibilities of referral and consultation among physicians and dentists. Patients and the community should be made to understand the relationship between oral and systemic health by means of awareness campaigns. In doing so, National health goals can be achieved only by reducing these kinds of healthcare disparities.

Conclusion

Even though medical students showed fairly positive attitude and knowledge towards dentistry, the analysis within the study groups showed that knowledge and attitude regarding the collaborative practice worsened over the academic years among the medical students.

- To break the stereotypes, in clinical practice continuing dental education programs are very useful means to foster collaboration and two-way referral relationship to improving resource efficiency and the standard of care
- Improvement in MBBS (medical) course curriculum to address the gap in interprofessional management of patients with stress on significance of effects of Oral health on general health to instill a sense of confidence and necessity of interprofessional relation among under graduates.

Declarations

1. Ethics approval and Consent to participate:

Ethical approval was obtained from the Institutional ethics committee for conducting this questionnaire survey with the reference number-17020.

Written informed consent was obtained from all the participants before filling the questionnaire survey form.

2. Consent for publication:

Not applicable

3. Availability of Data and materials:

The datasets used and analysed for the study can be made available from the corresponding author on reasonable request.

4. Competing interests:

The authors declare that they have no competing interests.

5. Funding:

Self-funded study

6. Author's contribution:

Dr Harshit Atul Kumar: Conception, Design of Work, Manuscript writing

Dr David Kadakampally: Data acquisition, Manuscript writing

Dr Ashita Uppoor: Conception, Final draft of manuscript.

Dr B Unnikrishnan: Data analysis

Dr Prasanna Mitra: Statistical analysis and data interpretation

7. Acknowledgments:

None

References

1. Arada¹ J, Sheokand V, Kaushik N, Kapoor V, Arora P. Oral Health–Neglected Area on Global Health Map.
2. National Research Council. Improving access to oral health care for vulnerable and underserved populations. National Academies Press; 2012 Jan 22.
3. Committee on an Oral Health Initiative. Advancing oral health in America. National Academies Press; 2011 Dec 5.
4. Arvind Kasthuri; **Challenges to Healthcare in India - The Five A's**; Indian J Community Med. 2018 Jul-Sep; **43(3): 141–143**
5. Lo EC. Enhancing health care services through close collaboration between medical and dental professionals. Hong Kong Med J. 2014 Apr 1;20(2):92 – 3.

6. Zhang S, Lo EC, Chu CH. Attitude and awareness of medical and dental students towards collaboration between medical and dental practice in Hong Kong. *BMC oral health*. 2015 Dec 1;15(1):53.
7. Hendricson WD, Cohen PA. Oral health care in the 21st century: implications for dental and medical education. *Academic Medicine*. 2001 Dec 1;76(12):1181 – 206.
8. Migliorati C, Madrid C. The interface between oral and systemic health: the need for more collaboration. *ClinMicrobiol Infect*. 2007;13(4):11–6.interprofessional education. *J Interprof Care*. 1995;9(2):151–61
9. Baron-Cohen S. *The essential difference: the truth about the male and female brain*. 1st ed. New York, NY: Basic Books; 2003
10. Offenbacher S, Katz V, Fertik G, et al. Periodontal infection as a possible risk factor for preterm low birth weight. *J Periodontol*. 1996; 67(10 suppl):1103–13.
11. Offenbacher S, Jared HL, O'Reilly PG, et al. Potential pathogenic mechanisms of periodontitis associated pregnancy complications. *Ann Periodontol*. 1998; 3:233–50.
12. Lo¨e H. Periodontal disease—the sixth complication of diabetes mellitus. *Diabetes Care*. 1993;16:329–34.
13. American Dental Association (ADA), Edelstein BL. *Oral Health Services in the Child Health Insurance Program, Children’s Dental Health Project, Washington, DC, and the American Dental Association Task Force on CHIP Resource Packet*. Chicago, IL: ADA, 199
14. Reinhard DA, Konrath SH, Lopez WD, Cameron HG. Expensive egos: narcissistic males have higher cortisol. *PLoS one*. 2012 Jan 23;7(1):e30858.
15. Carpenter J. Doctors and nurses: stereotypes and stereotype change in interprofessional education. *J Interprof Care*. 1995;9(2):151–61.