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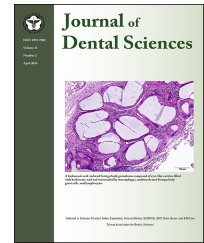
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Original Article

# Assessment of effectiveness of oral medicine course for medical students: A presurvey and postsurvey evaluation

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## KEYWORDS

Oral medicine;  
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**Abstract** *Background/purpose:* The dental education for the medical students is very important and a necessary part for the comprehensive medical education. The purpose of this study was to evaluate the new initiative of oral medicine course by evaluating medical students' perspectives via a presurvey and postsurvey evaluation.

*Materials and methods:* Forty-five fourth-year medical students of MacKay Medical College

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enrolled in the course of “oral and maxillofacial medicine” were invited to fill in an anonymous online presurvey regarding their cognition for basic knowledge of the oral medicine and the estimated learning time for the class. An anonymous online postsurvey using the presurvey questions with added questions on medical students’ attitude toward the independent learning for the oral medicine course.

**Results:** Of the 45 medical students, 27 (60 %) and 45 (100 %) participated in the online presurvey and postsurvey, respectively. The results showed that all respondents found the oral medicine course to be helpful in raising their basic knowledge of the oral medicine. For all questions, the mean scores significantly increased 2.58–2.73 after the oral medicine class (all *P*-values <0.001).

**Conclusion:** In this study, the oral medicine course contributed to an increase in students’ basic knowledge of the oral medicine and their awareness and understanding of the importance of the independent learning for the oral medicine. Considering the reported effectiveness of the oral medicine course on medical students’ basic knowledge and attitude of the oral medicine, this model shows promise for further use in other medical institutions.

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## Introduction

The medical education process should include a learning environment that encourages interprofessional learning by applying basic biomedical fundamentals and interdisciplinary clinical knowledge to solve the patients’ problems. Since total patient care involves a multidisciplinary and interprofessional environment with a group of healthcare providers, it is critical to provide students with interprofessional educational courses in the early medical and dental education.<sup>1</sup> However, the separation of the medical and dental education has serious negative implications for the delivery of medical and dental care.<sup>2</sup> Oral health education has historically been lacking in medical school curricula.<sup>3,4</sup> In a 2009 national survey of the 88 medical schools in the United States, 10.2 % (9/88) did not offer any oral health courses.<sup>5</sup> According to the 2022 schedules announced on the websites by various medical colleges/universities in Taiwan, among 13 medical colleges, 53.8 % (7/13) did not offer any oral health courses for their medical students, indicating that the problem of separation of medical and dental education is even more serious compared to that in the United States.<sup>6</sup>

The primary medical staff (including primary care physicians, nurse practitioners, primary care providers, and pharmacists) have relatively little learning in treating oral health problems or maintaining good oral health, although they are more numerous than dentists and should be taught to address disparities in oral care.<sup>7,8</sup> In the United States, physicians could play an important role in helping prevent oral diseases and improving access to oral care for vulnerable populations by providing preventive care such as oral hygiene instruction, nutritional counseling, smoking cessation assistance, and even fluoride application.<sup>9,10</sup> Integrating oral health into general healthcare will reduce healthcare costs and improve the quality of life for many people, especially those with chronic diseases.<sup>11</sup> Although physicians could play a role in preventing oral diseases,

they lack the knowledge to play a positive role. It is important to expose students to the patients with oral and systemic diseases throughout the courses. The educational experiences could help to provide the future healthcare professions with the tools to meet the oral health needs of the patient population and the public.<sup>10</sup>

The Department of Medicine of MacKay Medical College, renamed as the School of Medicine, College of Medicine, MacKay Medical University with the approval by Ministry of Education in 2025, offers a one-credit course on oral medicine, entitled as “An Introduction to Oral and Maxillofacial Medicine”, in its curriculum. It is a compulsory course for the fourth-year medical students. This new initiative was determined when the school was established in 2009, and was first started in 2012.<sup>12</sup> The implementation of this oral medicine course has been more than 10 years, which is to introduce the medical students to the concept of oral health, and the course aims to improve medical students’ understanding of the growing relationship between oral health and general health by introducing the specialties of dentistry and teaching the main oral and maxillofacial diseases. The goal of this course is to hopefully prepare the medical students to become physicians with a more comprehensive consideration of oral and maxillofacial diseases in the future. The purpose of this study was to evaluate the medical students’ learning outcomes by assessing their perceptions of this oral medicine course.

## Materials and methods

### Participants

A total of 45 fourth-year medical students who took the compulsory course entitled “An Introduction to Oral and Maxillofacial Medicine” in MacKay Medical College in 2021 were included in this study.

## Teaching process

The oral medicine course was a specific subject for the medical students in the first semester of the fourth academic year of the Department of Medicine, which was a one-credit subject and was taught in the form of lectures. The learning topics are shown in Table 1. There were 8 lectures in total, each of which was a 2-h lecture for a topic. It was taught by the senior attending dentists of the Department of Stomatology of MacKay Memorial Hospital. An oral pathologist was responsible for 7 topics to introduce major oral and maxillofacial diseases, as well as another oral surgeon was responsible for one topic to introduce oral surgery, oral cancer, and odontogenic infections. In addition to the midterm and final examinations accompanied with clinical pictures of oral and maxillofacial diseases to test the medical students' understanding of oral and maxillofacial diseases, an assignment was designed to require students to take the initiative to search for papers related to one of the topics of the course of interest, and choose an article to read and write down their thoughts for cultivating the medical students' life-long renewal of medical knowledge.

## Survey tool

Within 2 weeks before the first class of the oral medicine course, all medical students who took the course of "Introduction to Oral and Maxillofacial Medicine" were invited to fill out the questionnaire for an online presurvey under the school information system. Within 3 weeks after the last class, the same medical students were invited again to fill out the questionnaire for an online postsurvey. The questions of the presurvey and postsurvey were the same for analyzing the changes of students' cognition

before and after taking the oral medicine course. The other questions of the postsurvey were used for analyzing the medical students' attitude towards the independent learning. All medical students were invited to join in these surveys at their free will to fill out the questionnaires without the pressure from the investigators.

A structured questionnaire-based online survey was used as the survey tool to understand the medical students' cognition and attitude for the oral medicine. The questionnaire was designed to obligate the participants to answer all the questions and to make sure that the returned electronic survey forms were all complete. The investigated questions included (1) the self-assessment of the medical students' cognition for knowledge about divisions of dental specialties and oral medicine, and (2) the attitude towards the independent learning for the oral medicine. In the investigated questions of part (1), the answer was designed to let the participants to raise a score ranging from 1 to 5. If the intensity or response for each question was extremely agreed, the score was 5. If the intensity or response for each question was neutral, the score was 3. In contrast, if the intensity or response for each question was extremely disagreed, the score was 1. The mean score was 3 or more meant that on average the answerers agreed the investigated questions, and the higher the score, the higher the degree of their agreement. In the investigated questions of part (2), the answer was designed to let the participants to choose a suitable option from several category items. The participants were suggested to fill the score or answer in fresh memory.

## Statistical analysis

All data obtained from the school information system were stored in the excel files and used for statistical analysis. The differences in the mean scores (the degree of agreement) of various investigated items were compared between presurvey and postsurvey results by independent sample t-test. The result was considered to be significant if the *P*-value was less than 0.05.

## Ethical consideration

The study has been approved by the MacKay Memorial Hospital Institutional Review Board (IRB number: 22MMHIS175e).

## Results

### Demographic data

A total of 45 fourth-year medical students who took the course of "An Introduction to Oral and Maxillofacial Medicine" in 2021 were included in this study. Among them, before the first class, 27 students filled out the questionnaires for the online presurvey. After the last class, 45 students filled out the questionnaires for the online postsurvey. The response rates were 60 % in the presurvey and 100 % in the postsurvey, respectively (Table 2).

**Table 1** Learning topics on oral and maxillofacial medicine for the medical students in MacKay Medical College in 2021.

Topic	Instructor
1. Clinical specialties in oral and maxillofacial medicine	Oral pathologist
2. Pulp and periapical lesions	Oral pathologist
3. Periodontal diseases	Oral pathologist
4. Oral potentially malignant disorders	Oral pathologist
5. Non-odontogenic infections of oral and maxillofacial region	Oral pathologist
6. Oral surgery (including odontogenic infections) and oral cancer	Oral surgeon
7. Developmental defects in head and neck region	Oral pathologist
8. Odontogenic cysts and odontogenic tumors	Oral pathologist

**Table 2** Presurvey and postsurvey results of repeated questions for the medical students' cognition before and after the oral medicine course.

Questions	Presurvey (n = 27)		Postsurvey (n = 45)		Significance t value
	Mean	SD	Mean	SD	
1. I Am familiar with the specialties related to clinical dentistry.	1.78	0.64	4.36	0.68	-15.92***
2. I Am familiar with the pathogenesis and clinical features of main diseases of the oral and maxillofacial region.	1.78	0.70	4.36	0.65	-15.92***
3. I Understand the concept of pulp diseases and periapical lesions.	1.70	0.72	4.38	0.68	-15.71***
4. I Understand the concept of gingivitis and periodontal diseases.	1.67	0.73	4.40	0.65	-16.40***
5. I Understand the concept of oral precancerous lesion, oral cancer, and the management of odontogenic infections.	1.78	0.75	4.42	0.72	-14.81***
6. I Understand the concept of non-odontogenic infections of the oral and maxillofacial region.	1.70	0.72	4.40	0.72	-15.35***
7. I Understand the concept of the developmental defects in the head and neck region.	1.70	0.72	4.36	0.74	-14.80***
8. I Understand the concept of the odontogenic cysts and odontogenic tumors.	1.70	0.72	4.42	0.66	-16.36***
Overall	1.73	0.68	4.39	0.66	-16.32***

SD: Standard deviation.

\*\*\*  $P < 0.001$

### The changes of medical students' cognition for the oral medicine before and after the oral medicine course.

There were eight investigated questions for analyzing medical students' cognition for basic knowledge of the oral medicine before and after the class (Table 2). Based on the postsurvey results, all respondents found the oral medicine course to be helpful in raising their basic knowledge of the oral medicine. The degree of agreement for each question was high, and all the mean scores for each question were 4.36–4.42. Because these mean scores were all more than 3, it meant that on average the answerers agreed all the investigated questions. Moreover, the overall mean score was 4.39. The data for questions on medical students' cognition for basic knowledge of the oral medicine in the presurvey and postsurvey are shown in Table 2.

Before the class, however, all respondents disagreed that they understood or knew the basic knowledge of the oral medicine, and all the mean scores for each question were only 1.67–1.78. Because these mean scores were all less than 3, it meant that on average the answerers disagreed all the investigated questions. Moreover, the overall mean score was only 1.73. For all questions of medical students' cognition for the basic knowledge of the oral medicine, the mean scores significantly increased 2.58–2.73 after the oral medicine class (all  $P$ -values

$<0.001$ ). Among them, the mean scores of the questions that I understand the concept of gingivitis and periodontal diseases as well as I know the concept of odontogenic cysts and odontogenic tumors increased from  $1.67 \pm 0.73$  and  $1.70 \pm 0.72$  to  $4.40 \pm 0.65$  and  $4.42 \pm 0.66$  (both  $P$ -values  $<0.001$ ) with the most increases of 2.73 and 2.72, respectively. Moreover, the overall mean score significantly increased from  $1.73 \pm 0.68$  to  $4.39 \pm 0.66$  with an increase of 2.66 ( $P < 0.001$ ) (Table 2).

### The self-estimated and actual weekly independent learning time of the medical students taking the oral medicine course

The independent learning included the pre-class preview, after-class review, assignment, preparation for examination, and extended reading of related references. According to the medical students' answers in the online presurvey before the class, the highest proportion of the medical students' self-estimated weekly independent learning time was more than 4 h (40.7 %, 11/27), followed in a descending order by 1–2 h (25.9 %, 7/27), 2–4 h (22.2 %, 6/27), 0.5–1 h (7.4 %, 2/27), and less than 0.5 h (3.7 %, 1/27) (Table 3). In the postsurvey after the class, however, the highest proportion of their actual weekly independent learning time was 1–2 h (51.1 %, 23/45), followed in a descending order by 2–4 h (20 %, 9/45), 0.5–1 h

**Table 3** Presurvey and postsurvey results of the self-estimated and actual weekly independent learning time of the medical students taking the oral medicine course.

Weekly independent learning time	Presurvey (n = 27)	Postsurvey (n = 45)
	Self-estimated Numbers (%)	Actual Numbers (%)
Less than 0.5 h	1 (3.7)	1 (2.2)
0.5–1 h	2 (7.4)	7 (15.6)
1–2 h	7 (25.9)	23 (51.1)
2–4 h	6 (22.2)	9 (20)
More than 4 h	11 (40.7)	5 (11.1)

The independent learning included the pre-class preview, after-class review, assignment, preparation for examination, and extended reading of related references.

(15.6 %, 7/45), more than 4 h (11.1 %, 5/45), and less than 0.5 h (2.2 %, 1/45). In other words, their actual weekly independent learning time for the oral medicine course was lower than that they estimated by themselves before the oral medicine class (Table 3).

### The medical students' attitude toward the independent learning for the oral medicine course

There were two investigated questions for analyzing the medical students' attitude toward independent learning for the oral medicine course after the class (Table 4). Based on the postsurvey results, all respondents had positive attitude toward the independent learning for this oral medicine course. For the importance of independent learning in achieving the learning objectives and outcomes in this oral medicine course, 84.4 % (38/45) of the medical students considered it very important or important, while for the satisfaction of the learning resources (including textbooks,

**Table 4** Postsurvey (n = 45) results of questions for the medical students' attitude toward the independent learning for the oral medicine course.

Questions	Category	Numbers (%)
The importance of independent learning in achieving learning objectives and outcomes in the oral medicine course	Very important	15 (33.3)
	Important	23 (51.1)
	Average	7 (15.6)
The satisfaction of learning resources (including textbooks, reference materials, teaching handouts, videos, etc.) provided by the instructors in achieving the learning objectives and outcomes in this oral medicine course	Very satisfied	24 (53.3)
	Satisfied	18 (40)
	Average	3 (6.7)

reference materials, teaching handouts, videos, etc.) provided by the instructors in achieving the learning objectives and outcomes in this oral medicine course, 93.3 % (42/45) of the medical students considered it very satisfied or satisfied (Table 4).

### Discussion

In this study, the presurvey and postsurvey results showed that the oral medicine course contributed to an increase in the medical students' basic knowledge of the oral medicine and their awareness and understanding of the importance of the independent learning for the oral medicine. In addition, the medical students achieved a positive attitude for this oral medicine course after the class and highly agreed that the importance of the independent learning in achieving the learning objectives and outcomes and the high satisfaction of the learning resources (including textbooks, reference materials, teaching handouts, videos, etc.) provided by the instructors in achieving the learning objectives and outcomes in this oral medicine course.

It was also observed that the medical students expressed their interests in the overview of the specialties in clinical dentistry, the tooth numbering system, the basic dental examination technique, and the frequently used terms related to clinical dentistry during the classroom activity. The above-mentioned content may assist in their career, especially in cases of interprofessional consultations.<sup>13,14</sup> Indeed, we build a bridge for the interprofessional communication in this oral medicine course. Due to the separation of the medical and dental education, the teaching and learning of the tooth numbering system seems to exist only in dental schools. We consider that the tooth numbering system should not only be the language of communication among dentists and oral health care providers, and it should also be the language of communication for physicians and all other health care providers. Just taking the tooth numbering system as an example, the separation of the dental education from the medical education indeed has serious negative implications for the delivery of oral health care.<sup>13–15</sup>

This oral medicine course exposes the fourth-year medical students to the concepts of oral health related to general health. It is also designed to prepare the medical students for understanding the important link between oral and systemic health. Some subsequent selective topics might be challenges for the medical students. Although all medical students had never been exposed to professional courses in the oral medicine before this, most medical students were able to get good grades on midterm and final examinations, indicating that they are indeed capable of taking the oral medicine course and gaining clinical diagnostic ability for related oral and maxillofacial diseases from the oral medicine course.

The physicians across the entire medical profession are valuable assets in the prevention and detection of oral diseases.<sup>2</sup> The oral medicine course for the medical students is an important initiative to further develop the educational interprofessional learning and incorporate curriculum content on the interaction of oral and systemic

conditions. Oral health is an integral part of general health, and educational curricula should reflect the need for collaboration among healthcare professionals to achieve the optimal patient care. As the medical education increasingly focuses on the whole patient, interprofessional training opportunities at the predoctoral stage are important. There are many studies supporting the need for more interdisciplinary projects and interprofessional education in the curricula.<sup>16–20</sup> The medical and dental education share a common foundation in basic biomedical sciences. Moreover, a substantial body of evidence shows that dental and oral diseases are associated with systemic health problems, and that oral health is tightly linked to physical well-being, quality of life, and disease prevention. Lack of oral health has been shown to be associated with negative health outcomes, such as respiratory disease, cardiovascular disease, diabetes, stroke, and adverse pregnancy outcomes.<sup>21–24</sup>

In a 2009 national survey in the United States, 9 (10.2 %) of the 88 medical schools did not offer the oral health curriculum.<sup>5</sup> This phenomenon has raised concerns among American medical education scholars about the negative impacts of separating medical and dental education. However, according to the 2022 schedules announced on the websites by various medical colleges/universities in Taiwan for their medical students, 7 (53.8 %) of the 13 medical colleges did not offer the oral health curriculum.<sup>6</sup> This could be considered as a serious problem in Taiwan.

Regarding the question about the self-estimated and actual weekly independent learning time of the medical students for the oral medicine class, the highest proportion of their actual weekly independent learning time was 1–2 h (51.1 %, 23/45), while the highest proportion of their self-estimated weekly independent learning time before the class was more than 4 h (40.7 %, 11/27). This indicates that fourth-year medical students already have enough prior knowledge to enable them to take the oral medicine courses, although they have not studied oral medicine-related professional courses before. Moreover, this also indicates that it is appropriate for the medical students to take more oral medicine courses in the medical curriculum content. Therefore, this model shows promise for further use in other medical institutions.

Oral health education is an important step for supporting the interprofessional education in the healthcare professions and promoting a collaborative learning environment in the medical schools.<sup>2</sup> Our interprofessional oral medicine course for fourth-year medical students helps them to learn some basic knowledge of oral health through the attending dentists of the teaching hospital, published papers reading, videos illustrating, and hands-on exercises. The initial feedback from the medical students was almost entirely positive.

From the final report for the academic paper reading by the medical students, top three topics selected by the medical students were oral cancers, oral precancers, and periodontal diseases. A focus on the issues of oral cancers and precancers can be explained by the fact that these relevant diseases are likely to be encountered in their future practice. The discussion on periodontal diseases included the relation to systemic factors or diseases (dietary factors, diabetes, autoimmune diseases, and

Papillon-Lefevre syndrome). It was worth mentioning that three out of the 45 students explored the oral manifestations of COVID-19. This was exactly the goal that the course originally set. Furthermore, a lot of students expressed their awareness of the oral/dental lesions or normal anatomical variants in the oral and maxillofacial region that they were unfamiliar with prior to the enrollment in the oral medicine class. Several medical students expressed more understanding of the dental procedures, especially the endodontic and periodontal treatments that they or their family members had received. The explanation of the correct use of dental brush and dental floss also help the medical students with more confidence in maintenance of oral health to assist their patients for keeping good oral hygiene.

The future directions of the oral medicine course for the medical students include further developing oral health topics throughout the curriculum and measuring evidence of impact on the interprofessional learning experiences. This kind of oral medicine course could have a major implication on patients' care outcomes. Because the medical students will have a more comprehensive consideration in the treatment of oral and maxillofacial diseases. The medical professionals who are aware of the link between oral and systemic health and pay attention to the social and biological consequences of poor oral health can provide their patients with a higher level of health care.<sup>2</sup>

## Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

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## References

1. Hendricson WD, Cohen PA. Oral health care in the 21st century: implications for dental and medical education. *Acad Med* 2001; 76:1181–206.
2. Park SE, Donoff RB, Saldana F. The impact of integrating oral health education into a medical curriculum. *Med Princ Pract* 2017;26:61–5.
3. Krol DM. Educating pediatricians on children's oral health: past, present, and future. *Pediatrics* 2004;113:e487–92.
4. Mouradian WE, Reeves A, Kim S, et al. A new oral health elective for medical students at the University of Washington. *Teach Learn Med* 2006;18:336–42.
5. Ferullo A, Silk H, Savageau JA. Teaching oral health in U.S. medical schools: results of a national survey. *Acad Med* 2011; 86:226–30.
6. Cheng FC, Wang YL, Chiang CP. Dental curriculum for medical students in Taiwan: a preliminary survey. *J Dent Sci* 2024;19: 747–50.
7. Formicola AJ. Dentistry and medicine, then and now. *J Am Coll Dent* 2002;69:30–4.
8. Vargas CM, Isman RE, Crall JJ. Comparison of children's medical and dental insurance coverage by sociodemographic characteristics, United States, 1995. *J Publ Health Dent* 2002; 62:38–44.

9. Hale KJ. Oral health risk assessment timing and establishment of the dental home. *Pediatrics* 2003;111:1113–6.
10. Mouradian WE, Reeves A, Kim S, et al. An oral health curriculum for medical students at the University of Washington. *Acad Med* 2005;80:434–42.
11. Donoff B, McDonough JE, Riedy C. Integrating oral and general health care. *N Engl J Med* 2014;371:2247–9.
12. Lin HP, Wang LH, Lin TC, Cheng FC, Chiang CP. Oral medicine education for medical students - a retrospective evaluation of the course in MacKay Medical College from 2016 to 2021. *J Dent Sci* 2022;17:1292–9.
13. Cheng FC, Wang LH, Wang YL, Chiang CP. Course content analysis of the last dental course for the medical students of National Taiwan University in 2011. *J Dent Sci* 2024;19:1883–5.
14. Cheng FC, Wang LH, Wang YL, Chiang CP. The importance of the dental education for the medical students: the viewpoints from a senior attending dentist who participates in the teaching of the dental course. *J Dent Sci* 2024;19:2468–71.
15. Cheng FC, Huang GF, Wang YL, et al. The implication of integrating pediatric education into a pediatric dentistry course for undergraduate dental students. *J Dent Sci* 2023;18:1794–803.
16. Wilder RS, O'Donnell JA, Barry JM, et al. Is dentistry at risk? A case for interprofessional education. *J Dent Educ* 2008;72:231–7.
17. Haden NK, Hendricson WD, Kassebaum DK, et al. Curriculum change in dental education, 2003–2009. *J Dent Educ* 2010;74:539–57.
18. Mabry CC, Mosca NG. Interprofessional educational partnerships in school health for children with special oral health needs. *J Dent Educ* 2006;70:844–50.
19. Migliorati CA, Madrid C. The interface between oral and systemic health: the need for more collaboration. *Clin Microbiol Infect* 2007;13(Suppl 4):11–6.
20. Owens JB, Wilder RS, Southerland JH, et al. North Carolina internists' and endocrinologists' knowledge, opinions, and behaviors regarding periodontal disease and diabetes: need and opportunity for interprofessional education. *J Dent Educ* 2011;75:329–38.
21. Offenbacher S, Jared HL, O'Reilly PG, et al. Potential pathogenic mechanisms of periodontitis associated pregnancy complications. *Ann Periodontol* 1998;3:233–50.
22. Mattila KJ, Asikainen S, Wolf J, et al. Age, dental infections, and coronary heart disease. *J Dent Res* 2000;79:756–60.
23. Herrera D, Sanz M, Shapira L, et al. Association between periodontal diseases and cardiovascular diseases, diabetes and respiratory diseases: consensus report of the Joint Workshop by the European Federation of Periodontology (EFP) and the European arm of the World Organization of Family Doctors (WONCA Europe). *J Clin Periodontol* 2023;50:819–41.
24. Yoon AJ, Cheng B, Philipone E, et al. Inflammatory biomarkers in saliva: assessing the strength of association of diabetes mellitus and periodontal status with the oral inflammatory burden. *J Clin Periodontol* 2012;39:434–40.