ORIGINAL RESEARCH

# Emerged Medically Compromised Conditions in Thai Patients Visiting a Private Dental School

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## Abstract

**Aim:** To investigate medical conditions and medication use in dental patients visiting a private dental school and determine association among these factors.

**Materials and methods:** Medical and personal profiles from systematically selected 712 dental chart records were reviewed and analyzed.

**Results:** Females (457 patients; 64.2%) were more prevalent than males. Ages ranged between 12 and 84 years, with a median age of 27 (21, 49). The medical conditions and medication use were revealed in 217 (30.5%) and 136 (19.4%) patients with female preponderance. The most common medical conditions were hypertension (9.9%), allergy (9.1%), and diabetes mellitus (DM; 3.7%). The most prevalent drugs were drugs for hypertension and cardiovascular diseases (CVDs; 8.6%), followed by anti-diabetic drugs and drugs for thyroid disorders (4.1%). Antidyslipidemic drugs (2.7%) were usually observed. Significant associations of males with obesity, systolic blood pressure, smoking, and alcohol consumption were demonstrated ($p < 0.001$). Females were related with underweight ($p < 0.001$) and diastolic blood pressure ($p = 0.009$). Dental patients with overweight or obesity had a higher likelihood of having a history of hypertension or DM than normal or underweight patients [odds ratio (OR) = 15.62; 95% confidence interval (CI) 8.27,29.51; OR = 4.49; 95% CI 1.90,10.64; $p = 0.001$, respectively]. Drug allergy was frequent (7.3%), with the highest penicillin prevalence (35.3%). Filling, scaling, and oral surgery were the regular previous dental treatment. Medical consultation, significantly associated with high blood pressure levels and medical conditions, was stated in 32 (4.4%) participants.

**Conclusion:** High number of medically compromised dental patients is demonstrated. Dentists should take a careful history of dental patients' health status to render the most beneficial treatment.

**Clinical significance:** High incidence of medical conditions and medication use in dental patients is revealed. Thorough history taking, careful clinical examinations, and knowledge about systemic diseases and medications taken by dental patients are fundamental requirements before any dental procedures.

**Keywords:** Cross-sectional study, Dental practice management, Dental records, Dental school, Thai.

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## Introduction

Systemic diseases cause disease-related morbidity and mortality and affect patients' quality of life. Most patients who have systemic conditions receive some medications. An increasing number of patients who visit dental clinics are medically compromised or are receiving medications. The prevalence of systemic conditions among dental patients ranges from 12.2 to 86.0%.[1–9] This discrepancy may be attributed to the population's characteristics, research methods, or the exclusion or lack of diagnosis of some systemic conditions. Imprecise information about systemic conditions and medication use could affect oral health and the treatment planning patients should receive.

Evaluating the status of a dental patient is an important part of proper dental management. There is a general lack of data about dental patients' medical status in Thailand, including data about patients seen by dental students in private dental schools in Thailand. Patients at the Rangsit University College of Dental Medicine, a private dental school, receive comprehensive dental treatment. Data could be collected from the first dental visit until the completion of treatment. The patient's history could then be entirely recorded and updated, yielding more reliable information.[10] Therefore, the objectives of our study were to review the occurrence of medical conditions and medication use in patients receiving treatment at the College of Dental Medicine, Rangsit University, and to determine associations among these factors. This information could encourage dentists and dental students to be aware of common systemic conditions and medication use in dental patients and successfully deal with medically compromised patients, rendering their treatment more beneficial.

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**Conflict of interest**: None

## Materials and Methods

Dental chart records of patients who received dental treatment at the College of Dental Medicine at Rangsit University during 2013–2017 were studied in this cross-sectional research. The research was approved by the Human Research Ethics Committee of the Rangsit University (COA.No.RSUERB2020–007) according to the

Declaration of Helsinki and reported following the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement.[11] For calculating the sample size, the prevalence (12.2%) of systemic conditions in dental patients from a previous study in a Thai government dental school was used.[1] Six hundred eighty-six files were needed to be sampled by systematic randomization.

The dental records of patients aged 12 years and older who had undergone a dental examination were evaluated. Dental records of patients aged younger than 12 years or of patients with intellectual disabilities were excluded. Data of age, sex, all medical conditions, medication use, drug allergies, medical consultations, the latest physical examination, and dental treatment that dental students had recorded under the supervision of dental clinic supervisors were analyzed. Body mass index (BMI) was classified into four groups: normal weight (18.5–22.99 kg/m$^2$), underweight (<18.5 kg/m$^2$), overweight (23.00–24.99 kg/m$^2$), and obese (>25 kg/m$^2$).[12] Hypertension was probable when a person's systolic blood pressure (SBP) in the office or clinic was ≥140 mm Hg and/or diastolic blood pressure (DBP) was ≥90 mm Hg.[13]

The data were analyzed using IBM SPSS Statistics for Windows version 25.0 (IBM Corp., Armonk, NY, USA). A *p*-value of <0.05 was set for statistical significance. The Kolmogorov–Smirnov test tested the normal distribution of the collected data. Descriptive statistics were applied, and the Mann-Whitney U test was used to compare the median values. A Chi-square test evaluated the associations among profile variables. Odds ratios were calculated, along with 95% confidence intervals.

## Results

A total of 712 dental patients were studied (Table 1). Females (457 patients; 64.2%) were more prevalent than males (255 patients; 35.8%). Their ages ranged between 12 and 84 years, with a median age of 27 (21,49). Most patients (63.3%) were not married, and 70.9% reported that their latest physical examination was within the last year. The number of underweight dental patients was higher than the number of overweight or obese patients. Most of the underweight patients were females (30.0%), while males (12.7%) were commonly obese. There was an association between sex and BMI ($p < 0.001$). Regarding smoking and alcohol consumption, most of the patients had never smoked or drunk alcohol. However, the statistical analysis showed that men had a significantly higher frequency of smoking and drinking alcohol than women ($p < 0.001$).

The measured SBP of 145 patients (21.3%), as noted in the oral examination chart, was classified as possible hypertension; males (11.4%) showed a higher tendency towards hypertension than females (9.9%). In contrast, females (5.0%) had a higher predilection for hypertension than males (2.4%) according to DBP measurements. Associations were found between sex and measured SBP ($p = 0.001$) and DBP ($p = 0.009$). Sixty-nine (10.1%) patients gave a history of hypertension. However, when measured blood pressure levels of participants prone to hypertension were considered with their hypertension history, three-thirds of patients with possible hypertension did not have a hypertension history. In contrast, only 37.7% of patients with a history of hypertension were measured as having a normal blood pressure value. The substantial remainder of the patients had high blood pressure levels that might not be under control (Table 2). The patients with possible hypertension from blood pressure measurement had a seven times tendency to have a definitive diagnosis of hypertension than patients without possible hypertension (OR = 7.37; 95% CI 4.35,12.50; $p = 0.001$). Blood pressure measurements were repeated, and participants with possible hypertension were advised to consult a physician for further examination and definitive diagnosis.

The total of 217 out of 712 patients (30.5%) had medical problems. Of these, most (22.4%) had one medical condition, 7.1% had two medical conditions, and 1.0% had three or more medical conditions. The maximum number of medical conditions per patient was six, which occurred in only one case. Women showed a higher prevalence of medical conditions than men. However, none of the medical conditions were significantly associated with sex except for genitourinary disease, which occurred mainly in males ($p = 0.024$). The most common medical conditions were hypertension (9.9%), allergy (9.1%), DM (3.7%), and respiratory disease (3.1%) (Fig. 1). Asthma was the most common form of respiratory disease. Dyslipidemia (2.7%) and hematologic diseases (2.7%) were equally prevalent. Dyslipidemia usually occurred with hypertension and DM. Allergy was the second most common medical condition, found in 126 (17.7%) patients. The allergies were usually related to air particles, drugs, or foods. The total of 11 out of the 126 patients with allergies had more than one type of allergy. There was an association between allergy and sex with a female predominance ($p = 0.039$).

In patients aged 70–79 years, 87.0% had the most serious medical conditions (Fig. 2). In patients aged 60–69 years and 50–59 years, 60.7% and 51.7% had medical conditions, respectively. Similarly, 78.3% of patients aged 70–79 years had the highest medication use, followed by patients aged 60–69 years and ≥80 years. Our study showed that one-fourth of all patients with medical conditions (58 from 217) were more than 60 years of age. Moreover, almost half of the patients taking medications (55 from 136) were older adults aged ≥60 years.

Figure 3 illustrates the percentage of patients with medical conditions according to BMI. The average BMI was 22.3 (19.5, 25.7) kg/m$^2$. Most obese patients had hypertension (4.4%), DM (1.7%), dyslipidemia (2.7%), or CVD (0.8%). Overweight or obese patients had a higher likelihood of having a history of hypertension or DM than normal or underweight patients (OR = 15.62; 95% CI 8.27,29.51; OR = 4.49; 95% CI 1.90,10.64; $p = 0.001$, respectively). Allergy (4.6%), respiratory diseases (1.56%), and hematologic diseases (1.7%) were frequently found in underweight patients. Underweight patients had an increased risk of anemia (OR = 6.88; 95% CI 2.56,18.52, $p = 0.002$).

One hundred thirty-six patients (19.4%) reported a history of taking medications (Fig. 4). Of these, 72.7% used one drug group, and the remaining patients used two or more groups. The maximum number of drugs used was seven, which occurred in only one case. Women (13.3%) took medications more frequently than men (6.3%). The most prevalent drugs were drugs for CVD (8.6%), followed by drugs for endocrine disorders (4.1%) and antidyslipidemic drugs (2.7%). Among drugs for CVD, drugs for hypertension treatment were the most frequently reported. The most common drugs for endocrine diseases were anti-diabetic drugs, followed by drugs for thyroid disorders and reproductive organs. Twenty patients (2.8%) reported taking multiple medications. Medical conditions were ordinarily associated with medication use ($p < 0.001$). Nevertheless, the use of medications was not significantly associated with males or females.

In the present study, 18.0% of patients had a history of allergy. The most frequent allergies were drug allergies (7.3%), followed by seasonal allergies (4.9%) and food allergies (4.3%). In the drug allergy group, 23.5% were allergic to $\beta$-lactam antibiotics, 21.6% were allergic to non-steroidal anti-inflammatory drugs, and 17.6%

**Table 1:** Characteristics of dental patients according to sex

| | *Dental patients (N = 712)* | | | |
|---|---|---|---|---|
| *Variables* | *Male n (%)* | *Female n (%)* | *Total n (%)* | *p* |
| Age (median (Q1, Q3) years) | 27 (21,52) | 28 (21,49) | 27 (21,49) | 0.305 |
| BMI (*n* = 593) | | | | |
| Normal weight | 22 (3.7%) | 64 (10.8%) | 86 (14.5%) | 0.001 |
| Underweight | 70 (11.8%) | 178 (30.0%) | 248 (41.8%) | |
| Overweight | 39 (6.6%) | 50 (8.4%) | 89 (15.0%) | |
| Obese | 75 (12.7%) | 95 (16.0%) | 170 (28.7%) | |
| SBP (mm Hg) (*n* = 680) | | | | |
| Normal | 107 (15.7%) | 307 (45.1%) | 414 (60.8%) | <0.001 |
| High normal | 58 (8.5%) | 63 (9.3%) | 121 (17.8%) | |
| Hypertension stage I | 63 (9.3%) | 46 (6.8%) | 109 (16.1%) | |
| Hypertension stage II | 12 (1.8%) | 16 (2.4%) | 28 (4.2%) | |
| Hypertension stage III | 3 (0.4%) | 5 (0.7%) | 8 (1.1%) | |
| DBP (mm Hg) (*n* = 680) | | | | |
| Normal | 196 (28.8%) | 374 (55.0%) | 570 (83.8%) | 0.009 |
| High normal | 31 (4.6%) | 29 (4.3%) | 60 (8.9%) | |
| Hypertension stage I | 8 (1.2%) | 28 (4.1%) | 36 (5.3%) | |
| Hypertension stage II | 5 (0.7%) | 5 (0.7%) | 10 (1.4%) | |
| Hypertension stage III | 3 (0.4%) | 1 (0.2%) | 4 (0.6%) | |
| Tobacco history (*n* = 674) | | | | |
| Never | 160 (23.7%) | 416 (61.7%) | 576 (85.4%) | <0.001 |
| Current | 72 (10.7%) | 18 (2.7%) | 90 (13.4%) | |
| Former | 7 (1%) | 1 (0.2%) | 8 (1.2%) | |
| Alcohol consumption (*n* = 677) | | | | |
| Never | 114(16.8%) | 326(48.2%) | 440(65.0%) | <0.001 |
| Current | 127(18.8%) | 108(16.0%) | 235(34.8%) | |
| Former | 1(0.1%) | 1(0.1%) | 2(0.2%) | |

**Table 2:** Number of dental patients with a history of hypertension according to patients' blood pressure levels

| | *Blood pressure levels* | | |
|---|---|---|---|
| *Hypertension history* | *SBP < 140 mm Hg/DBP < 90 mm Hg* | *SBP ≥ 140 mm Hg/DBP ≥ 90 mm Hg* | *Total* |
| Presence | 26 (3.82%) | 43 (6.32%) | 69 (10.14%) |
| Absence | 499 (73.38%) | 112 (16.47%) | 611 (89.85%) |
| Total | 525 (77.20%) | 155 (22.79%) | 680 (100%) |

were allergic to more than one kind of drug. The most frequent combined drug allergy was with penicillin (35.3%). This study also showed that females were significantly more likely to have drug allergies than males ($p = 0.006$).

Most patients (69.7%) only visited their dentist when symptoms presented. The typical dental treatments were fillings (53.8%), followed by scaling (53.1%) and oral surgery (51.1%). While 0.5% had bleeding and 0.2% had an infection, almost all patients had no complications.

Thirty-two (4.4%) participants were referred for medical consultations. The time taken to receive results from a medical consultation varied from 1 day to 1 month. Descriptions of 26 consulted cases were derived; 16 (50.0%) were males, and 16 (50.0%) were females. The median age of males was 58.5 (41.2,65.5) years, while females' median age was 51.5 (37.7,59.2). The presence of medical conditions and medication use, high SBP and DBP levels, and a history of hypertension were significantly associated with medical consultations ($p < 0.001$). The median SBP of patients

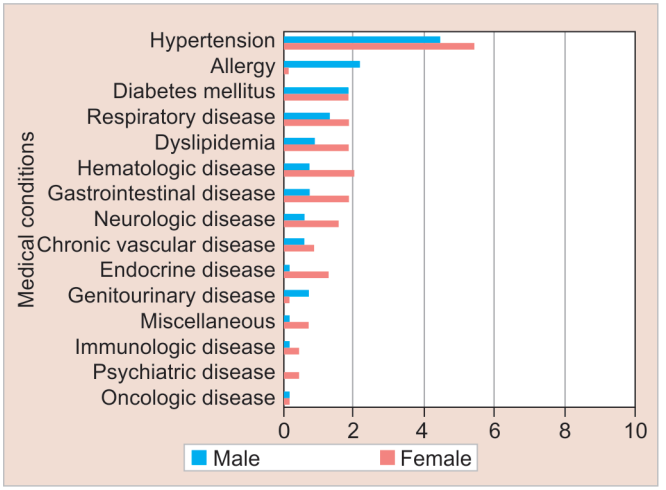


**Fig. 1:** Percentage of dental patients with medical conditions according to sex

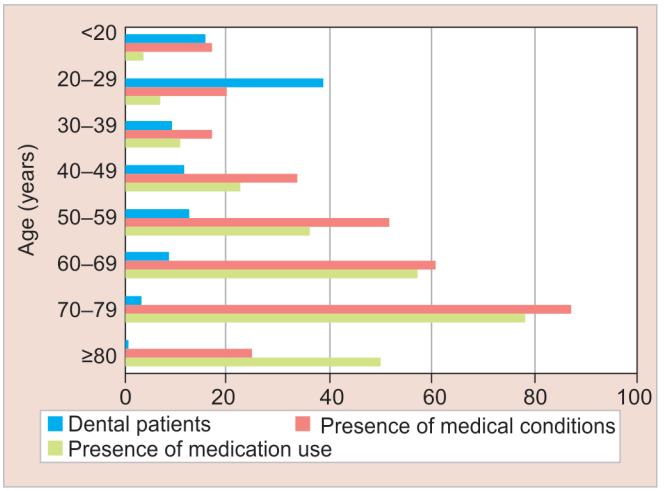


**Fig. 2:** Percentage of dental patients with medical conditions and medication use according to age-group

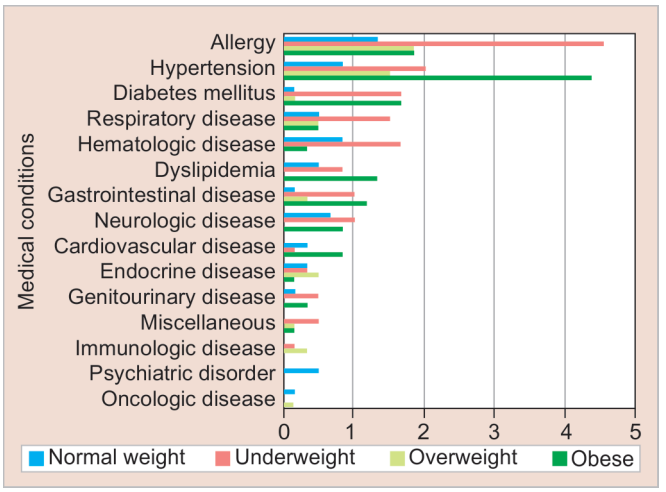


**Fig. 3:** Percentage of dental patients with medical conditions according to BMI

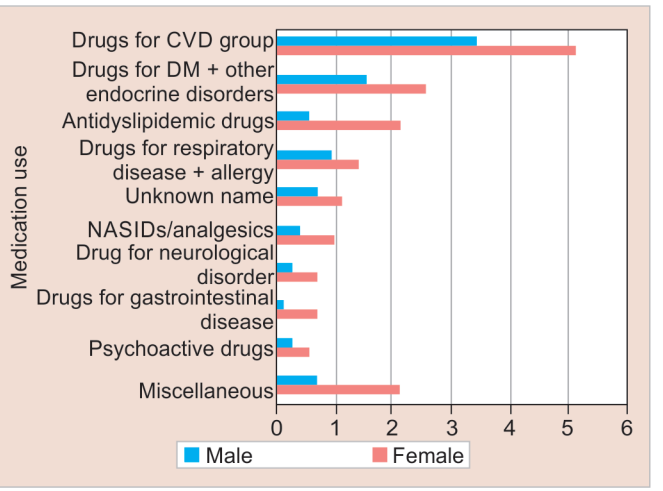


**Fig. 4:** Percentage of dental patients with medication use according to sex

with a consultation was 141.0 (128.0,157.7) mm Hg, compared with the lower median SBP of patients without a consultation [124.0 (113.0,136.0) mm Hg]. Similarly, the median DBP of patients with a consultation was higher [81.0 (70.25,88.75) mm Hg] than that of patients without a consultation [72.0 (65.0,80.0)]. The relationship between the SBP and DBP levels of patients with medical consultations was significant ($p < 0.001$ and $p = 0.05$, respectively). Nevertheless, there was no significant association between medical consultations and BMI ($p = 0.405$), latest physical examination ($p = 0.543$), history of endocrine diseases ($p = 0.413$), genitourinary diseases ($p = 0.589$), immunological diseases ($p = 0.051$), allergies ($p = 0.952$), or psychiatric disorders ($p = 0.703$).

## Discussion

We present a uniquely detailed analysis of the medical status of patients seen by dental students in a private dental school in Thailand. Out of 712 patients studied, females were more prevalent than males, with a 1.8:1 female-to-male ratio. This is similar to previous studies, which reported a 1.2:1–1.9:1 female-to-male ratio.[1,2,8,14] The higher number of female patients in the present study is probable evidence of awareness and intention to seek dental treatment in females than males. However, the private dental school's treatment system favored patients who were adults of working age; hence, the percentage of older adults was lower than that of previous studies.[15,16]

The principal results indicated that 30.5% of dental patients had medical conditions, with a female predominance. Consistent with other studies, more females than males were medically compromised.[1–3] However, the occurrence was relatively high when compared with previous studies of Thai dental patients.[1,3] This variation in results may be due to several factors, including age, sex, sample population, and methodology. When subgroups were analyzed, the percentage of participants older than 60 years was comparable to other Thai studies. Jainkittivong et al. and Kaomongkolgit et al. found that 82.5 and 66.3% of older Thai dental patients had a history of systemic diseases.[15,16] The younger patients recruited in the present study compared with the older population in previous studies may explain how medical conditions increase with advancing age.[17] In contrast with the National Thai Food Consumption Survey results,[12] males were more overweight and obese than females in the present study aside from previous

study in Thai.[18] However, regardless of sex, it is encouraging that dentists play an important role in assisting patients to achieve healthy weight management.[19] Smoking and alcohol consumption, both risks for systemic and oral diseases,[20,21] were frequently shown to have a higher prevalence than in previous reports with male preponderance.[3,4,15] Dentists should routinely inform patients about the impact of smoking and alcoholism on health, promote smoking cessation, and provide regular oral hygiene care. Personal data recording before dental treatment is therefore recommended.

Hypertension, allergies, DM, respiratory diseases, hematologic diseases, and dyslipidemia were frequently reported in the present study. Similar findings in previous studies demonstrate that hypertension was the most common disease in dental patients.[2,3,5,7-9,15,22] Hypertension screening is mandatory. Pain control, stress reduction, and the use of vasoconstrictors in dental anesthesia should be obligatory to decrease the risk of adverse cardiovascular events.

Though secondly found in this study like another study,[4] allergy was the most frequently encountered medically compromised condition in dental patients from other studies.[1,17] Drug allergy was the most frequent allergy category. As in previous Thai studies, most of the drug-related allergic reactions occurred with $\beta$-lactam antibiotics (amoxicillin).[1,3,16,22] Allergies can cause skin rashes, itching, swelling, shortness of breath, and anaphylactic shock; a thorough patient history, especially concerning drug allergies, is necessary before performing a dental operation or prescribing medications.[23]

Although Javali et al. reported that DM was the most common systemic condition among dental patients,[6] it was ranked third in our study, which is consistent with previous Thai studies.[1,3] Periodontal treatment significantly improves glycemic control in DM.[24] Therefore, dentists must recognize the signs and symptoms of DM, refer patients with suspected DM for medical consultation, and be aware of the potential role of DM in oral diseases.

Respiratory disease, principally asthma, was the fourth most common systemic condition in our study. Comparable results have been reported in previous studies of Thai dental patients.[1,3] An asthma attack is an emergency event that can occur during dental treatment, triggered immediately after local anesthetic injection or stress-inducing dental procedures. Dentists should implement appropriate strategies to prevent acute attacks in patients with a history of asthma and be prepared for proper management of this potentially life-threatening medical emergency.

Dyslipidemia, as in other published data, was not uncommon in our study.[1,3] Dyslipidemia is considered to be one of the major risk factors causing CVD.[1,3] Patients with dyslipidemia do not generally have any apparent symptoms, and the condition is usually discovered during a physical examination or when a stroke or heart attack occurs. Therefore, dentists need to encourage patients to have routine medical check-ups. Although most patients had only one medical problem in our study, similar to the findings of Humbert et al.,[8] patients quite commonly reported two or more diseases. Most obese patients had hypertension, dyslipidemia, DM, and CVD in the present study. Khan et al. demonstrated that obese individuals were associated with shorter longevity and significantly increased CVD morbidity and mortality risk than those with normal BMI.[25] Thanakun et al. demonstrated that overweight or obese Thai people acquired increased inflammatory dental and periodontal diseases with altered plasma inflammatory mediators.[18] When periodontal treatment was delivered, the systemic inflammatory response was improved.[26]

Overall, the most prevalent medications were cardiovascular drugs, followed by endocrine drugs, antidyslipidemic drugs, and drugs for the respiratory system. Among drugs for CVD and endocrine drugs, antihypertensives, and anti-diabetics were the most frequent medications. These frequencies corresponded with hypertension, DM, dyslipidemia, and respiratory diseases as the most common medical conditions in our study. The current results were similar to other reports that found that cardiovascular medications and endocrine drugs were the main drugs used in dental patients.[1,3,4,7,22] Xerostomia, dysgeusia, lichenoid reactions, and gingival enlargement are adverse drug reactions of anti-hypertensive, anti-diabetic, and antidyslipidemic drugs.[27] When any of these signs and symptoms are observed, consultation with a prescribing physician may be indicated.

Common reasons for referral for a medical consultation were systemic conditions, medication use, high SBP and DBP levels, and a history of hypertension. Although similar reports of the standard type of dental operations to our study,[8] we suggest that patients presenting with any questionable medical conditions and determined to be at risk for complex dental treatment should be referred for a physician consultation before starting treatment. Jainkittivong et al. showed that a medical consultation could reduce the medical risk associated with dental procedures and lessen unnecessary antibiotic prophylaxis.[16] Penicillin allergy, the most common drug allergy, is of vital concern because penicillin is the principal drug for antibiotic prophylaxis.[22]

This study has some limitations. Medical health records from routine health check-ups were not available from every dental patient. Therefore, some history of medical conditions and medication use relied on the history taken from dental students under the supervision of the dental clinic supervisors and were unable to be confirmed. Moreover, because the study was performed at a single center, the interpretation cannot be generalized. However, this research was conducted at a private dental school, which provides comprehensive dental treatment and enables dentists to monitor patients' history at every visit. It appears that an entire medical history and medication use obtained from the patients are extensive. Therefore, the results of our study provide valuable information about the medical profiles of patients receiving treatment by dental students and could be extrapolated to those of ordinary dental patients. Thorough history taking, careful clinical examinations, and knowledge about systemic diseases and medications taken by patients are fundamental requirements before any dental procedures are undertaken.

## Conclusion

This study reveals the relatively high incidence of medical conditions and medication use in patients visiting a private dental school. Dental management of these patients may need to be modified to provide safe and successful treatment without triggering a medical emergency. Knowledge and awareness of patients' medical profiles, attained through extensive medical history taking at every dental visit, are essential. Patients with asymptomatic medical conditions may be undiagnosed. Encouraging these patients to have routine medical check-ups is recommended.

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## References

1. Dhanuthai K, Sappayatosok K, Bijaphala P, et al. Prevalence of medically compromised conditions in dental patients. Med Oral Patol Oral Cir Bucal 2009;14(6):E287–E291. http://www.medicinaoral.com/medoralfree01/v14i6/medoralv14i6p287.pdf
2. Maryam A, Atessa P, Mozafari Pegah M, et al. Medical risk assessment in patients referred to dental clinics, Mashhad, Iran (2011–2012). Open Dent J 2015;9:420–425. DOI: 10.2174/1874210601509010420
3. Chaichalermsak S, Thanakun S, Sriwara J, et al. Medical history of a group of Thai dental patients: the Faculty of Dentistry, Mahidol University 2003–2008. J Dent Assoc Thai 2010;60(1):11–21. https://www.jdat.org/main/archive/9/2010
4. Frydrych AM, Parsons R, Kujan O. Medical status of patients presenting for treatment at an Australian dental institute: a cross-sectional study. BMC Oral Health 2020;20(1):289. DOI: 10.1186/s12903-020-01285-2
5. Al-Bayaty HF, Murti PR, Naidu RS, et al. Medical problems among dental patients at the School of Dentistry, the University of the West Indies. J Dent Educ 2009;73(12):1408–1414. https://europepmc.org/article/MED/20007497
6. Javali MA, Khader MA, Al-Qahtani NA. Prevalence of self-reported medical conditions among dental patients. Saudi J Med Med Sci 2017;5(3):238–241. DOI: 10.4103/sjmms.sjmms_78_16
7. Esteves HJ, Quintanilla JM. Identification of medically compromised dental patients in a Portuguese population. Oral Health Prev Dent 2013;11(4):315–322. DOI: 10.3290/j.ohpd.a30484
8. Humbert A, Schmage P, Harendza S. Internal diseases encountered by dental students while treating dental patients during undergraduate training. BMC Med Educ 2018;18(1):149. DOI: 10.1186/s12909-018-1258-3
9. Aggarwal A, Panat SR, Talukder S. Self-reported medical problems among dental patients in Western Uttar Pradesh, India. J Dent Educ 2011;75(12):1635–1640. https://pubmed.ncbi.nlm.nih.gov/22184604/
10. AAOM. Clinical practice statement: subject: medical history. Oral Surg, Oral Med, Oral Pathol, Oral Radiol 2016;121(6):618–619. DOI: 10.1016/j.oooo.2016.02.013
11. von Elm E, Altman DG, Egger M, et al. Strengthening the reporting of observational studies in epidemiology (STROBE) statement: guidelines for reporting observational studies. BMJ 2007;335(7624):806. DOI: 10.1136/bmj.39386.490150.94
12. Jitnarin N, Kosulwat V, Rojroongwasinkul N, et al. Prevalence of overweight and obesity in Thai population: results of the National Thai Food Consumption Survey. Eat Weight Disord 2011;16(4):e242–e249. DOI: 10.1007/bf03327467
13. Sukonthasarn A, Audhya R, Sitthisook S, et al. 2019 Thai Guidelines on The Treatment of Hypertension; 2019.
14. Khader YS, Alsaeed O, Burgan SZ et al. Prevalence of medical conditions among patients attending dental teaching clinics in northern Jordan. J Contemp Dent Pract 2007;8(1):60–67. DOI: 10.4103/sjmms.sjmms_78_16
15. Kaomongkolgit R. Oral lichenoid drug reaction associated with antihypertensive and hypoglycemic drugs. J Drugs Dermatol 2010;9(1):73–75. DOI: 10.5005/jp-journals-10029-1075
16. Jainkittivong A, Aneksuk V, Langlais RP. Medical health and medication use in elderly dental patients. J Contemp Dent Pract 2004;5(1):31–41. DOI: JCDP/pdf/10.5005/jcdp-5-1-31
17. Smeets EC, de Jong KJ, Abraham-Inpijn L. Detecting the medically compromised patient in dentistry by means of the medical risk-related history. A survey of 29,424 dental patients in The Netherlands. Prev Med 1998;27(4):530–535. DOI: 10.1006/pmed.1998.0285
18. Thanakun S, Pornprasertsuk-Damrongsri S, Izumi Y. Increased oral inflammation, leukocytes, and leptin, and lower adiponectin in overweight or obesity. Oral Dis 2017;23(7):956–965. DOI: 10.13039/100008919
19. Arora A, Poudel P, Manohar N, et al. The role of oral health care professionals in preventing and managing obesity: a systematic review of current practices and perceived barriers. Obes Res Clin Pract 2019;13(3):217–225. DOI: 10.1016/j.orcp.2019.03.005
20. Zhang Y, He J, He B, et al. Effect of tobacco on periodontal disease and oral cancer. Tob Induc Dis 2019;17:40–40. DOI: 10.18332/tid/106187
21. Grocock R. The relevance of alcohol to dental practice. Br Dent J 2018;223(12):895–899. DOI: 10.1038/sj.bdj.2017.997
22. Fitzgerald J, Epstein JB, Donaldson M, et al. Outpatient medication use and implications for dental care: guidance for contemporary dental practice. J Can Dent Assoc 2015;81:f10. https://jcda.ca/article/f10
23. Becker DE. Drug allergies and implications for dental practice. Anesth Prog 2013;60(4):188–197. DOI: 10.2344/0003-3006-60.4.188
24. Baeza M, Morales A, Cisterna C, et al. Effect of periodontal treatment in patients with periodontitis and diabetes: systematic review and meta-analysis. J Appl Oral Sci 2020;28:e20190248. DOI: 10.1590/1678-7757-2019-0248
25. Khan SS, Ning H, Wilkins JT, et al. Association of body mass index with lifetime risk of cardiovascular disease and compression of morbidity . JAMA Cardiol 2018;3(4):280–287. DOI: 10.1001/jamacardio.2018.0022
26. Wanichkittikul N, Laohapand P, Mansa-Nguan C, et al. Periodontal treatment improves serum levels of leptin, adiponectin, and C-reactive protein in Thai patients with overweight or obesity. Int J Dent 2021;2021: Article ID 6660097, DOI: 10.1155/2021/6660097
27. Yuan A, Woo S-B. Adverse drug events in the oral cavity. Oral Surg Oral Med Oral Pathol Oral Radiol 2015;119(1):35–47. DOI: 10.1016/j.oooo.2014.09.009