Published Online: 2025 May 14

Research Article

Knowledge, Attitude, and Practice of Senior Dental Students and General Dentists Regarding Anti-coagulant Therapy and Related Tests

Mohammadreza Salehi [1], Fatemeh Abbasi [1], Mehran Shafiei [2], Adel Tabesh [1,*]

[1] Department of Oral Medicine, Dental Research Center, Dental Research Institute, Faculty of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran

[2] Student Research Committee, Faculty of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran

[*] ***Corresponding Author:*** Department of Oral Medicine, Dental Research Center, Dental Research Institute, Faculty of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran. Email: adeltabesh@gmail.com

Received: 10 May, 2025; **Accepted:** 13 May, 2025

Abstract

Background: Several dental procedures involve bleeding, which is typically not a concern under normal circumstances. However, in patients undergoing anticoagulant therapy, there may be fatal consequences unless proper dental management is implemented.

Objectives: The purpose of the present study was to evaluate the knowledge, attitude, and practice of general dentists and senior dental students regarding anticoagulant therapy and its related tests.

Methods: This was a cross-sectional study. The questionnaire consisted of 30 questions regarding knowledge, 4 questions for attitude, and 2 questions for practice assessment. The validity and reliability of the questionnaire have been confirmed. The answers were coded, and SPSS software was used to analyze the data. A P-value of less than 0.05 was considered statistically significant.

Results: The total number of participants was 400, of whom 275 completed the study, including 152 students and 123 dentists. The mean score of knowledge was 16.84 ± 3.57. The mean scores of knowledge for students and dentists were 17.30 ± 3.72 and 16.29 ± 3.39, respectively, which were statistically significant (P = 0.021). The mean score of attitude and the prevalence of answers to practice questions were also reported.

Conclusions: The level of knowledge, attitude, and practice regarding anticoagulant therapy and related tests was relatively low, especially among general dentists. Planning educational programs seems necessary to improve knowledge and practice on the subject.

Keywords: Knowledge, Practice, Dentists

1. Background

Homeostasis is the process by which the human body maintains its water and electrolyte balance. Coagulation is one of its major components, preserving intravascular homeostasis by forming clots following vessel wall injuries through extrinsic and intrinsic pathways (1). The coagulation cascade is triggered by injury and results in fibrin formation (2).

Several dental procedures, including surgeries, extractions, and root planing, cause bleeding. Normally, clot formation prevents excessive blood loss, with or without local remedies such as pressure or sutures. However, patients with coagulation disorders may experience serious or even fatal complications (3).

Coagulation disorders can be either inherited or acquired (4). Inherited disorders include von Willebrand disease, hemophilia A/B, and Glanzmann thrombasthenia, while acquired disorders usually result from liver failure or certain drug consumption (5-8).

Dentists must pay close attention to the bleeding history of patients or their close relatives before performing invasive dental procedures like tooth extraction (8). Laboratory tests such as platelet count, bleeding time (BT), prothrombin time (PT), and partial thromboplastin time (PTT) are among the evaluations

How to Cite: Salehi M, Abbasi F, Shafiei M, Tabesh A. Knowledge, Attitude, and Practice of Senior Dental Students and General Dentists Regarding Anti-coagulant Therapy and Related Tests. Compr Health Biomed Stud. 2024; 3 (1): e162704. https://doi.org/10.5812/chbs-162704.

that help clinicians identify or manage such disorders (2, 9).

When encountering such disorders, dentists should list the drugs taken by a patient, such as warfarin (coumarin or coumadin), aspirin, clopidogrel (Plavix), heparin, enoxaparin, or other derivatives, as well as newer drugs like rivaroxaban. Additionally, consulting with hematologists may assist in planning suitable dental management and treatment for the patient (9-11).

Dental practitioners need sufficient knowledge and practical skills regarding anticoagulant drugs and related laboratory tests to prevent risks associated with dental procedures for patients consuming such drugs.

2. Objectives

The present study aimed to investigate the knowledge, attitude, and practice of senior dental students and general dentists regarding anticoagulant therapy and related tests.

3. Methods

3.1. Study Design and Participants

This was a cross-sectional study conducted from June 2020 to April 2021. The study population comprised general dentists working in Isfahan city, as well as dental students from the Faculty of Dentistry at Isfahan University of Medical Sciences, who were in their clinical training period.

The sample size was calculated using the following formula. With a confidence level of 95% and a maximum margin of error of 0.35, 168 participants were calculated for knowledge assessment in each group. As the total number of senior dental students was 200, and considering probable missing cases throughout the study, 200 participants were set for each group.

$$\frac{\left(NZ^2a^2\right)}{\left(d^2(N-1)+Z^2a^2\right)}$$

Inclusion criteria included working clinically as a general dentist or being a senior (the last two years of a six-year period) dental student in Isfahan city. Exclusion criteria included unwillingness to participate, not opening the questionnaire link, incomplete answers to the questionnaire, and no clinical practice during the last year. The sampling method was consensus for students. The questionnaire was electronically prepared and sent to all senior dental students (200 individuals) training at Isfahan Dental School. The web link to the online questionnaire was sent via short message service (SMS) to each individual's cell phone.

For general dentists, random sampling was performed. The list of general dentists residing in Isfahan was obtained from the Isfahan Medical Council. Using a table of random digits, 200 general dentists were randomly selected, and the questionnaire was sent to their cell phones via a link in an SMS.

3.2. Questionnaire Design and Data Collection

The validity and reliability of the utilized questionnaire were previously verified by Salehi, with an acceptable Cronbach's alpha of 0.79 (12). The questionnaire comprised three separate parts. The first part was for knowledge assessment, consisting of two sections: Fourteen yes/no questions and 16 multiple-choice questions. Each correct yes/no answer received a score of 1, while each incorrect answer scored 0. In the multiple-choice questions, the correct answer scored 1, and other choices were incorrect (score 0). Therefore, the knowledge score of participants ranged from 0 to 30 (14 + 16). Scores below 18 were considered relatively low.

The second part was for attitude assessment. There were four questions regarding participants' attitudes in the questionnaire. Answers to each question were recorded on a Likert scale, scored as (1) low, (2) medium, (3) much, and (4) very much. Therefore, the attitude score ranged from 4 to 16, with higher scores indicating a better attitude.

The last part of the questionnaire was for practice assessment. Two questions assessed the practice of participants. In the first question, participants were asked whether they order anticoagulant profile checking tests themselves or prefer to refer the patient to a physician. The second question asked whether they would change the patient's anticoagulant drug regimen when needed or would rather refer them. For each of these two questions, the prevalence of chosen answers was reported individually. Data regarding gender and years of practice to date (for general dentists, more or less than five years) were also recorded.

3.3. Education

For educational purposes, after the process of filling out the questionnaire, a previously completed questionnaire with correct answers in the field of knowledge was sent to each participant. The goal of this action was to enhance clinicians' knowledge regarding the dental management of patients.

3.4. Statistical Analysis

SPSS version 22 (IBM Statistics, Chicago, USA) was used to analyze the data. A *t*-test was used to compare knowledge and attitude scores between different gender and work experience groups. The chi-square test was used to compare practice answers between different groups. A P-value of less than 0.05 was considered statistically significant.

4. Results

4.1. Demographic Characteristics

The questionnaire was sent to 200 students, and 152 (76%) students returned the completed questionnaire. The questionnaire was also sent to 200 dentists, of whom 123 (61.5%) returned the completed questionnaire. Therefore, a total response rate of 69% was recorded. Female participants numbered 147, comprising 53.5% of the participants. Meanwhile, 128 men participated in the study, accounting for 46.5% of the respondents. Notably, 87 dentists (70.7%) had worked for less than 5 years.

4.2. Questionnaire Scores and Results

The mean score of knowledge was 16.84 ± 3.57. The mean score was 16.29 ± 3.39 for dentists and 17.30 ± 3.72 for students. The mean score of attitude was 7.62 ± 2.01, with scores of 7.58 ± 2.18 for dentists and 7.65 ± 1.99 for students. Regarding the question about ordering coagulation profile tests, 31.6% of students and 21.1% of dentists ordered the tests themselves. Regarding the question about changing a patient's drug dose, the percentage declined to 6.6% for students and 2.4% for dentists (Table 1).

Table 1. Prevalence of Answers to Practice Questions

Questions	Students (%)	Dentists (%)	P-Value
Requesting coagulation profile			
Medical consultation	53.3	64.2	0.016
Do the job themselves	31.6	21.1	0.011
Adjusting drug dose			
Medical consultation	81.6	86.2	> 0.05
Do the job themselves	6.6	2.4	0.03

4.3. Relationship Between Study Variables

The difference between the mean knowledge scores of students and dentists was statistically significant (P = 0.021). However, the mean score of attitude between students and dentists was not statistically significant (P > 0.05). Furthermore, there was no statistically significant relationship between study variables and gender or years of work experience (P > 0.05). The difference between students' and dentists' answers to the two practice questions was statistically significant. Specifically, students were more likely to order anticoagulant tests (P = 0.016) and to adjust a patient's drug regimen (P = 0.03) than dentists were.

5. Discussion

Evaluation of the knowledge, attitude, and practice of dentists and dental students regarding the dental management of patients with coagulation disorders provides the foundation for planning motivational and educational programs. Dentists and dental students are essential members of healthcare services, and ongoing programs ensure their qualified service to individuals and overall social well-being (13-15). The mean knowledge score was 16.84 ± 3.57 out of 30, indicating a relatively low index. Other studies in this area have also shown medium or low indices (16-20). However, the score was significantly higher in students than in dentists (P = 0.021), similar to the study by Moshaverinia et al. (16). It seems that students are more up-to-date than dentists, study newer references, and are more familiar with the dental management of medically compromised patients due to the courses they take.

This study showed no significant difference between the scores of general dentists with more and less than five years of work experience (P > 0.05). The results of other studies in this regard are controversial. While the results of Shabestari et al. and Robati and Farokhi align with the findings of the present study (17, 18), four other studies depicted a decline in knowledge over time (12, 16, 19, 20). It seems that in-service training programs should be planned for all dentists, regardless of how much time has passed since their graduation. Focusing on the hand skills of dentistry might have overlooked the role of medical management skills in general dentists. In line with this perspective, the present results showed that although the majority of dentists (70.7%) had been away from university for less than 5 years, their practice has declined significantly compared to dental students (P < 0.05).

The majority of general dentists and students in the present study preferred to refer patients with coagulation disorders to a physician for medical consultation before performing bleeding dental procedures. This finding aligns with other research results as well (12, 16-19). While seeking a medical consult is vital in complicated cases requiring dental services, why do such a high percentage of dentists or students refrain from ordering related coagulation tests themselves? It seems more prudent to check the coagulation profile first and consult in extreme cases for

adjustment, doesn't it? Despite educational programs for students and in-service education for dentists, it appears that a lack of self-esteem or experience prompts them to seek — sometimes unnecessarily — medical consultations. Practical clinical observation with hands-on training, more clinical experience, and greater attention to the medical aspects of dental patient management may improve their skills in this regard.

Despite the difference in knowledge and practice, the attitude scores of students and dentists were not significantly different ($P > 0.05$). This indicates that dentists are as eager as students to learn about the dental management of coagulation disorders, but they may become so accustomed to the practical aspects of dentistry that they forget, ignore, or lose the ability to address the medical aspects of patient management. In the present study, a correctly answered questionnaire was sent to everyone after participation, which had a great motivational effect on them, emphasizing the role of in-service training.

The main limitation of the present study was the emergence of the COVID-19 global pandemic, which restricted accessibility to dentists and students. Consequently, the researcher had to send the questionnaires online, which significantly reduced the response rate. It is suggested that future studies assess the knowledge, attitude, and practice of dentists regarding the dental management of other important systemic conditions to enhance their ability in this area and improve dental health treatments provided to medically compromised patients.

5.1. Conclusions

The level of knowledge, attitude, and practice among senior dental students was not acceptable; it was even lower among general dentists. A better education plan in dentistry courses, as well as in-service training programs on the dental management of coagulation disorders, seems beneficial to improve the dental services provided for patients with this disorder and enhance their oral health-related quality of life.

Footnotes

Authors' Contribution: Mohammadreaza Salehi designed the study protocol. Fatemeh Abbasi conducted article preparation. Mehran Shafiei gathered the data. Adel Tabesh edited the manuscript and conducted article submission.

Conflict of Interests Statement: The authors declare no conflict of interest, financial or non-financial.

Data Availability: Data will be readily available upon reasonable request.

Ethical Approval: IR.MUI.RESEARCH.REC.1399.401 .

Funding/Support: The present study was funded by Isfahan University of Medical Sciences.

Informed Consent: The informed consent was obtained from all the participants.

References

1. Israels S, Schwetz N, Boyar R, McNicol A. Bleeding disorders: Characterization, dental considerations and management. *J Can Dent Assoc*. 2006;**72**(9):827. [PubMed ID: 17109803].
2. Shadamarshan RA, Sharma R, Pradhan I, Kumar P. Post-dental extraction bleeding: Emphasis on the diagnosis of rare coagulation disorders. *Clin Case Rep*. 2021;**9**(9). e04746. [PubMed ID: 34484775]. [PubMed Central ID: PMC8405522]. https://doi.org/10.1002/ccr3.4746.
3. Sohn JB, Lee H, Han YS, Jung DU, Sim HY, Kim HS, et al. When do we need more than local compression to control intraoral haemorrhage? *J Korean Assoc Oral Maxillofac Surg*. 2019;**45**(6):343-50. [PubMed ID: 31966979]. [PubMed Central ID: PMC6955419]. https://doi.org/10.5125/jkaoms.2019.45.6.343.
4. Lin S, Hoffman R, Nabriski O, Moreinos D, Dummer PMH. Management of patients receiving novel antithrombotic treatment in endodontic practice: Review and clinical recommendations. *Int Endod J*. 2021;**54**(10):1754-68. [PubMed ID: 33894015]. https://doi.org/10.1111/iej.13533.
5. Aparna M. von Willebrand Disease in Dental Clinic: An Exclusive Case Report with Review of Literature. *J Contemp Dent*. 2015;**5**(2):107-12. https://doi.org/10.5005/jp-journals-10031-1118.
6. de Azevedo Kinalski M, Brondani LP, de Mattos Carpena ALM, Dos Santos MBF. Delayed Bleeding in a Hemophilic Patient After Sinus Floor Elevation and Multiple Implant Placements: A Case Report. *J Oral Implantol*. 2022;**48**(2):133-8. [PubMed ID: 33690855]. https://doi.org/10.1563/aaid-joi-D-20-00043.
7. Franco JB, Andrade NS, Bueno M, Peres M, Medina JB, Tenorio JDR, et al. Assessment of laboratory tests and intraoperative bleeding in patients with liver cirrhosis undergoing tooth extractions. *Oral Surg Oral Med Oral Pathol Oral Radiol*. 2022;**133**(2):148-55. [PubMed ID: 34275775]. https://doi.org/10.1016/j.oooo.2021.05.010.
8. Gupta A, Epstein JB, Cabay RJ. Bleeding disorders of importance in dental care and related patient management. *J Can Dent Assoc*. 2007;**73**(1):77-83. [PubMed ID: 17295950].
9. Dalati MH, Kudsi Z, Koussayer LT, Dalati MF, Mawla MF. Bleeding disorders seen in the dental practice. *Dent Update*. 2012;**39**(4):266-8. 270. [PubMed ID: 22774690]. https://doi.org/10.12968/denu.2012.39.4.266.
10. Bianchi S, Torge D, Rinaldi F, Piattelli M, Bernardi S, Varvara G. Platelets' Role in Dentistry: From Oral Pathology to Regenerative Potential. *Biomedicines*. 2022;**10**(2). [PubMed ID: 35203428]. [PubMed Central ID: PMC8869410]. https://doi.org/10.3390/biomedicines10020218.
11. Romer P, Heimes D, Pabst A, Becker P, Thiem DGE, Kammerer PW. Bleeding disorders in implant dentistry: A narrative review and a treatment guide. *Int J Implant Dent*. 2022;**8**(1):20. [PubMed ID: 35429255]. [PubMed Central ID: PMC9013394]. https://doi.org/10.1186/s40729-022-00418-2.
12. Salehi MR. Evaluation the knowledge and application of Isfahan dentists about coagulation tests in patients with coagulation

disorders. *J Isfahan Dent School*. 2006;**2**(1):59-62.

13. Elagib MFA, Baldo SMH, Tawfig A, Alqarni MA, Ghandour IA, Idris AM. Knowledge, attitude, and practice regarding infection control measures among dental students during COVID-19 pandemic. *Arch Environ Occup Health*. 2022;**77**(6):455-67. [PubMed ID: 34047677]. https://doi.org/10.1080/19338244.2021.1931796.
14. Basheer SN, Vinothkumar TS, Albar NHM, Karobari MI, Renugalakshmi A, Bokhari A, et al. Knowledge of COVID-19 Infection Guidelines among the Dental Health Care Professionals of Jazan Region, Saudi Arabia. *Int J Environ Res Public Health*. 2022;**19**(4). [PubMed ID: 35206219]. [PubMed Central ID: PMC8872162]. https://doi.org/10.3390/ijerph19042034.
15. Chowdhury S, Ara R, Roy S, Tanvir SMS, Eva FN, Neela TM, et al. Knowledge, attitude, and practices regarding human papillomavirus and its' vaccination among the young medical professionals and students of Bangladesh. *Clin Exp Vaccine Res*. 2022;**11**(1):63-71. [PubMed ID: 35223666]. [PubMed Central ID: PMC8844672]. https://doi.org/10.7774/cevr.2022.11.1.63.
16. Moshaverinia M, Lavaee F, Mohseni M. [Evaluation the knowledge of dentists and dentistry students in shiraz about dental considerations in patients using anticoagulants]. *J Isfahan Dent Sch*. 2017;**13**(1):99-107. FA.
17. Shabestari SB, Bakhshi M, Shirinbak I, Mahmoud K. [Knowledge and performance among dentists regarding coagulation tests in patients with hereditary bleeding disorders and patients on anticoagulant therapy]. *Sci J Iranian Blood Transfusion Org*. 2012;**8**(4):286-92. FA.
18. Robati R, Farokhi M. Evaluation the dentists' awareness of inherited bleeding disorders and anticoagulants in Shiraz. *Iran J Ped Hematol Oncol*. 2013;**3**(4):159-63. [PubMed ID: 24575290]. [PubMed Central ID: PMC3915455].
19. Kia SJ, Ghodsian B. [Survey the Knowledge of General Dental Practitioners about Coagulation Tests and Bleeding Disorders]. *J Guilan Univ Med Sci*. 2010;**19**(75):18-24. FA.
20. Haghi M, Haghi M, Kaboudi B, Nasiri S, Mohebi A, Zangeneh YM. [Evaluation of dentists' knowledge about management of patients with bleeding disorders in Kermanshah, Iran]. *J Isfahan Dent Sch*. 2013;**9**(2):178-85. FA.