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Knowledge of Practicing Students and Dental Surgeons Regarding Anti- coagulation Therapy of Patients Undergoing Dental Extractions

[1]Abdul Manan Shahid, [2]Muhammad Jamal, [3]Khalid Mahmood Siddiqi, [4]Muhammad Mudassar Saleem, [5]Muhammad Zeeshan Baig

ABSTRACT

Introduction: Dentists are still confused about whether to stop anticoagulants during extractions or to practice local hemostatic measures and closely monitor patients' international normalized ratios (INR) levels.

Aims & Objectives: To determine and analyze the level of knowledge of practicing students and dental surgeons regarding anticoagulation therapy of patients undergoing dental extractions.

Place and Duration of Study: A descriptive cross-sectional study was conducted among dentists and dental students in a teaching dental hospital (Islamabad Dental Hospital) for 5 months between August to December 2021.

Material & Method: There were a total of 127 participants including BDS students, house officers, postgraduate trainees, and faculty members of all dental clinical departments who responded to the printed questionnaire. A convenience sampling technique was used to gather the data. After encoding, the data was input into SPSS version 22. For qualitative variables, mean and standard deviation were computed, whereas for quantitative variables, frequencies and percentages were determined., p.value≤ 0.05 was considered significant. The findings were displayed as tables, charts, and figures.

Results: Out of 127 participants, 63.7% (n=81/127) were in favor of consultation with the patient's physician before dental extractions whereas 59% (n=75/127) considered discontinuation of aspirin seven days before extractions. Different international normalized ratio (INR) levels were considered for different medical conditions by 78.7% (n=100/127) while 49.6% (n=63/127) of the participants believed that warfarin should be replaced with low molecular weight heparin before dental extractions. 79% of participants knew the antidote of heparin. Postoperative clot formation was not checked by 25.2% (n=32/127), and 87.4% (n=111/127) gave both verbal and written instructions after dental extractions.

Conclusion: It is concluded that there is a good level of awareness and implementation of guidance among dental practitioners. Further research and training programs are advised to enhance the knowledge among dental practitioners and to upgrade the standard protocols for treating patients with anticoagulation therapy.

Keywords: Bleeding disorder, Anticoagulant, Hemophilia, Factor deficiency, von Willebrand disease

INTRODUCTION

Vitamin-K Antagonists (VKA´s) and New oral anticoagulants (NOAC) or Direct oral anticoagulant (DOAC) are the two main classes of anticoagulants. The most used VKA's are Warfarin and Ecenocoumarol whereas DOAC's include Dabigatran, Rivaroxaban, Apixaban, Endoxaban, and Betrixaban[1]. Previously dentists preferred discontinuing oral anticoagulation therapy for a few days to reduce the risk of postoperative bleeding, but this may result in thromboembolism and ischemic stroke[2]. Minor dental surgeries such as tooth extractions are associated with a low risk of bleeding which can be managed with local hemostatic agents[3].

To date, dentists are perplexed about whether to discontinue anticoagulants during extractions or should instead focus on careful monitoring of patients' international normalized ratio (INR)levels and employing local hemostatic measures[4].

A systematic review recommended stopping oral anticoagulants three days before the procedure. Some studies advise 7-10 days of discontinuation

[1]*Department of Oral Medicine, Islamabad Medical & Dental College, Shaheed Zulfiqar Ali Bhutto Medical University, Islamabad.*
[2]*Department of Oral & Maxillofacial Surgery, Capital Hospital, Islamabad.*
[3]*Department of Oral & Maxillofacial Surgery, Islamabad Medical & Dental College, Shaheed Zulfiqar Ali Bhutto Medical University, Islamabad.*
[4]*Department of Oral and Maxillofacial Surgery, Dental Centre, Yanbu General Hospital, Yanbu, Ministry of Health, Kingdom of Saudi Arabia.*
[5]*Department of Oral & Maxillofacial Surgery, Frontier Medical & Dental College, Abbottabad.*

Correspondence:
Dr. Khalid Mahmood Siddiqi, *Professor, Islamabad Medical & Dental College, Islamabad*
E-mail: drkhalidms@gmail.com

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before a surgical procedure, while most studies emphasize safe extractions without stopping the drugs[5]. Another study recommended an assessment of the risk of bleeding and thrombosis by the physician before discontinuing oral anticoagulants[6]. If international normalized ratio (INR) is in the therapeutic range of 2.0 to 4.0 and extractions are least traumatic, the oral anticoagulation therapy should not be discontinued peri procedurally. Local hemostatic agents such as tranexamic acid mouthwash, oxidized cellulose, gelatin sponge, and sutures reduce bleeding[7]. There was a low incidence of bleeding after tooth extractions in patients undergoing anticoagulation therapy. More bleeding complications were seen specifically in patients on NOACs, whereas there was moderate bleeding in those with classic anticoagulants and no bleeding complications in patients undergoing antiplatelet therapy[8].

A variation in dentist's knowledge, awareness and practice regarding the management of patients on oral anticoagulation therapy was found. [i] It was recommended that training sessions be organized to enhance the knowledge of students and dentists[9]. Haris et.al concluded a lack of knowledge among all groups of dentists, a statistically insignificant difference in diagnosis, and a significant difference regarding treatment planning and postoperative management section[10]. It was also suggested to update knowledge amongst dentists through workshops, updated courses, and curriculums[11].

According to a survey, more people knew about aspirin and warfarin than about other more recent medications (rivaroxaban and dabigatran)[12]. Before undergoing any invasive dental procedures, the majority of participants sought advice from a doctor, and their main concern when treating patients on oral anticoagulant medication was thromboembolic events[12].

There is a need for more educational research on managing patients undergoing low molecular weight heparin therapy and DOAC therapy[13]. Many myths are still circulating among dentists. Academic establishments need to confront these ideas immediately[14]. Asraf and Ishaq also recommended the development of local guidelines on anticoagulants[15]. Dentists need to use the most recent, scientifically supported information in their work.

The main aim of this study was to assess the knowledge of practicing students and dental surgeons regarding the management of patients taking anticoagulation therapy undergoing dental extractions.

MATERIAL AND METHODS

A descriptive cross-sectional study was conducted among dentists and dental students in a teaching dental hospital (Islamabad Dental Hospital) for 5 months. Ethical approval was sought from the Institutional Review Board (Ref # IMDC/DS/IRB/Ext/245) dated 17th June, 2021. The study included (n=127)3rd year and final-year students of the BDS program, house officers, post-graduate trainees, and faculty members of all clinical departments of dentistry. Participants who did not give consent and the forms that were incompletely filled were excluded. The questionnaire was self-constructed with the help of different studies and construction, content and face validity were confirmed by three subject specialists. The data was collected using a convenience sampling technique in the form of a printed questionnaire. Pilot testing was done on twenty participants and Cronbach's alpha reliability was found to be 0.73. The data was encoded and entered in SPSS version 23. Frequencies and percentages were calculated for qualitative variables, and mean and standard deviation for quantitative variables. p.value<0.05 was considered significant. Results were presented in the form of figures, charts, and tables.

RESULTS

The present study had a total of 127 (43 Male and 84 Female) participants with a mean age of 23.55±2.924 range of 17 (20 to 37 years). The designation of participants is shown in Fig-1.

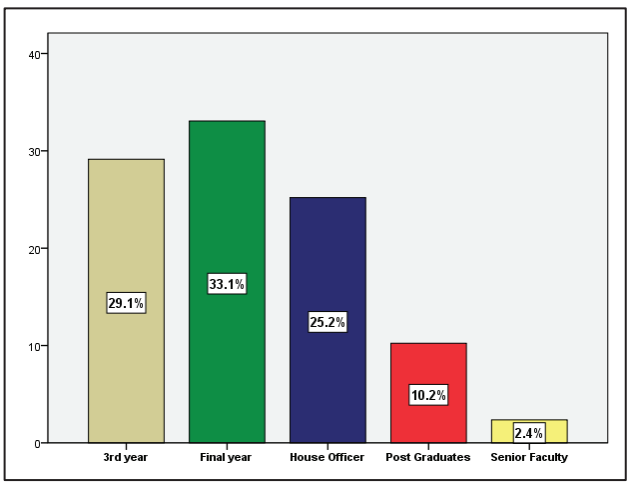

Fig-1: Designation of the participants

Most of the participants (81, 63.7%) thought that consultation with the patient's physician was needed before dental extraction and 75 (59%) were in favor

of discontinuation of Aspirin seven days before dental extraction as shown in Table-1

Extraction		3rd year	Final year	House Officer	Post-Graduates	Senior Faculty	Total
Consultation with the patient's physician before extraction	Yes	23	28	18	9	3	81 (63.7%)
	No	4	3	7	2	0	16 (12.6%)
	May Be	10	11	7	0	0	30 (23.7%)
Discontinuation of Aspirin seven days before extraction	Yes	20	25	23	6	1	75 (59%)
	No	6	10	3	4	1	24 (18.9%)
	May Be	11	7	6	3	1	28 (22.1%)

Table-1: Consultation with patient's physician and discontinuation of Aspirin

Many of the participants (100/127, 78.7%) considered different levels of INR for different medical conditions as shown in Table-2.

Consideration		3rd year	Final year	House Officer	Post-Graduates	Senior Faculty	Total
INR levels for different medical conditions	Yes (Considered)	24	37	27	9	3	100 (78.7%)
	No (Not considered)	13	5	5	4	0	27 (21.3%)
Total		37	42	32	13	3	-

Table-2: Consideration of INR levels for different medical conditions

Almost half of the participants (63/127, 49.6%) believed that warfarin should be replaced with low molecular weight heparin before dental extraction. Most of the participants (101/127, 79.5%) knew about the antidote of heparin but 9/127 (7.1%) mentioned vitamin K as an antidote for heparin as shown in Fig-2.

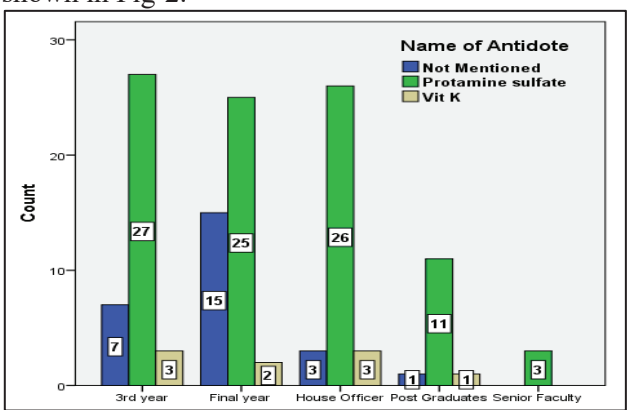

Fig-2: Knowledge of participants about the heparin antidote

A number of participants (32/127, 25.2%) did not check the formation of clots after tooth extraction before signing them off as shown in Figure 3. Most of the participants (111, 87.4%) gave post-operative instructions both in written as well as verbal format followed by participants (10, 7.9%) who preferred to instruct in verbal form only while there were 6 (4.7%) participants who solely used written format to deliver post-operative instructions.

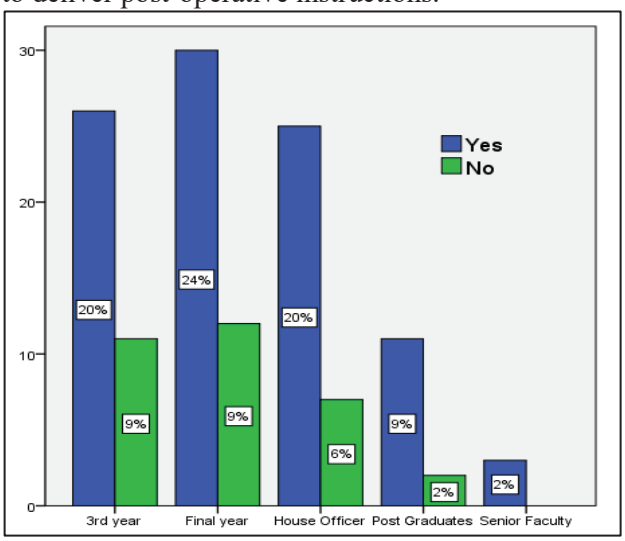

Fig-3: Checking of blood clot formation after extraction before signing off the patient

DISCUSSION

The knowledge of practicing dentists about treating patients with anticoagulation therapy is a topic of debate. In the present study, the results highlighted very good level of awareness and adherence to the protocols of treating patients on anticoagulant therapy while doing dental extraction. More than half of the participants (63.7%, n=81/127) were in agreement to consult with the patient's physician before any dental extraction. A recent study in 2022 conducted by Gaballah and Hassan in UAE ended with the result that 32.9% (n=165/502) of the dentists did not consider physicians' approval before extraction; they suggested that the dentist should have enough knowledge of when to consult with the patient's physician, and when it is not required[9]. In 2020, another study conducted by Ibdah et al in northern Jordan exhibited that 64.1% (n=50/78) of dentists in public hospitals and 76% (n=38/50) of dentists in clinical setups consulted with patients' physicians about altering the medication and pursuing dental extraction[11]. In the past, some authors proposed that anticoagulation therapy should be stopped 2-6 days before dental extraction. As demonstrated by the current study 59% (n=75/127) of the participants were in favor of discontinuation of aspirin 7 days before dental extraction. Almost identical results were demonstrated by Gaballah and Hassan in 2022 in

UAE that 63.1% (n=317/502) of dentists considered that aspirin should be stopped a few days before dental extraction[9]. In a 2019 study, Ahmad et al. in Srinagar, India split the participants into two groups: the study group continued anticoagulation therapy without making any changes, and the control group stopped anticoagulation three days prior to the procedure. Neither group experienced any immediate post-extraction hemorrhage.[7] The research findings indicate that dentists' practices and levels of awareness on stopping antiplatelets like aspirin prior to dental extractions differ significantly. This could be due to the format and practice of training in the respective institutions. The International Normalized Ratio (INR) was established by the WHO in 1983 to reduce morbidity resulting from iatrogenic bleeding[4]. British Dental Association (BDA) and National Patient Safety Agency (NPSA) agree that an INR of 2-4 is found to be associated with minimal bleeding in patients undergoing dental extraction[16]. 78.7% (n=100/127) of respondents to the current poll stated that they took into account various INR levels before extracting teeth from patients receiving anticoagulant therapy. In 2020, Felix et al emphasized in their article that a dental practitioner needs to know patient's INR[17]. According to some authors, warfarin can be replaced with LMWH (Low-Molecular-Weight-Heparin) before extraction and then can be continued after the procedure as less bleeding is seen in patients on LMWH[7]. In the current study, 49.6% (n=63/127) of participants recommended that warfarin should be replaced with LMWH. Recently, in 2023, Kelly et al conducted a survey in Scotland which reported that 41% (n=61/149) of the participants knew how to deal with patients taking LMWH appropriately and were in favor of replacing warfarin with LMWH[13]. It is an ethical responsibility of all dentists, to evaluate the socket and clot formation after dental extraction. A quarter of the participants (25.2%, n=32/127) in current study checked clot formation. In 2020 Gaballah and Hassan conducted a cross-sectional survey in UAE gave the results that 18% of the participants followed the standard protocol of socket evaluation and clot formation while 13.3% (n=67/502) of the participants reported an additional hemostatic measure of packing the socket with oxidized cellulose[9]. A small number of 4.7% (n=06/127) individuals used written post-operative instructions, whilst 7.9% (n=10/127) of participants opted to offer instructions only verbally. Shenoi et al. highlighted in a study released in 2021 the need for a graphical method of post-operative instruction delivery to improve retention. Therefore, compared to patients who got vocal post-operative instructions alone, the group receiving both verbal and graphical depiction with the prescription of drugs showed higher patient compliance[18].

The participants who knew about the antidote of heparin were 79.5% (n=101/127). There was no recent study found regarding knowledge of the antidote of heparin. In a case series published in 2023, Jain et al stated that the antidote of warfarin i.e. vitamin K needed hours to reactivate the clotting factors, hence it cannot immediately control bleeding. Therefore, first of all, bleeding should be controlled by local hemostatic measures, and in cases of severe bleeding FFP (Fresh Frozen Plasma) should be transfused as it controls the bleeding immediately by providing clotting factors[19,18]. The present study limitation was that it was based in a teaching hospital so it may not be representative of a private clinical setup. It is recommended to conduct a further study including in the private clinical setups to evaluate the true picture of practice.

CONCLUSION

The study concludes that dental professionals are generally aware of and follow guidelines regarding anticoagulation therapy well. Interdisciplinary task force groups comprising cardiologists and dentists should be formed to supervise the application of best practices in order to deliver high-quality care during complicated dental extractions in patients having co-morbidities. For the safe and efficient treatment of such patients, dental education and regulatory organizations must establish updated local rules, plan formal training sessions, and give students and dentists the requisite knowledge.

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The Authors:

Dr. Abdul Manan Shahid,
Assistant Professor,
Oral Medicine,
Islamabad Medical & Dental College, Shaheed Zulfiqar Ali Bhutto Medical University, Islamabad.

Dr. Muhammad Jamal,
Professor & Consultant,
Oral & Maxillofacial Surgeon,
Capital Hospital, Islamabad.

Dr. Khalid Mahmood Siddiqi,
Professor,
Oral & Maxillofacial Surgery,
Islamabad Medical & Dental College, Shaheed Zulfiqar Ali Bhutto Medical University, Islamabad.

Dr. Muhammad Mudassar Saleem,
Consultant,
Oral and Maxillofacial Surgery,
Dental Centre, Yanbu General Hospital, Yanbu, Ministry of Health, Kingdom of Saudi Arabia.

Dr. Muhammad Zeeshan Baig,
Assistant Professor,
Oral & Maxillofacial Surgery,
Frontier Medical & Dental College, Abbottabad.

Authorship:

AMS: Drafting, Revision, Writing of Manuscript
MJ: Data Collection, Drafting
KMS: Conceptualization of Project, Proofreading
MMS: Literature Search, Revision
MZB: Statistical Analysis