Original Research Article

Assessment of the dental students and dental practitioners' awareness about bleeding disorders across Saudi Arabia

ABSTRACT:

Introduction: Bleeding disorders patients might require diagnostic tests prior to dental procedures in order to know if any changes are needed in the procedure.

Aim: To assess the awareness level of the dental students and practitioners in Saudi Arabia about the bleeding disorders.

Materials and Methods: This cross sectional study was conducted among 502 dental students and dentists in Saudi Arabia. This was a questionnaire based internet survey consisted of 331 clinical year dental students and 171 dentists. The questionnaire contained 15 questions.

Results: The highest percentage of participants were from the Eastern Province (31.1%). Almost half of the participants were males (51.2%). The dentists represented 34.1%. Around 47.8% participants replied that they had encountered bleeding disorder patients before. Almost 50.8% participants who encountered those patients said that they referred them to a physician for a consent. Six questions were used to assess the knowledge of the participants about the bleeding disorders based on the number of the correct answers. Only 1% were able to answer all the questions correctly. Most of the participants (93.8%) said that they need to learn more about

bleeding disorders.

Conclusion: Majority of the dental students and general practitioners had poor knowledge of the management of bleeding disorder patients.

Keywords: *Assessment, dental students, dental practitioners, awareness, bleeding disorders*

1. INTRODUCTION

Bleeding disorders are a group of disorders that share the inability to form a proper blood clot [1]. Platelets play an important role in forming the blood clot if any injury occurs. Platelets accumulate at the site of injury to maintain the process of hemostasis [2]. Bleeding disorders could be divided into congenital and acquired disorders such as Hemophilia, Von Willebrand disease (vWD), Leukemia, and Thrombocytopenia [3]. Most bleeding disorders are caused by a defect in one or more factors of coagulation, including fibrinogen, prothrombin, Factors V, VIII, VII, X, XI, and factor XIII [2]. Some of these bleeding disorders have interactions with certain medications. Therefore, management should be done in a way which would decrease the bleeding [2]. Awareness do impact on the occurrence of bleeding disorders; for which dentists are an important factor in treating and managing their patients [4]. The awareness of bleeding disorders plays an important role in

minimizing potential complications which might arise while performing invasive dental procedures [5]. Dentist's knowledge about the management of different bleeding disorders and its types is necessary because for each disease the management approach could differ [2].

Bleeding disorder patients might require diagnostic tests prior to dental procedures in order to know if any changes are needed in the procedure [4]. Changes could be such as prescribing medications or giving the patient an anticoagulant prior to treatment or to do minimal invasive treatments only [4]. Many surgical procedures, such as tooth extraction, flap surgery and many periodontal procedures could cause bleeding [2]. Episodes of most dental bleedings are minor and do not require special precautions or treatment [4]. Local hemostatic measures provide effective results in most of the cases but are insufficient in patients with severe hemophilia A and vWD [6]. Accordingly, the consultation of the hematologist before treating bleeding disorder patients is essential.

Hemophilia A is a deficiency of factor VIII or anti-hemophilic factor [1]. Von Willebrand's disease is the most common hereditary coagulation disorder and is marked by deficiency in vWF [6]. Management for Hemophilia A and vWD in dental clinic consists of increasing factor VIII levels by giving the patient the factor as an infusion [6]. A successful case history should be taken, including previous medical, family and dental history, past drug medications of the patients, is the best way to prevent complications [2]. During history-taking, any clinically relevant bleeding episodes need to be noted; for example 1) Prolonged bleeding after 12

hours; 2) bleeding in which patients requested or returned to or seek medical attention at the dental clinic; 3) bleeding which causes an ecchymosis or hematoma within soft tissue; 4) requires support for blood transfusions; and 5) history of nasal or oral hemorrhages [4]. Taking proper family history for bleeding disorders is necessary also as many bleeding disorders run in families [3].

International normalized ratio (INR) is the recommended test for patients taking vitamin K antagonists (VKA) [7]. It could also be used to assess the risk of bleeding or the coagulation status of the patients [7]. For normal patients who are not on anticoagulation, the INR is usually 1.0 [7]; Whereas patients who are on anticoagulant therapy such as Warfarin and Aspirin, the therapeutic INR ranges between 2.0 to 3.0 and it is the standard therapeutic target range (STTR) [8]. INR levels above 4.9 are considered critical values and increase the risk of bleeding [7].

Analgesics might be required for dental pain or abscess management, or for post-procedure pain relief [9]. In patients with bleeding disorders, aspirin and drugs containing aspirin should be avoided as the hemorrhagic risk might increase as a result of the inhibition of platelet function [9]. The use of non-steroidal anti-inflammatory medications could be helpful in managing dental pain, but their prescription should be discussed with the physician, because if administered pre-operatively they could increase the risk of bleeding [9]. Safe substitutes are paracetamol and codeine-based preparations [9]. Hence, this study was conducted to assess the awareness level of the dental students and practitioners in Saudi Arabia about the bleeding disorders.

2. material and methods

A cross-sectional study was carried out employing a questionnaire based on an internet survey in which a total of 502 dental students and dentists participated. Around 331 clinical year dental students and 171 dentists participated in the study. The questionnaire contained 15 questions. To examine the reliability of the questionnaire, a sample of 20 dental students and general dentists completed the questionnaire twice with a 1 week interval. There answers were excluded later from the sample size.

Descriptive statistics for the variables was presented in the form of frequencies and percentages. The knowledge of participants about bleeding disorders was assessed based on the number of correct answers to 6 questions. Comparison of the knowledge level between different categories was done using Chi square test. IBM SPSS version 26 for windows software was used for the analysis. A p-value of < 0.05 was considered significant.

3. results and discussion

A total of 502 dental students and dentists participated in this study. The highest percentage of participants were from the Eastern Province (31.1%), followed by the Riyadh region (26.5%). Almost half of the participants were males (51.2%). The

dentists represented 34.1%, while the clinical year dental students were 65.9% (Table 1).

Table 1. Demographic data:

		Frequency	Percent (%)
Region	Eastern Province	156	31.1
	Northern region	66	13.1
	Riyadh	133	26.5
	Southern region	80	15.9
	Western region	67	13.3
Sex	Female	245	48.8
	Male	257	51.2
Student or dentist	Clinical year dental student	331	65.9
	Dentist	171	34.1

Around 47.8% participants replied that they had encountered bleeding disorder patients before. Almost 50.8% participants who encountered those patients said that they referred them to a physician for a consent, while 21.3% performed the procedure without physician consent, 19.6% sent the patient for laboratory investigations and 8.3% refused to treat the case.

Almost half of the participants (52.6%) said that they knew the normal value for bleeding time test. The opinions of the participants regarding the best measure to stop bleeding varied. Around 36.9% chose “apply pressure”, 35.9% chose “local agent”, and 27.3% chose “Systemic homeostatic agent”.

When participants were asked about how they grade themselves regarding knowledge of bleeding disorders, 46.4% considered their knowledge poor, 44.4% considered it average, and 9.2% considered it good. Most of the participants (93.8%) said that they need to learn more about bleeding disorders (Table 2).

Table 2 Awareness of bleeding disorders and their management:

		Frequency	**Percent (%)**
Did you encounter any bleeding disorder patient before?	No	262	52.2
	Yes	240	47.8
If yes, how did you manage this case?	Perform the procedure without physician consent	51	21.3
	Refer him to a physician for a consent	122	50.8

	Refuse to treat the case	20	8.3
	Send the patient for laboratory investigations	47	19.6
Do you know the normal value for bleeding time test?	No	238	47.4
	Yes	264	52.6
What is the international normalized ratio (INR) for normal people?	0.8-1.2	106	21.1
	1.0-1.5	115	22.9
	2.0-3.0	99	19.7
	Don't know	182	36.3
What is the standard therapeutic target range (STTR) for patients taking warfarin and aspirin?	Don't know	224	44.6
	INR= 1.0-2.0	67	13.3
	INR= 2.0-3.0	125	24.9
	INR= 3.0-4.0	86	17.1
What is the safest analgesic for patients with Bleeding disorders?	Don't know	97	19.3
	Ibuprofen	52	10.4
	Indomethacin	44	8.8
	Paracetamol	309	61.6
What is the minimal duration for Aspirin, warfarin termination prior to dental procedure?	1 day	68	13.5
	10 days	141	28.1
	3 days	177	35.3

	Don't know	116	23.1
Hemophilia A is defined as deficiency in factor	Don't know	150	29.9
	V	52	10.4
	VIII	248	49.4
	X	52	10.4
What is the most common complication following IANB (Inferior alveolar nerve block) in patients with Hemophilia A?	Don't know	118	23.5
	Fever	49	9.8
	Hematoma	281	56.0
	Oral ulcer	54	10.8
How do we manage Hemophilia A patients undergoing dental surgery?	Aspirin	27	5.4
	Don't know	194	38.6
	Factor VIII infusion	210	41.8
	Paracetamol	71	14.1
Von Willebrand disease is classified as	Coagulation factors deficiency	146	29.1
	Don't know	201	40.0
	Platelet disorder	109	21.7
	Vascular disorder	46	9.2
Management of Von Willebrand disease patients is similar to patients with Hemophilia A	False	272	54.2
	True	230	45.8

In your opinion, what is the best measure to stop bleeding?	Apply pressure	185	36.9
	Local agent	180	35.9
	Systemic hemostatic agent	137	27.3
How do you grade yourself regarding knowledge of bleeding disorders?	Good	46	9.2
	Average	223	44.4
	Poor	233	46.4
Do you think that you need to learn more about bleeding disorders (Lectures- workshops)? *	No	31	6.2
	Yes	471	93.8

Six questions were used to assess the knowledge of the participants about the bleeding disorders based on the number of the correct answers. Only 1% were able to answer all the questions correctly, 5.2% answered 5 questions correctly and 11.4% answered four questions correctly. Almost 65% participants answered 2 questions or less correctly. The percentage of correct answers for each question ranged from 21.1% to 49.4% (Table 3).

Table 3. Assessment of knowledge about bleeding disorders and their management:

Percentage of correct answers	Frequency	Percent (%)

Q1) What is the international normalized ratio (INR) for normal people?		106	21.1
Q2) What is the standard therapeutic target range (STTR) for patients taking warfarin and aspirin?		125	24.9
Q3) What is the minimal duration for Aspirin, warfarin termination prior to dental procedure?		177	35.3
Q4) Hemophilia A is defined as deficiency in factor		248	49.4
Q5) Von Willebrand disease is classified as		109	21.7
Q6) Management of Von Willebrand disease patients is similar to patients with Hemophilia A		230	45.8
Overall Knowledge Assessment	No correct Answers	103	20.5
	One correct Answer	99	19.7
	Two correct Answers	128	25.5
	Three correct Answers	84	16.7
	Four correct Answers	57	11.4
	Five correct Answers	26	5.2

	All correct Answers	5	1

The results of this study showed that 50.8% refer the bleeding disorder patient to a physician for consent before treating them. The finding of this study is in agreement with another study which was conducted in Buraidah and Riyadh city where 82.5% would refer the patient to a physician for a consent [5]. It is also in agreement with another study which was conducted in Kerala where 80% refer the bleeding disorders patients to a physician [10]. Bleeding time is a clinical laboratory test performed to evaluate platelet function [11]. In this study only 52.6% were aware about the normal value of bleeding time. In a research conducted in Shiraz only 34.2% general dentists were aware of normal values of INR test [12]. Whereas, in the current research only 21.1% knew the normal values of INR test. Standard therapeutic range (STTR) of international normalized ratio (INR) of 2.0 to 3.0 is important for the safety and effectiveness of warfarin anticoagulation [13]. Unfortunately, in this study only 24.9% knew the STTR for patients taking warfarin and aspirin. It is recommended that aspirin should be stopped for a minimum of 3 days prior to any invasive dental procedure to avoid excessive postoperative bleeding [14]. Around 35.3% participants only knew the minimal duration to stop aspirin, warfarin prior to invasive dental procedures.

4. Conclusion

Majority of the dental students and general practitioners had poor knowledge of the management of bleeding disorders patients. Therefore, additional courses and training is required to improve their skills and knowledge about the management of bleeding disorders patients.

Consent

All authors declare that 'written informed consent was obtained from the participants.

Ethical approval

Ethical approval was granted by Research Ethics Committee at King Faisal University, Ref # KFU-REC 2021-04-29, Dated 25 April 2021.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that no competing interests exist. The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any

litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors

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