Awareness on the Management of Bleeding Disorders among Dental Students

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Original Research Article

ABSTRACT

Continuous bleeding in the surgical site can be associated with an increased risk of morbidity and mortality across all surgical areas. To avoid complications related to excessive bleeding, numerous products have been developed to achieve hemostasis. It is of utmost importance to know the use of each and every product and effective method on how to manage excessive bleeding. The study aims at assessing the awareness on management of bleeding disorders. An awareness based survey was conducted in January 2020 among dental students (Third years, Final years, Interns). The questionnaire consisted of 10 awareness based questions and were equally distributed among Third years, Final years, Interns. The total sample size was 150 dental students. The data collected was entered in an Excel sheet and subjected to statistical analysis using SPSS version 20. From the results obtained it was seen that 33.33% of third years, 30% of final years and 22.67% of interns had never come across a patient with bleeding disorders. 33.33% of interns, 31.33% of final years, 28.67% of third years said that they collect a detailed history on the past medical problems of the patients. 33.33% of interns, 30.67% of final years, 20.67% of third years were aware of the

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possible bleeding disorders that might occur in a patient. 33.33% of interns and final years and only 4% of third years knew about hemostatic therapies. 30% of interns, 28% of final years and 16.67% of third years were aware of prophylactic transfusion of FFP. Chi square test shows p<0.05, significant. Thus it was seen that Interns had a good awareness on management of bleeding disorders when compared to the final and third years.

1. INTRODUCTION

Hemostasis is known as the process by which bleeding is arrested after injury to the blood vessels. It is a process that involves interactions between the blood vessels, platelets and coagulation factors. A defect in any of these phases of coagulation can result in a problem that causes continuous bleeding. This defect in the coagulation can be inherited or acquired. The process of coagulation is a combination of cellular and biochemical events. Functions occur together to keep blood in the fluid state within the vessels to subsequently prevent blood loss of blood following injury by the formation of a stable clot [1–4]. It is important to collect a proper history of the patient especially while planning an invasive procedure [5]. While managing a patient with a bleeding disorder the dentist should consult with the patient's primary physician or hematologist to discuss the severity of the disease, the dental and oral/maxillofacial procedures planned and nature of the bleeding risk, the patient's response to previous dental treatment, surgery, and trauma, the patient's response to various modes of systemic therapy, including blood component replacement therapies [6]. Some disorders are haemophilia, Von Willebrand syndrome, leukemia, thrombocytopenia, Glanzmann thrombasthenia etc. Most of the bleeding disorder tend to occur due to a defect in one or more coagulation factors namely the fibrinogen, prothrombin, Factor V, combined Factor V and Factor VIII, Factor VII, Factor X, Factor XI and Factor XIII [7]. In dental procedures like extraction or any periodontal surgery bleeding tends to occur but in the presence of any bleeding disorder there is no clot formation which might even lead to death if not treated at the earliest [8]. This however depends on the severity of the condition. Post operative bleeding can be localized or systemic. They can also be categorised as primary prolonged bleeding, intermediate or reactionary prolonged bleeding, and secondary prolonged bleeding.

Haemostasis generally is dependent on the balance between fibrin formation and resolution and is influenced by the external environment, which contains both plasminogen and plasminogen activators [9]. Conventional methods for control of bleeding such as electrocautery, suturing, manual compression, or ligatures may be used, while some newer hemostatic agents such as Surgicel, Hemotase, Tachosil or Tisseel (fibrin sealants), different sponge products such as only composed of gelatin eg., Gelfoam or more specific techniques such as polyvinyl alcohol sponge eg., Merocel can also be used as an effective method to control bleeding [10].

Management of bleeding disorders generally serves as a challenge to dentists despite the availability of various aids and techniques. Thus it is important for each and every practitioner to have adequate knowledge on the same.

With a rich case bank established over 3 decades we have been able to publish extensively in our domain [11–21]. Based on this inspiration we aim to assess the awareness of the dental students on management of bleeding disorders.

2. MATERIALS AND METHODS

2.1 Study Design

2.1.1 Awareness based survey

2.1.1.1 Data collection

A survey was conducted in January 2020 among dental students (Third years, Final years, Interns). It was an online questionnaire based study, conducted to assess the awareness on the management of bleeding disorders. 150 dental students (Third years, Final years, Interns) participated in this study. The data collection was done via google forms.

2.1.1.2 Survey instrument

A pretested, self administered, closed ended questionnaire comprising the following sections

formed the survey instrument. A structured questionnaire containing 10 questions which was adopted from a validated questionnaire developed by the World Health Organisation. The questionnaire was equally distributed among Third years, Final years, Interns. The goal of developing this questionnaire was to know about the awareness the dental students have on the management of bleeding disorders. The questions had to be answered with a Yes or No response.

2.1.1.3 Data analysis

The data collected was entered in Excel sheet and subjected to statistical analysis using SPSS version 20. Chi square test was done. The independent variables are age and gender while dependent variables are awareness on management of bleeding disorders. The level of significance was set at $p < 0.05$.

Questionnaire given is as follows:

Year of study:

- Have you come across any patient with a bleeding disorder?
- Do you collect a detailed history of the patient's past medical history?
- Are you aware of all the bleeding disorders that might occur?
- Do you know what are hemostatic therapies?
- Are you aware of the prophylactic transfusion of FFP?
- Are you aware of the use of cryoprecipitate?
- Do you know the use of desmopressin?
- Do you think suturing is enough to control the bleeding in a patient with bleeding disorder?
- Do you know the drug that interferes with haemostasis?
- Are you aware of the oral manifestations of bleeding disorders?

3. RESULTS AND DISCUSSION

From the results obtained it was seen that 33.33% of third years, 30% of final years and 22.67% of interns had never come across a patient with bleeding disorders, Chi square test shows p=0.000, significant (Fig. 1). 33.33% of interns, 31.33% of final years, 28.67% of third years said that they collect a detailed history on the past medical problems of the patients, Chi square test shows p=0.000, significant (Fig. 2). 33.33% of interns, 30.67% of final years, 20.67% of third years were aware of the possible bleeding disorders that might occur in a patient, Chi square test shows p=0.000, significant (Fig. 3). 33.33% of interns and final years and only 4% of third years knew about hemostatic therapies, Chi square test shows p=0.000, significant (Fig. 4). 30% of interns, 28% of final years and 16.67% of third years were aware of prophylactic transfusion of FFP, Chi square test shows p=0.000, significant (Fig. 5). 33.33% of interns, 28% of final years and 1.33% of third years were aware of what was cryoprecipitate, Chi square test shows p=0.000, significant (Fig. 6). 26.67% of interns, 15.33% of final years and 6.67% of third years knew the use of desmopressin, Chi square test shows p=0.000, significant (Fig. 7).24.67% of interns, 26.67% of final years and 20% of third years felt that suturing alone was not enough to control bleeding in a patient with bleeding disorder, Chi square test shows p=0.079, not significant (Fig. 8). 26.67% of interns, 31.33% of final years and 6.67% of third years knew the drugs that interfered with hemostasis, Chi square test shows p=0.000, significant (Fig. 9). 18.67% of interns, 30.67% of final years and 24% of third years were not aware of the oral manifestations of bleeding disorders, Chi square test shows p=0.000, significant (Fig. 10).

In our study, we have compared the awareness levels of the interns, final years and third years and it is seen that the level of awareness in lesser among third years than interns and final years While looking into previous studies that were conducted among dentists' to assess awareness of dentistry procedures for individuals suffering from bleeding disorders, it was seen that the knowledge was found to be at a moderate level (69.26%) [22,23]. Studies state that Hemocoagulase (2U/ml) mixed with fibrin glue placed in post-extraction sockets can reduce bleeding. This technique reduces post-extraction bleeding in hemophilic patients and is reported with an 80% success of reducing preoperative factor VIII infusion in hemophilic patients undergoing dental extraction [24,25]. Potdar et al. in his study asked students whether they have encountered any patients with bleeding disorders and 50.63% of them said yes. However he also said that the majority of them did not know the INR test values [26]. Conventional methods of controlling bleeding are said to be less effective in patients with bleeding

disorders. Mechanical methods like manual pressure, ligature are the initial efforts that are put in but these methods are said to be intensive and time-consuming. Sealing of bleeding vessels is preferred, and is done by thermal methods such as electrocauterization or laser cauterization, but these methods can create areas of necrosis of tissue subsequently increasing the possibilities of infection inturn damaging the edges of the wound which can be lead to impaired healing [27,28].

In our study it was found that the majority of them were not aware of the oral manifestations of bleeding disorders. It is of utmost importance to have sufficient knowledge on the same. Platelet deficiencies are seen generally as petechiae or ecchymosis on the oral mucosa and the gingiva

is prone to spontaneous bleeding. In cases of leukemia, gingival hyperplasia is observed. Hemosiderin and other blood degradation products deposits on the surface of teeth as brown pigments due to chronic bleeding [29]. It is said that in patients with coagulopathies the nerve-block injections are contraindicated unless in case of emergency and there is no better alternative. Post operatively prophylaxis must be provided as the anesthetic solution might be deposited in highly vascularized areas and which causes risk of hematoma formation [5,30]. There are no comparative studies since not much attention is given towards training the students at an undergraduate level to encounter and manage patients with bleeding disorders. Thus the curriculum should emphasize the need to know about the management of bleeding disorders.
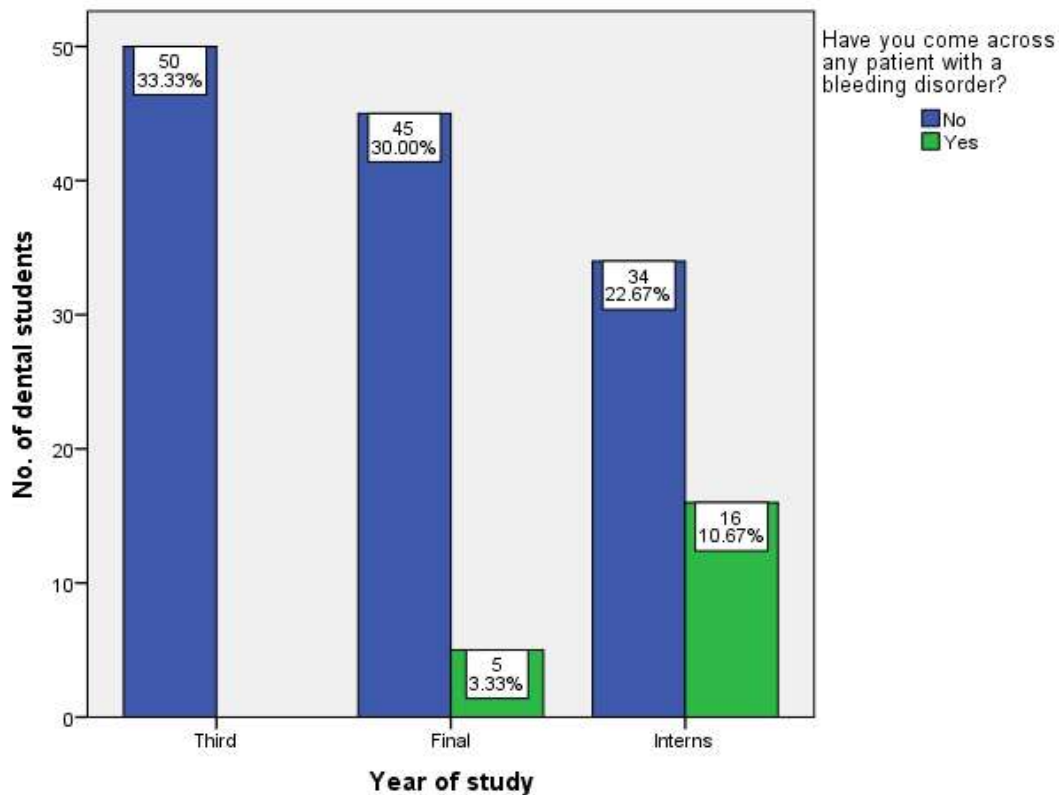

Fig. 1. Bar graph denotes association between year of study of the participants and number of students who have come across a patient with a bleeding disorder. X axis denotes the year of study of the participants and Y axis denotes the number of dental students. The response of yes (green) was mostly given by the interns and majority of the third years have given a response of no (blue). Chi square test shows p=0.000, significant. Hence proving that there is significant association between the year of study of the participants and number of dental students who have come across a patient with a bleeding disorder
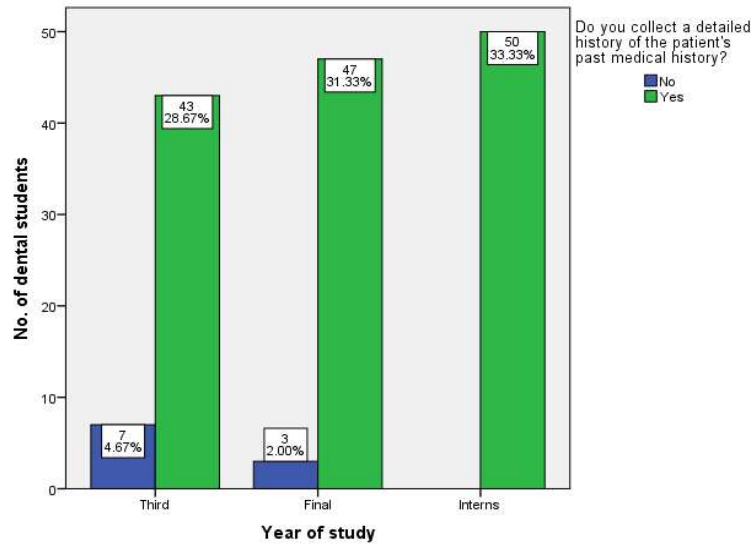
Fig. 2. Bar graph denotes association between year of study of the participants and number of students who collect detailed history of the patients past medical history. X axis denotes the year of study of the participants and Y axis denotes the number of dental students. Majority of the interns have given a response of yes (green) and the response no (blue) was mostly given by the third years. Chi square test shows p=0.019, significant. Hence proving that there is significant association between the year of study of the participants and number of dental students who collect detailed history of the patients past medical history
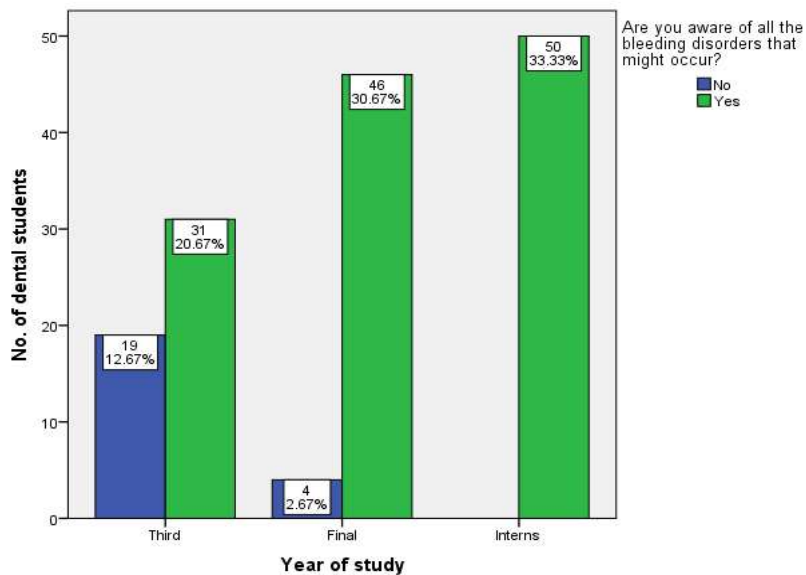

Fig. 3. Bar graph denotes association between year of study of the participants and number of students who are aware of the bleeding disorders that might occur. X axis denotes the year of study of the participants and Y axis denotes the number of dental students. Majority of the interns have given a response of yes (green) and the response no (blue) was mostly given by the third years. Chi square test shows p=0.000, significant. Hence proving that there is significant association between the year of study of the participants and number of dental students who are aware of the bleeding disorders that might occur
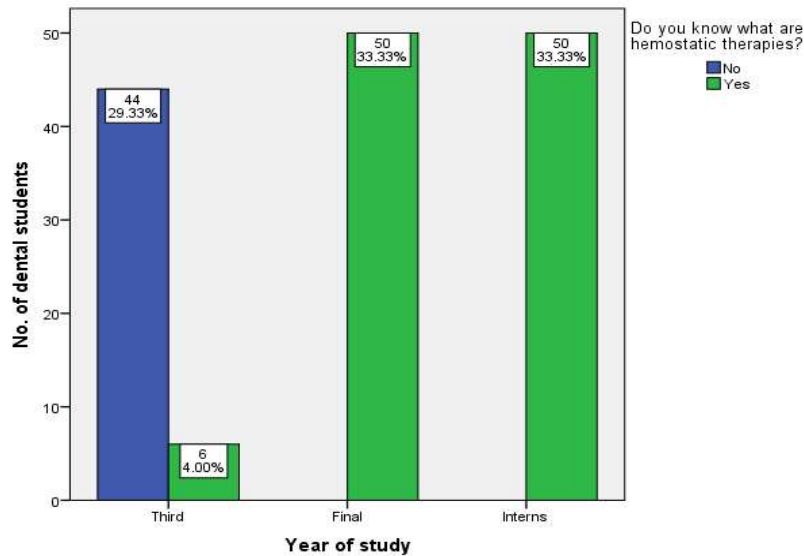
Fig. 4. Bar graph denotes association between year of study of the participants and number of students who knew about hemostatic therapies. X axis denotes the year of study of the participants and Y axis denotes the number of dental students. Majority of the interns have given a response of yes (green) and majority of the third years had given a response of no (blue). Chi square test shows p=0.000, significant. Hence proving that there is significant association between the year of study of the participants and the number of dental students who knew about hemostatic therapies
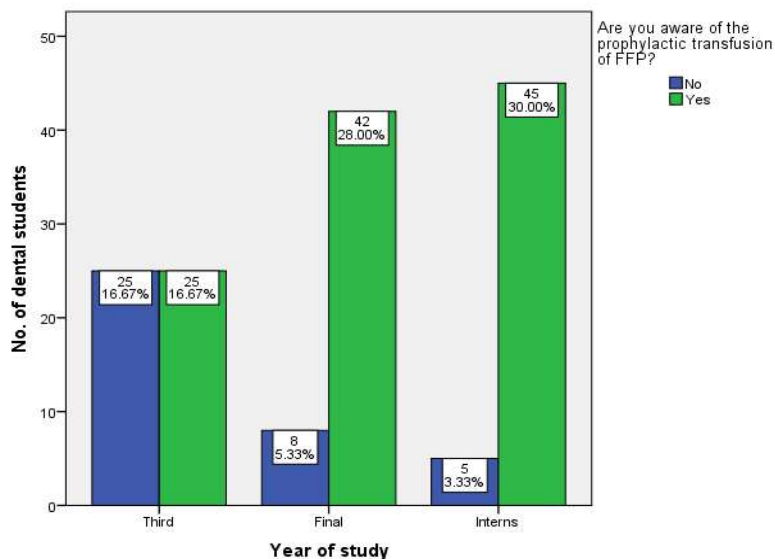

Fig. 5. Bar graph denotes association between year of study of the participants and number of students who were aware about the prophylactic transfusion of FFP. X axis denotes the year of study of the participants and Y axis denotes the number of dental students. Majority of the interns have given a response of yes (green) and the third years gave an equal response of yes and no (blue). Chi square test shows p=0.000, significant. Hence proving that there is significant association between the year of study of the participants and the number of dental students who were aware about the prophylactic transfusion of FFP
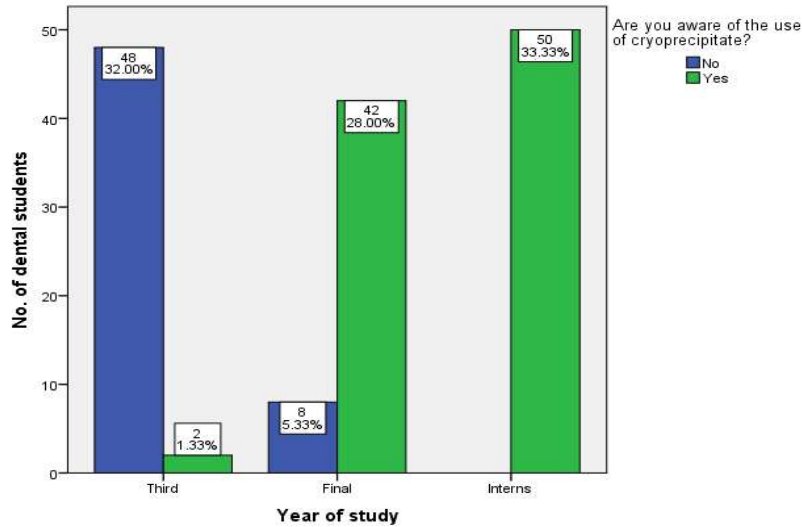
Fig. 6. Bar graph denotes association between year of study of the participants and number of students who knew about cryoprecipitate. X axis denotes the year of study of the participants and Y axis denotes the number of dental students. Majority of the interns have given a response of yes (green) and majority of the third years had given a response of no (blue). Chi square test shows p=0.000, significant. Hence proving that there is significant association between the year of study of the participants and the number of dental students who knew about cryoprecipitate
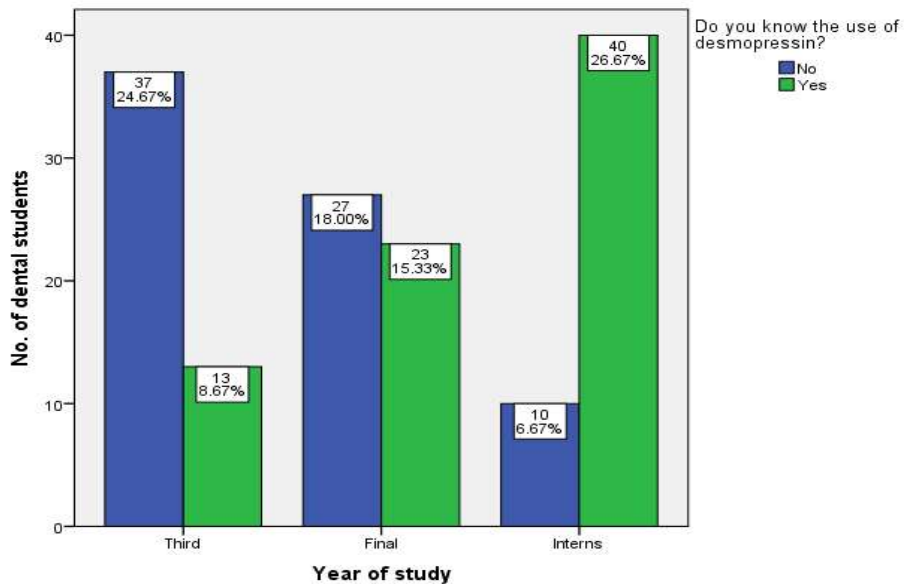

Fig. 7. Bar graph denotes association between year of study of the participants and number of students who knew the use of desmopressin. X axis denotes the year of study of the participants and Y axis denotes the number of dental students. Majority of the interns have given a response of yes (green) and majority of the third years had given a response of no (blue). Chi square test shows p=0.000, significant. Hence proving that there is significant association between the year of study of the participants and the number of dental students who knew the use of desmopressin
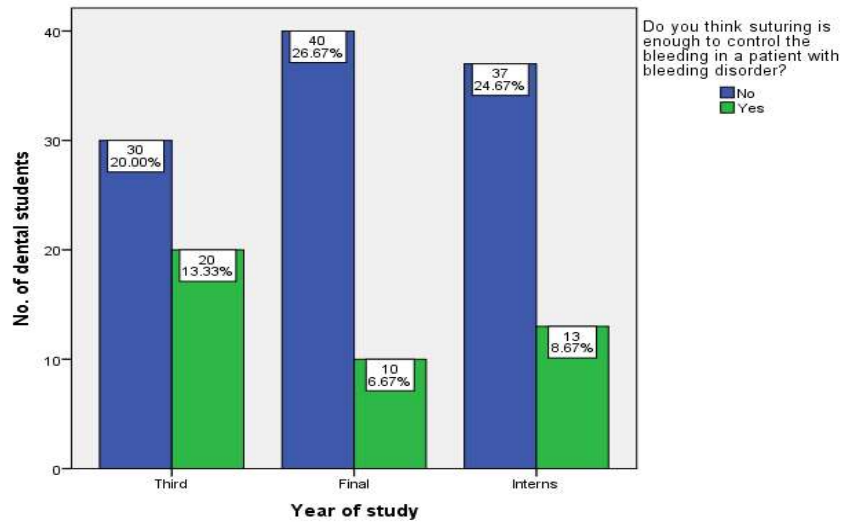
Fig. 8. Bar graph denotes association between year of study of the participants and number of students who felt that suturing was enough to control bleeding for a patient with bleeding disorder. X axis denotes the year of study of the participants and Y axis denotes the number of dental students. Majority of the final years have given a response of no (blue) and the response yes (green) was mostly given by the third years. Chi square test shows p=0.079, not significant. Hence proving that there is no significant association between the year of study of the participants and the number of dental students who felt that suturing was enough to control bleeding for a patient with bleeding disorder
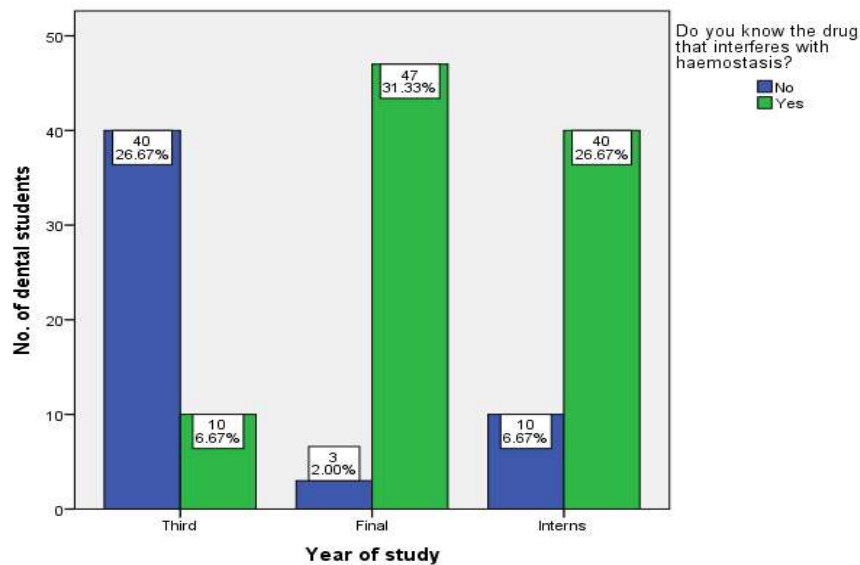

Fig. 9. Bar graph denotes association between year of study of the participants and number of students who knew the drugs that interfered with haemostasis. X axis denotes the year of study of the participants and Y axis denotes the number of dental students. Majority of the interns have given a response of yes (green) and majority of the third years have given a response of no (blue). Chi square test shows p=0.000, significant. Hence proving that there is significant association between the year of study of the participants and the number of dental students who knew the drugs that interfered with haemostasis
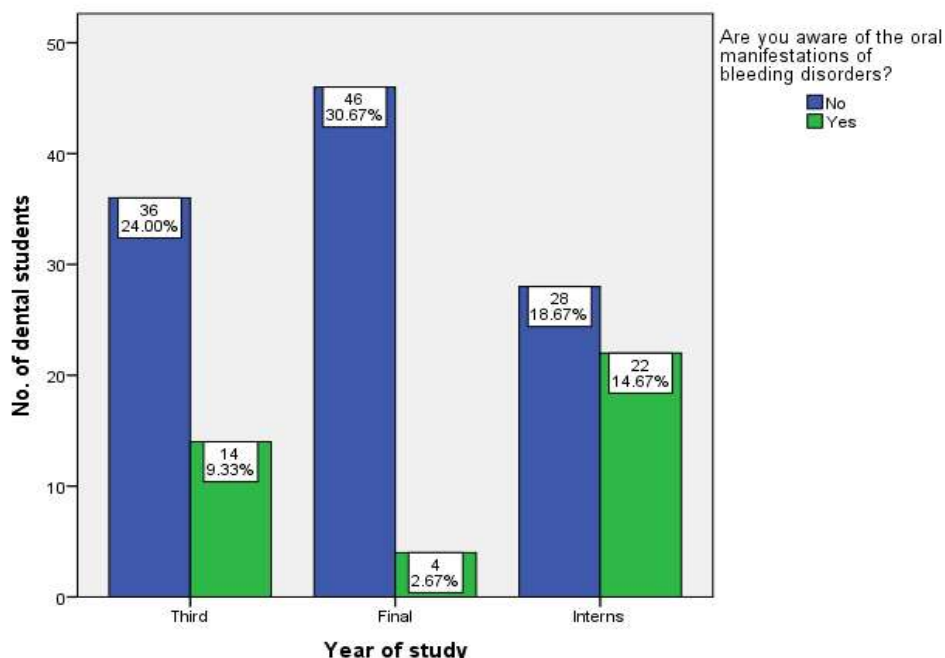
Fig. 10. Bar graph denotes association between year of study of the participants and number of students who were aware of the oral manifestations of bleeding disorders. X axis denotes the year of study of the participants and Y axis denotes the number of dental students. Most of the response of yes (green) was given by the interns and the majority of the final years had given a response of no (blue). Chi square test shows p=0.000, significant. Hence proving that there is significant association between the year of study of the participants and the number of dental students who were aware of the oral manifestations of bleeding disorders

The limitation of the study is that it was conducted only in one city (Chennai) and may not be generalized to other regions.

4. CONCLUSION

Within the limitation of the study it was seen that Interns had a good awareness on management of bleeding disorders when compared to the final and third years. This is because of the clinical expertise that the interns have acquired through clinical experience and clinical practice.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

Ethical approval was obtained from the Institutional Ethical Committee.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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