



Awareness of Bleeding On Probing Among Undergraduates and Post Graduates

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Abstract

The earliest sign of gingival inflammation that precedes established gingivitis is the bleeding from the gingival sulcus on gentle probing. Bleeding on probing indicates an inflammatory lesion of epithelium and connective tissue showing histological differences when compared with healthy gingiva. So, due to scarce literature about the awareness of the importance of bleeding on probing, we have decided to do a take up a questionnaire study at Darshan Dental College among undergraduate (3rd year, final year, and intern) students and postgraduate students of different specialties, except periodontology.

Aim

To evaluate the awareness of bleeding on probing among undergraduates and postgraduates, a questionnaire survey was conducted.

Material & Method

To test the hypotheses, students were given about 15 questionnaires. All questions were closed ended with multiple choice. The total sample size was 100.

Result

The result showed that there was no statically significant difference between the importance of knowledge of bleeding on probing.

Conclusion

Different fields of postgraduate diagnostic skills were found to be approximately the same as those of undergraduates. Hence, targeted continuing dental education is necessary for future treatment perspective so that it can be applied during clinical practice

Keywords: Bleeding on probing, matrix metalloproteinases

Introduction

The earliest sign of gingival inflammation that precedes established gingivitis is the bleeding from the gingival sulcus on gentle probing. It varies in severity, duration and in ease of provocation. It

appears first, before any change in colour or other visual signs of inflammation. Bleeding from gingival sulcus on probing indicates an inflammatory lesion of epithelium and connective tissue showing

histological differences when compared with healthy gingiva.¹ So, although bleeding on probing might not be considered as a good diagnostic indicator of clinical attachment loss, it is widely used as a clinical

sign for predicting the future periodontal condition for clinical attachment loss and progression of the disease.²



Figure .1: Bleeding on probing

Various histological studies have concluded the pathologic changes in periodontal disease, which include an increase in inflammatory cells that are associated with loss of collagen, proliferative and degenerative epithelial changes, and apical migration of the junctional epithelium with loss of periodontal fibre attachment and supporting alveolar bone. So, the critical area of importance for assessment of the inflammatory lesion in periodontitis is at the base of a periodontal pocket, an area which is usually inaccessible for visual evaluation. Therefore, bleeding upon probing of periodontal pockets helps as an objective diagnostic indicator of the presence of inflammation at the base of the pockets.³

It is caused by either the local factors that contribute to plaque retention and may lead to gingivitis or those associated with systemic change and trauma. The most common cause of abnormal gingival BOP is chronic inflammation. Bleeding is said to be chronic or recurrent when it occurs due to mechanical trauma (e.g., toothbrushing, toothpicks, food impaction), or biting into solid foods (e.g., apples).¹

In gingival inflammation, histopathologic alterations in the gingival tissue occur that result in abnormal gingival bleeding that include dilation & engorgement of the capillaries and thinning or ulceration of the sulcular epithelium. Therefore, the capillaries become more engorged, thin, and closer to the surface, which leads to the degenerated epithelium becoming less protective. Stimuli that are normally innocuous cause rupture of the capillaries, which finally leads to gingival bleeding.¹

Various studies have concluded that sites that bleed on probing have a greater area of inflamed connective tissue (i.e., cell rich, collagen-poor tissue) than sites that do not bleed. In most cases, the cellular infiltrate is predominantly lymphocytic, which is a characteristic of stage II gingivitis.⁴

Histologic evaluations done on animal specimens have revealed that during the early stages of gingivitis showed an expression of the cytokines (i.e., matrix metalloproteinases [MMPs]) that are primarily responsible for connective tissue breakdown. Different MMPs play roles in this breakdown at different stages (e.g., a decrease in MMP-14 activity on day 7 of inflammation; an immediate increase in MMP-2, especially with fibroblastic stimulation). MMP-9 expression peaked 5 days after gingivitis occurrence, which was also regulated by macrophages and neutrophils. Extracellular matrix remodelling was regulated by MMP-2 and MMP-9 production and activation by the host inflammatory response. Therefore, the presence of bleeding on probing is associated with "active" periodontal lesions, and the absence of bleeding on probing is presented with a 100% predictability for health. This entry was posted on July 8, 2010.⁴

So, the aim of the present study was to explore awareness of the importance of bleeding on probing from gingival sulcus while performing any other dental procedure among undergraduate students and post-graduate students.

Aim: To evaluate the awareness about bleeding on probing among undergraduates and post graduates - a questionnaire survey.

Materials & Methods

To test the hypotheses, students were given about 15 questionnaires. All questions were closed-ended with multiple choice. The total sample size was 100.

The questionnaire included questions among the undergraduate group and post-graduate groups like:

1. Awareness of the term Bleeding on probing?
2. How can we check for gingival bleeding?
3. Amount of force can be used by clinician to look for bleeding on probing from the gingival sulcus?
4. How many sites can clinician look for the presence of bleeding on probing to give diagnosis of the disease?
5. What does the presence of bleeding on probing indicate?
6. Does there is any need to address this issue or not?

7. What diagnosis should be given in cases where there is involvement of bleeding from 2 or 3 or 6 sites on probing?
8. If there is presence of bleeding on probing 6 sites then what would be the treatment planning for patient before proceeding to any other dental procedure?

Source Of Sampling

Undergraduate students & post-graduate students of Darshan dental collage & hospital, Udaipur.

Inclusion Criteria

1. Undergraduate students of 3rd year, Final year & Interns.
2. Postgraduate students of 1st year, 2nd year & 3rd year batch.

Exclusion Criteria

1. 1st & 2nd year undergraduate students
2. Post graduates from Department of Periodontology

PERFORMA FOR QUESTIONNAIRE STUDY

Name of the Student: Year /Class:

Q. 1. Are you aware of the term "bleeding on probing"?

1. Yes		2. No	
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Q. 2. Bleeding on probing is checked?

1. By using a blunt calibrated periodontal probe along the long axis of tooth in walking motion	
2. By introducing blunt probe to the bottom of pocket & gently moving it laterally along pocket wall	
3. Gentle probing around the tooth surface	
4. No need to check for bleeding on probing	

Q. 3. How much force can we apply to check for bleeding on probing?

1. 10 g		2. 15 g		3. 20 g		4. 25 g	
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Q. 4. How many sites per tooth can we check for bleeding on probing?

1. 2 sites		2. 4 sites		3. 6 sites		4. 8 sites	
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Q. 5. What will you give your diagnosis if bleeding on probing is present?

1. Gingivitis		2. Periodontitis	
3. Localized Periodontitis		4. Don't know	

Q. 6. Bleeding on probing is associated with gingivitis?

1. Strongly associated		2. Weakly associated	
3. Not associated			

Q. 7. Bleeding on probing is associated with periodontitis?

1. Strongly associated		2. Weakly associated	
3. Not associated			

Q. 8. If you see bleeding on probing at any 2 or 3 sites in a tooth then what would be your treatment plan?

1. Consult Periodontist	
2. Do not require any treatment	
3. Give medication to patient and bleeding will resolve automatically	
4. Don't know	

Q. 9. If bleeding on probing is present at more than 6 sites in a quadrant then what would be your treatment plan?

1. Oral prophylaxis & put patient on maintenance phase	
2. Advice OPG after clinical evaluation then send the patient to Periodontist for further treatment	
3. No need for treatment of bleeding on probing	
4. Don't know	

Q. 10. Does the presence of bleeding on probing indicate active site for disease progression?

1. Strongly associated		2. Weakly associated	
3. Not associated		4. Don't know	

Q. 11. Does bleeding on probing presence indicate the oral hygiene status of the patient?

1. Strongly associated		2. Weakly associated	
3. Definitely Not associated		4. Don't know	

Q. 12. Does diagnosing the presence of bleeding on probing alone will give accurate diagnosis of the disease?

1. Strongly associated		2. Weakly associated	
3. Absolutely Not associated		4. Don't know	

Q. 13. Is there any need to check or give importance to presence of bleeding on probing?

1. Yes		2. No		3. Don't know	
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Q. 14. Bleeding on probing is considered the most sensitive indicator for disease?

1. Strongly agree		2. Weakly agree	
3. Do not agree		4. Don't know	

Q. 15. Bleeding on probing is considered as an excellent predictor of future attachment loss in its absence?

1. Strongly agree		2. Weakly agree	
3. Do not agree		4. Don't know	

Contact –Dr. Shruti

Result

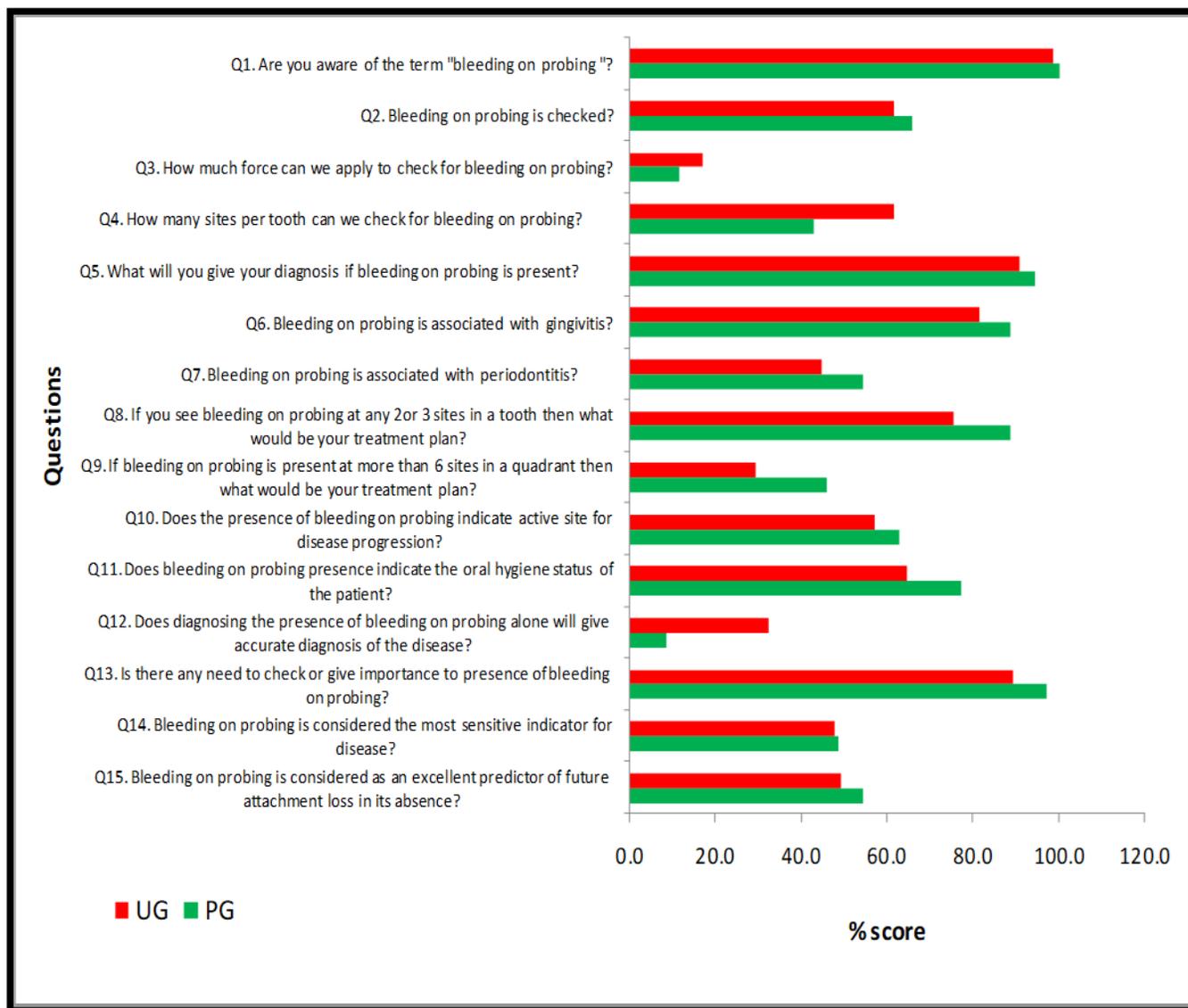


Figure 2: Figure showing intergroup comparison between undergraduate & post graduate students' knowledge in percentage (% score) question wise analysis.

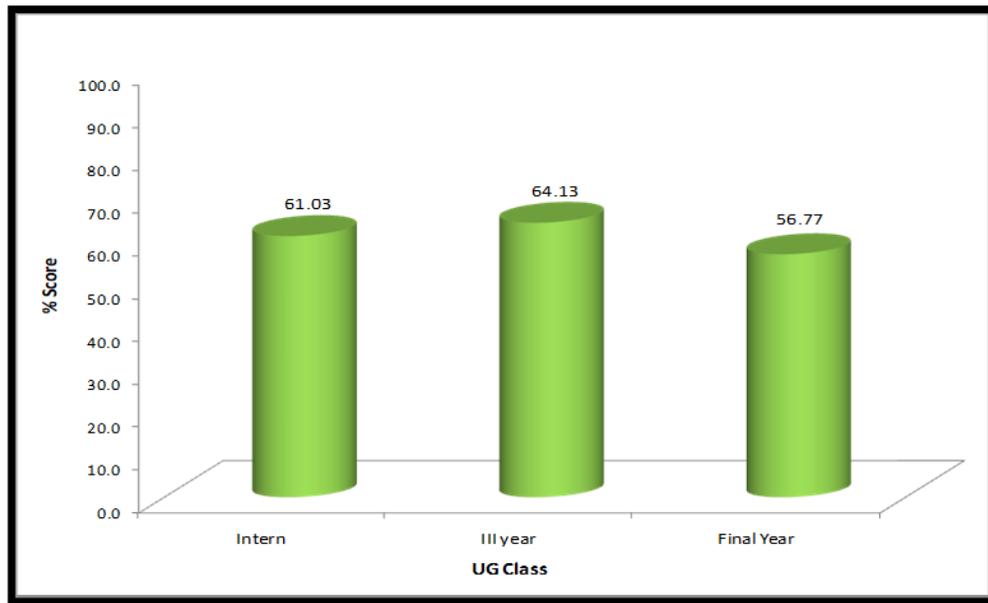


Figure 3: Intragroup comparison between undergraduate from 3rd yr, final yr & intern on x-axis & on y-axis percentage of knowledge they have for bleeding on probing in individual year in aggregate

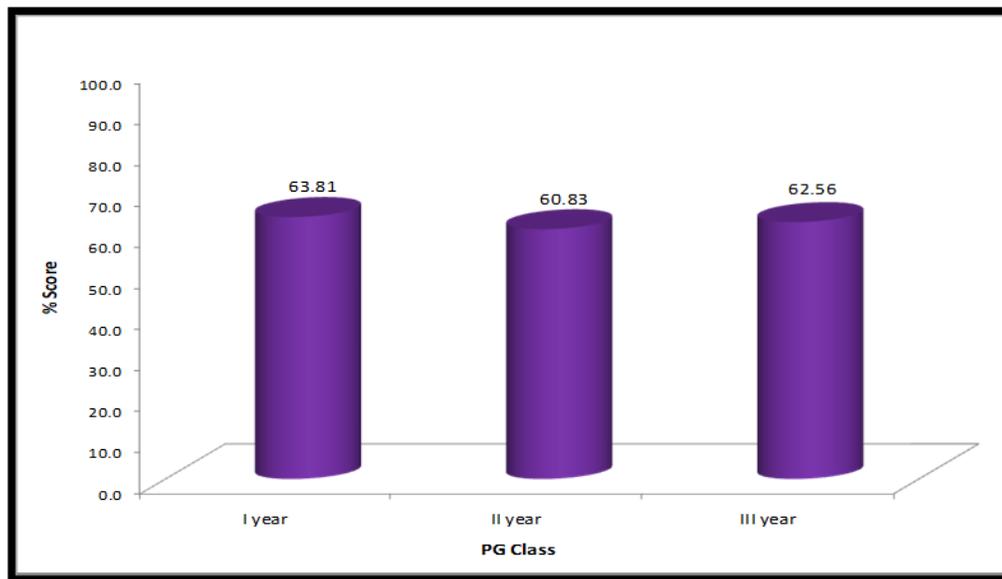


Figure 4: Intragroup comparison between Post-graduate from PG 1st ,2nd, 3rd yr on x-axis & on y-axis percentage of knowledge they have for bleeding on probing in individual year in aggregate

Discussion

Periodontal disease is a painless disease and the majority of people recognize it when it reaches its advanced stage where the prognosis becomes poor. Therefore, awareness and knowledge of this disease are paramount to preventing it and maintaining periodontal health.⁵

In 2017, Sulaimani did a similar study to that of ours wherein he looked for knowledge about gingival bleeding among dental students. Questions included were: bleeding experience among students, family experience of gingival bleeding, colour of gingiva, gingival colour change in inflammation, experience of gingival bleeding, any member of their family

having experienced gingival bleeding, students' reaction to addressing the issue, whether by stopping tooth brushing or other oral hygiene measures, or visiting a dentist to manage bleeding gingiva. They concluded that gingival bleeding is prevalent among dental students and their family members, and the students' knowledge of the cause of gingival bleeding was limited.⁵

In 2020, Shruti S. Ligade & Shretika Pandya did a cross-sectional blinded questionnaire study with four different colleges wherein they assessed the awareness of periodontal disease among dental undergraduate students. A total of 150 students in their final year from 4 different colleges were included in the study. The Questionnaire consists of basic periodontology and other relations with the specialty branch. They concluded that periodontal awareness among dental undergraduates was lacking in regard to its application to surgery and its

importance in systemic diseases such as diabetes and hypertension.⁶

Another study did an assessment of bleeding on probing in patients on anticoagulant therapy. They found that in the presence of the same plaque index and probing depth, anticoagulated patients did not bleed more than non-anticoagulated patients.⁷ (PJ Almiana-Pastor, 2017)

In our study, we have assessed the knowledge of bleeding on probing among undergraduate (3rd year, final year & intern) & postgraduate students (1st year, 2nd year & 3rd year) of Darshan Dental College & Hospitals in Udaipur (Rajasthan). Among which, table 1 showed individual groups' knowledge about bleeding on probing and table 2 showed a comparison between the knowledge of the importance of bleeding on probing problems between the two individual groups.

<u>Group</u>	<u>N</u>	<u>Mean</u>	<u>SD</u>	<u>t</u>	<u>df</u>	<u>p-Value</u>
<u>Under Graduate</u>	65	60.00	15.46	5.22	64	p<0.001
<u>Post Graduate</u>	35	62.67	11.68	6.41	34	p<0.001

Table 1: Knowledge level in individual category

<u>Group</u>	<u>N</u>	<u>Mean</u>	<u>SD</u>	<u>t</u>	<u>df</u>	<u>Result</u>
<u>Under Graduate</u>	65	60.00	15.46	-0.892	98	p > 0.05
<u>Post Graduate</u>	35	62.67	11.68			

Table 2: Overall Knowledge Compared

Figure 5 showed no statistically significant difference between the 2 individual groups in the importance of knowledge of bleeding on probing

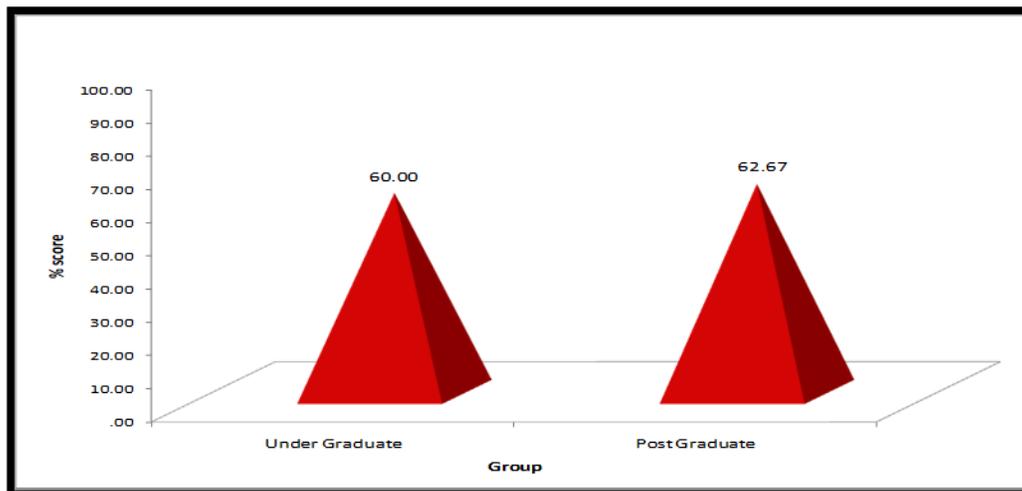


Figure 5: No statistical significant difference between the 2 individual groups

Conclusion

The awareness among students (UG/PG) was significantly low for the amount of probing force that can be applied to check for bleeding on probing and the absence of bleeding on probing acts as a good predictor for future attachment loss. Undergraduate and postgraduate students have significantly better knowledge of its association with gingivitis but not with periodontitis. Different fields of postgraduate diagnostic skills were found to be approximately the same as those of undergraduates.

Hence, targeted continuing dental education is necessary for future treatment perspective so that it can be applied during clinical practice.

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