

Original Research Article

To assess knowledge and awareness regarding treatment of dry socket among interns

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ABSTRACT

Objectives: A painful dental condition known as a dry socket (also known as alveolar osteitis) can occasionally develop after the extraction of a tooth. A dry socket occurs when the blood clot at the site of the tooth extraction dislodges before it has healed. The idea of treating dry sockets with medication-related combined treatment is relatively new. Many drugs have the ability to treat dry sockets. The study aimed to assess the knowledge regarding the combined treatment of dry socket among interns.

Material and Methods: This cross sectional study was carried out at a dental college to evaluate the knowledge and awareness of dental students regarding treatment of dry socket.

Results: The statistical analysis showed significance in knowledge about the combined treatment of dry socket. The participants had basic knowledge regarding various aspects of dry socket except recent advances.. Female interns showed more knowledge than male counterparts however, due to the unequal number of male and female participants the difference is not statistically significant. Basic knowledge regarding dry socket management was satisfactory however, awareness regarding newer advances needs to be improved.

Conclusion: It is strongly recommended that the students should update their knowledge using continuing education programmes, journal articles so that they can manage this clinical condition effectively.

Keywords: Dry socket, Alveolar osteitis, Hyaluronic acid, Lower laser therapy

INTRODUCTION

Alveolar osteitis, hemorrhage, discomfort, inferior alveolar nerve injury, oroantral communication, and periodontal disease are the potential side effects following tooth extraction.^[1,2]

Both odontogenic and non-odontogenic foci of persistent infection can provide access points for microorganisms to the post-extraction site. Data, however, suggest that bacteria might not be the main reason for the dry socket lesions connected to alveolar osteitis.^[3]

According to Lehner, using a vasoconstrictor in conjunction with local anesthetics results in extended vasospasm and avoids blood clot formation.^[4]

An inadequate degree of oral hygiene is thought to facilitate the development of dry socket, which is considered to be significantly influenced by infection. It has been demonstrated that patients with poor dental hygiene experience more dry sockets on average. Other factors include the location of extraction of site, surgical site trauma further risk factors.^[5]

The use of antibacterial medications following extraction and antiseptic rinses is two pharmacological techniques for preventing dryness.^[6,7]

Low-level laser treatment is offered in addition to well-known conventional therapies with the intention of promoting recovery. In their investigations, continuous diode laser irradiation followed by curettage and irrigation was a much more effective treatment for alveolar osteitis than curettage and irrigation followed with Alvogyl directly administered to the socket.^[8]

One of the physiotherapy techniques is magnetic-laser treatment, which reduces pain and swelling while hastening the regeneration of tissues following damage. A magnetic laser field acts on the chemicals that make up cell structures to drive cellular metabolism, enzymatic activity, and the respiration of lymphocytes and nerve cells. Improvements in microcirculation, rapid revascularization and reinnervation, a reduction in intracellular and intercellular edema are seen at the tissue level. Furthermore, the influence of a magnetic

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field on the surgical zone has analgesic, regenerative, and also accelerates tissue-healing.^[9]

One of the most prevalent linear extracellular matrix polysaccharides in the body's tissues, particularly in connective tissue and synovial fluid, is hyaluronic acid (HA), a glycosaminoglycan.

It carries out a number of functions, such as regulating tissue hydration, the elastic viscosity of synovial fluid in joints, and the mechanism of cell detachment with effects that are both anti-inflammatory and anti-edematous. As a result of advancements in our comprehension of the inflammatory mechanisms and wound healing process associated with tooth sockets, many extracellular matrix components, including HA, chondroitin sulfate, and fibronectin, are recognized as promoters of periodontal healing and regeneration.

HA is also non-immunogenic and non-toxic, making its usage in medicine safe.^[10,11]

MATERIAL AND METHODS

In Nagpur, Maharashtra, between April 2022 and June 2022, the study was carried out. One hundred and four interns were included to take the cross-sectional survey. The Ranjeet Deshmukh Dental College and Research Center's Institutional Ethical Committee reviewed the study's proposal and gave its approval (IEC/VSPMDCRC/81/2022). One hundred and four consenting volunteers who agreed to participate in the study provided the data.

Through multiple-choice questions, the participants awareness of combined treatment of dry socket was evaluated. The interns were informed about the study's purpose. A questionnaire was created online. Considering that it was simple to record and analyze the numbers, the online option was selected. Every participant's summary was effortlessly captured, tabulated, and statistically analyzed.

To do a descriptive analysis, data were analyzed using the statistical software Statistical Package for the Social Sciences version 2022 (IBM). Mann-Whitney U-test is used to assess the relationship between gender and correct answers among interns regarding the combined treatment of dry socket.

RESULTS

The study included 104 patients in total. Out of 104, 72 (69.2%) were female and 32 (30.8%) were male [Tables 1-3].

Table 1: Participants' evaluation based on gender.

Gender	Frequency	Percent
Female	72	69.2
Male	32	30.8
Total	104	100

Table 2: Descriptive statistics of participants' responses.

Questionnaire	Frequency	Percent
1. What is a dry socket?		
A) Damage to salivary gland	7	6.7
B) A displaced tooth	7	6.7
C) Exposure of bone after extraction	90	86.5
2. Dry socket is also known as?		
A) Alveolar proteinosis	38	36.5
B) Fibrinolytic alveolitis	62	59.6
C) Keratoconjunctivitis	4	3.8
3. Hormones increase the risk of dry socket		
A) Prolactin	26	25
B) Estrogen	39	37.5
C) Progesterone	39	37.5
4. The most common site of dry socket after extraction		
A) Primary molars	14	13.5
B) Canine	10	9.6
C) Wisdom tooth	80	76.9
5. True or False: Using straw after extraction of the risk of dry socket		
A) True	87	83.7
B) False	17	16.3
6. Time of experiencing pain of dry socket after extraction of tooth		
A) <24 h	15	14.4
B) 1-3 days	75	72.1
C) 1-3 weeks	14	13.5
7. True or False: Is dry socket recurrent or frequently occurring in adjacent tooth.		
A) True	42	40.4
B) False	62	59.6
8. Which of the following is not a feature of dry socket?		
A) Halitosis	12	11.5
B) Fever	29	27.9
C) Bad taste	37	35.6
D) Localized inflammation	16	15.4
E) Moderate-severe pain	10	9.6
9. How many days after an extraction does a dry socket usually develop?		
A) 28 days	7	6.7
B) 2-4 days	44	42.3
C) 7-8 days	23	22.1
D) 1-2 days	19	18.3
E) Within 24 h	11	10.6
10. Known risk factor for development of a dry socket?		
A) Radiotherapy	25	24
B) Infection	12	11.5
C) Smoking	16	15.4
D) Atraumatic extraction	41	39.4
E) Contraceptive pills	10	9.6
11. Which of the following is not usually a part of management of a dry socket?		
A) Irrigation with saline	15	14.4
B) Analgesic advice	14	13.5
C) Prescription of antibiotics	8	7.7
D) Packing with a sedative dressing	20	19.2
E) Repetition of postoperative advice	47	45.2

(Contd...)

Table 2: (Continued)

Questionnaire	Frequency	Percent
12. Not a underlying cause of dry socket		
A) Bacteria in the tooth socket	14	13.5
B) Severe trauma to surrounding bone	27	26
C) Both of the above	63	60.6
13. Which are the new treatment modalities for dry socket?		
A) HA	7	6.7
B) Magnetic laser therapy	13	12.5
C) Citric acid	5	4.8
D) Both A and B	79	76
14. What are the effects of HA on healing dry socket?		
A) Reduces pain	7	6.7
B) Reduces local and systemic inflammation	14	13.5
C) Regeneration and repair	15	14.4
D) All of the above	68	65.4
15. How many sessions of magnetic laser therapy are required for treatment of dry socket?		
A) 2	40	38.5
B) 5	28	26.9
C) 7	29	27.9
D) 10	7	6.7

HA: Hyaluronic acid

DISCUSSION

Question number 1 depicts that seven participants responded damage to salivary gland, seven participants responded a displaced tooth, and 90 participants responded exposure of bone after extraction, 65 female interns and 25 male interns gave the correct answer, that is, exposure of bone after extraction [Figure 1].

Question number 2 depicts that 38 participants responded alveolar proteinosis, 62 participants responded fibrinolytic alveolitis, and four participants responded keratoconjunctivitis, 42 female interns and 20 male interns gave the correct answer, that is, fibrinolytic alveolitis.

Question number [Figure 2] 3 depicts that 26 participants responded prolactin, 39 participants responded estrogen, and 39 participants responded progesterone 29 female interns and 10 male interns gave the correct answer, that is, responded estrogen [Figure 3].

Question number 4 depicts that 14 participants responded primary molars, 10 participants canine, and 80 participants responded wisdom tooth 58 female interns and 22 male interns gave correct answer, that is, wisdom tooth [Figure 4].

Question number 5 depicts that 87 participants responded true and 17 participants responded false, 61 female interns and 26 male interns gave the correct answer, that is, true [Figure 5].

Question number 6 depicts that 15 participants responded <24 h, 75 participants responded 1–3 days, and 14

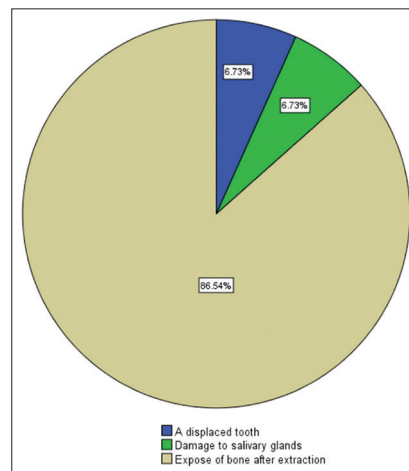


Figure 1: What is a dry socket.

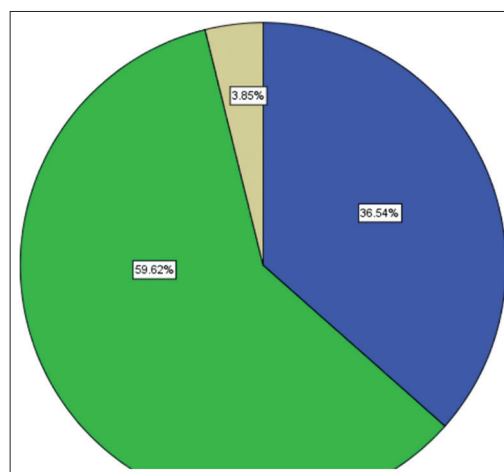


Figure 2: Knowledge about the alternative name of the dry socket.

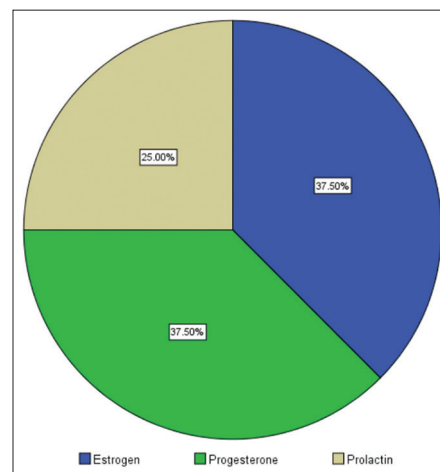


Figure 3: Hormone for which scientists have linked to an increased risk of developing dry socket.

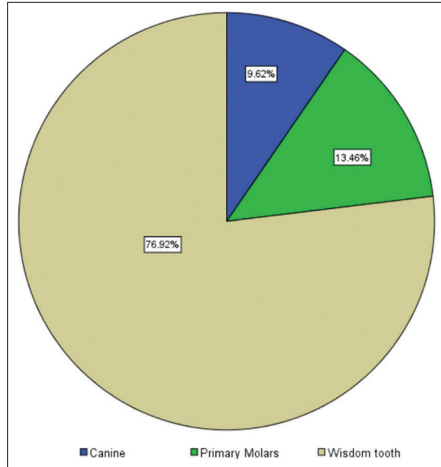


Figure 4: Believing that developing dry socket is more common after the extraction of the above type of tooth.

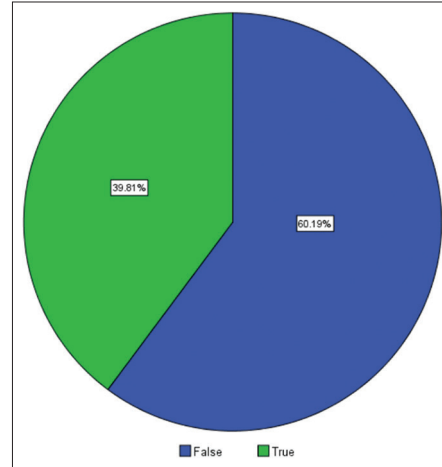


Figure 7: True or false: Having a dry socket once makes you more susceptible for it in the future.

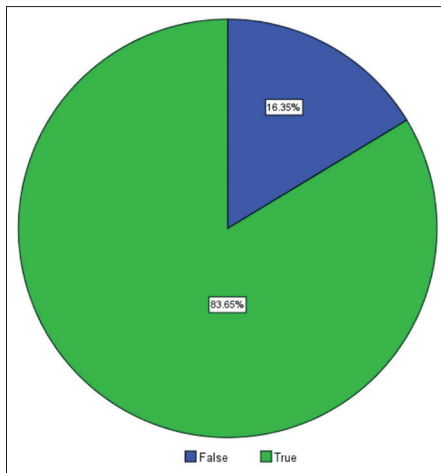


Figure 5: True or false: Drinking through a straw while healing from a tooth extraction increases your risk of developing dry socket.

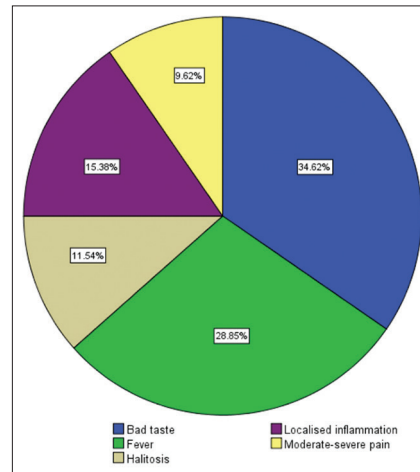


Figure 8: Which of the following is not a feature of dry socket.

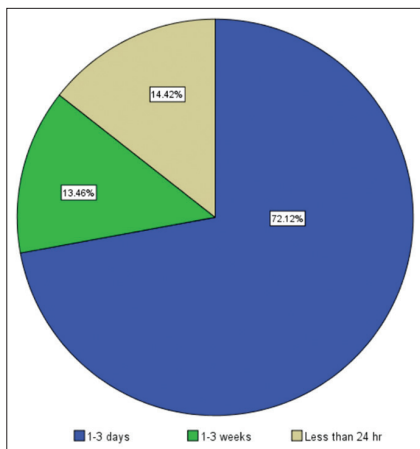


Figure 6: If you are developing dry socket, how soon after a tooth extraction would you begin to feel severe pain?

participants responded 1–3 weeks, 50 female interns and 25 male interns gave correct answer, that is, 1–3 days [Figure 6].

Question number 7 depicts that 42 participants responded true and 62 participants responded false, 19 female interns and 10 male interns gave correct answer, that is, false [Figure 7].

Question number 8 depicts that 12 participants responded halitosis, and 29 participants responded fever, 37 participants responded bad taste, 16 participants responded localized inflammation, and 10 participants responded moderate-severe pain, 27 female interns and 17 male interns gave the correct answer, that is, fever [Figure 8].

Question number 9 depicts that seven participants responded 28 days, 44 participants responded 2–4 days, 23 participants responded 7–8 days, 19 participants responded 1–2 days, and 11 participants responded within 24 h, 28 female interns and 13 male interns gave correct answer, that is, 2–4 days [Figure 9].

Table 3: Detailed results of questionnaire.

Questionnaire	Gender		Total	P-value
	Female	Male		
1. What is a dry socket? Responses				
Incorrect	7	7	14	0.095
Correct	65	25	90	
2. Dry socket is also known as? Responses				
Incorrect	30	12	42	0.691
Correct	42	20	62	
3. Hormones increases risk of dry socket Responses				
Incorrect	43	22	65	0.382
Correct	29	10	39	
4. The most common site of dry socket after extraction Responses				
Incorrect	14	10	24	0.189
Correct	58	22	80	
5. True or False: Using the straw immediately after tooth extraction increases the risk of dry socket Responses				
Incorrect	11	6	17	0.660
Correct	61	26	87	
6. If you are developing dry socket, how soon after a tooth extraction would you begin to feel severe pain? Responses				
Incorrect	22	7	29	0.365
Correct	50	25	75	
7. True or False: Is Dry socket recurrent or frequently occurring in adjacent tooth. Responses				
Incorrect	53	22	75	0.612
Correct	19	10	29	
8. Which of the following is not feature of dry socket? Responses				
Incorrect	45	15	60	0.138
Correct	27	17	44	
9. How many days after an extraction does a dry socket usually develop? Responses				
Incorrect	44	19	63	0.868
Correct	28	13	41	
10. Known risk factor for development of a dry socket? Responses				
Incorrect	69	27	96	0.044*
Correct	3	5	8	
11. Not usually a part of management of a dry socket? Responses				
Incorrect	56	21	77	0.194
Correct	16	11	27	
12. Not a Underlying cause of dry socket? Responses				
Incorrect	12	13	25	0.009*
Correct	60	19	79	
13. Treatment modalities for dry socket? Responses				
Incorrect	20	16	36	0.029*
Correct	52	16	68	
14. What are the effects of hyaluronic acid on healing dry socket? Responses				
Incorrect	55	20	75	0.147
Correct	17	12	29	
15. How many sessions of magnetic laser therapy are required for treatment of dry socket? Responses				
Incorrect	28	14	42	0.643
Correct	44	18	62	

*P value statistically significant

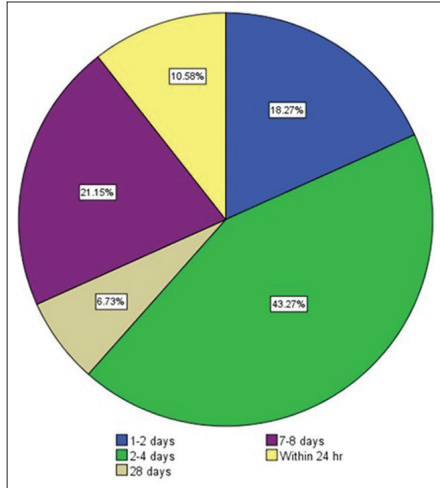


Figure 9: A pie chart showing percentage of responses showing awareness about the duration of occurrence of dry socket after extraction.

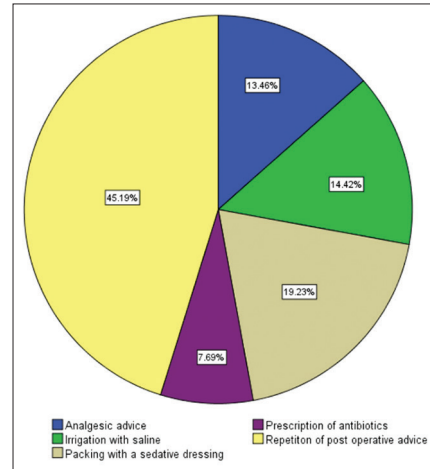


Figure 11: Which of the following is not usually a part of management of a dry socket.

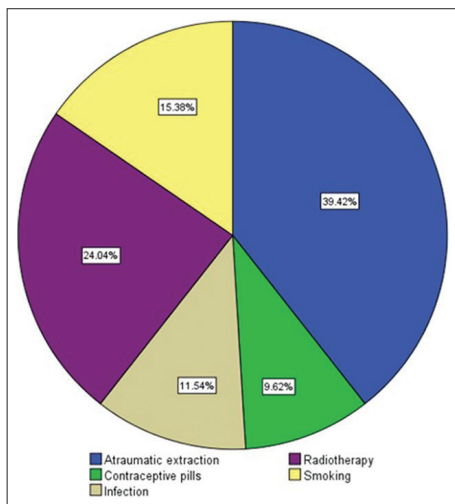


Figure 10: A pie chart showing percentage of responses showing awareness about the known risk factor for development of dry socket.

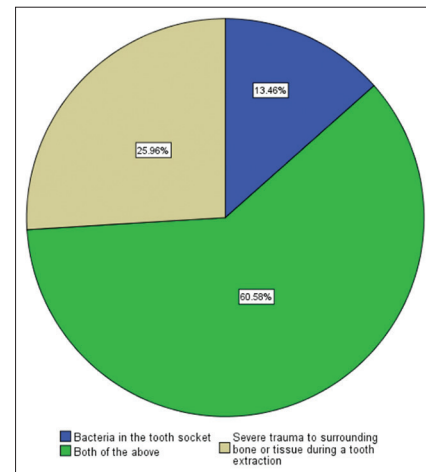


Figure 12: Which of the following do researchers suspect may be an underlying cause of dry socket.

Question number 10 depicts that 25 participants responded radiotherapy, 12 participants responded Infection, 16 participants responded smoking, 41 participants responded atraumatic extraction, and 10 participants responded contraceptive pills, 3 female interns and 5 male interns gave correct answer, that is, atraumatic extraction, p value significant (0.044) [Figure 10].

Question number 11 depicts that 15 participants responded irrigation with saline, 14 participants responded analgesic device, eight participants responded prescription of antibiotics, 20 participants responded packing with a sedative dressing, and 47 participants responded repetition

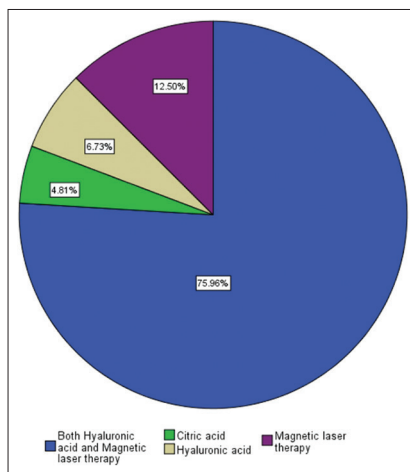


Figure 13: Which are the new treatment modalities for dry socket.

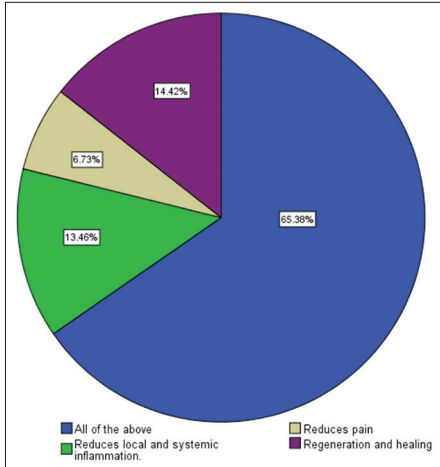


Figure 14: Which are the effects of hyaluronic acid on healing dry socket.

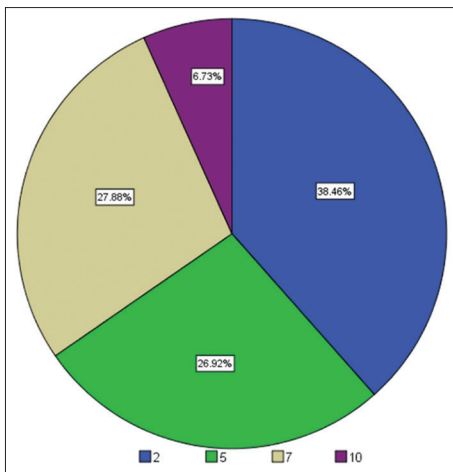


Figure 15: How many sessions of magnetic laser therapy are required for treatment of dry socket.

of postoperative advice, 16 female interns and 11 male interns gave correct answer, that is, prescription of antibiotics [Figure 11].

Question number 12 depicts that 14 participants responded with bacteria in the tooth socket, 27 participants responded with severe trauma to the surrounding bone, and 63 participants responded. Both of the above, 60 female interns and 19 male interns gave the correct answer, that is, severe trauma to surrounding bone, *P*-value significant (0.009) [Figure 12].

Question number 13 depicts that seven participants responded HA, 13 participants responded to magnetic laser therapy, five participants responded citric acid, and 79 participants responded. Both A and B, 52 female interns and 16 male interns, gave correct answers, that is, both A and B, *P*-value significant (0.029) [Figure 13].

Question number 14 depicts that seven participants responded that it reduces pain, 14 participants responded

reduces local and systemic inflammation, 15 participants responded regeneration and repair, and 69 participants responded. All of the above, 17 female interns and 12 male interns gave the correct answer, that is, all of the above [Figure 14].

Question number 15 depicts that 40 participants responded 2, 28 participants responded 5, 29 participants responded 7, and seven participants responded 10, 44 female interns and 18 male interns gave correct answers, that is, 7 [Figure 15].

Numerous authors claim that alveolar osteitis, a common condition, is responsible for between 24% and 35% of all complications experienced by patients following tooth extraction.^[12,13]

Alveolar osteitis treatment with magnetic-laser supportive therapy may be used in addition to more traditional surgical methods.^[14]

HA regulates a variety of biological processes and keeps the body's equilibrium in check. The extracellular matrix's elasticity and viscosity are crucially maintained by HA, a vital component of connective tissue.^[15]

A course of magnetic-laser treatment should be added to the complex of therapeutic procedures used to treat dry sockets that develop following removal.

The healing process of the mucous membrane surrounding the tooth's extraction is accelerated by magnetic-laser treatment, which also reduces the inflammatory symptoms of dry sockets that develop following tooth extraction. One of the reasons for such rapid changes should be the restoration of microcirculation in the inflammatory area as a result of the reduction in microvessel thrombosis and the activation of anti-inflammatory mechanisms in response to oxygen ions.

The ability of magnetic-laser treatment to reduce pain is explained by the fact that laser light is absorbed by nociceptors and inhibits A and C pain fibers.^[16]

HA gel was used as an adjuvant in the treatment of dry socket based on the aforesaid concepts and treatment approaches.

In our investigation, it was determined that knowledge of the use of HA to reduce pain was sufficient. Thus, it was determined that HA lessens both local and systemic inflammation in addition to pain. Knowledge about the application of combined exposure to a steady magnetic field and laser radiation was discovered in our research to promote effective therapies for alveolar osteitis.

The study was impeded by the fact that it was conducted in a single institution and only used a limited sample size. Due to informal talks among the respondents, there may not have been much diversity in the responses. Since the sample sizes in both groups were unequal, the findings cannot be generalized to all dental practitioners.

CONCLUSION

We conclude that there is a difference between male and female interns regarding the knowledge about the combined

treatment of dry socket. However due to the unequal number of male and female participants, this difference was not statistically significant. In some areas students need to improve their understanding such as newer treatment options for management of dry socket. Continuous knowledge update is recommended for all students.

Ethical approval

The research/study is approved by the Institutional Ethics Committee at VSPM Dental College and Research Center, number IEC/VSPMDCRC/81/2022.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The author confirms that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

REFERENCES

1. Mamoun J. Dry socket etiology, diagnosis, and clinical treatment techniques. *J Korean Assoc Oral Maxillofac Surg* 2018;44:52-8.
2. Blum IR. Contemporary views on dry socket (alveolar osteitis): A clinical appraisal of standardization, aetiopathogenesis and management: A critical review. *Int J Oral Maxillofac Surg* 2002;31:309-17.

3. Colby RC. The general practitioner's perspective of the etiology, prevention, and treatment of dry socket. *Gen Dent* 1997;45:461-7; quiz 471-2.
4. Lehner T. Analysis of one hundred cases of dry socket. *Dent Pract Dent Rec* 1958;8:275-9.
5. Nusair YM, Abu Younis MH. Prevalence, clinical picture, and risk factors of dry socket in a Jordanian dental teaching center. *J Contemp Dent Pract* 2007;8:53-63.
6. Sheikh MA, Kiyani A, Mehdi A, Musharaf Q. Pathogenesis and management of dry socket (alveolar osteitis). *Pak Oral Dent J* 2010;38:323-6.
7. Penarrocha-Diago M, Sanchis JM, S'aez U, Gay C, Bagán JV. Oral hygiene and postoperative pain after mandibular third molar surgery. *Oral Surg Oral Med Oral Pathol Oral Radiol Endodont* 2001;92:260-4.
8. Lin GH, López del Amo FS, Wang HL. Laser therapy for treatment of peri-implant mucositis and peri-implantitis: An American Academy of Periodontology best evidence review. *J Periodontol* 2018;89:766-82.
9. De Freitas LF, Hamblin MR. Proposed mechanisms of photobiomodulation or low-level light therapy. *IEEE J Sel Top Quantum Electron* 2016;22:7000417.
10. Marycz K, Kornicka K, Röcken M. Static magnetic field (SMF) as a regulator of stem cell fate-new perspectives in regenerative medicine arising from an underestimated tool. *Stem Cell Rev* 2018;14:785-92.
11. Refai H, Radwan D, Hassanien N. Radiodensitometric assessment of the effect of pulsed electromagnetic field stimulation versus low intensity laser irradiation on mandibular fracture repair: A preliminary clinical trial. *J Maxillofac Oral Surg* 2014;13:451-7.
12. Sahayata VN, Bhavsar NV, Brahmhbhatt NA. An evaluation of 0.2% hyaluronic acid gel (Gengigel (R)) in the treatment of gingivitis: A clinical and microbiological study. *Oral Health Dent Manag* 2014;13:779-85.
13. Couper MP, Tourangeau R, Conrad F. Evaluating the effectiveness of visual analog scales: A web experiment. *Soc Sci Comput Rev* 2006;24:227-45.
14. Kathuria V, Dhillion JK, Kalra G. Low level laser therapy: A panacea for oral maladies. *Laser Ther* 2015;24:215-23.
15. Abdelrahim A, Hassanein HR, Dahaba M. Effect of pulsed electromagnetic field on healing of mandibular fracture: A preliminary clinical study. *J Oral Maxillofac Surg* 2011;69:17081717.
16. Darendeliler MA, Darendeliler A, Sinclair PM. Effects of static magnetic and pulsed electromagnetic fields on bone healing. *Int J Adult Orthodon Orthognath Surg* 1997;12:43-53.

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