

Knowledge, awareness, and prevalence of various types of suturing techniques used for intraoral wound closure

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ABSTRACT

Wound closing is critical to the completion of any surgical operation. An imperfect closure causes edge isolation, creating a possible route for bacterial contamination, which can lead to infection and scarring. While tissue adhesives and staples are now used as substitutes, surgical sutures remain the gold standard for a safe wound. The aim of this survey is to assess dental students' knowledge on the variety of suturing techniques. A comprehensive online survey of 100 dental students with simple questions about different types of sutures was performed. Each student was asked to complete a questionnaire of 20 questions. This study saw a total of 100 students take part in it. It was found that 58% of the participants opted for interrupted suturing technique and the rest 42% opted for simple continuous technique. It was found that 23% of the participants were not aware of the simple loop suturing technique and the rest 77% were aware of this suturing technique. Thus from the above results and discussion, we will conclude that almost all of the members are fairly privy to the distinctive suturing strategies; however; intensive expertise is required.

Key words: Extraction, innovative technique, suture technique, sutures, undergraduate

INTRODUCTION

The suture is begun with a simple interrupted thread that is bound but not sliced. A series of simple sutures are put in sequence, with no suture material tied or cut after each pass. Sutures should be spaced uniformly, and stress should be spread evenly along the suture axis. The suturing material used has an effect on the recovery process and having knowledge about the material used for suture making is important. A suture's primary role is to help support the flap

during the healing stages without causing further damage to the soft tissue.^[1]

Suture substances and suture/needle mixtures are available in loads of options. The bodily and biological properties of the suture material, in addition to the restorative characteristics of the sutured tissues, are used to pick a suture for the selected treatment.^[2] Suture material gets chosen considering the following characteristics: the nature of the injury, the tissue matter to be healed, the extensible toughness of the suture material, tie knot-maintaining attributes of the surgical seams material, and the response of associated tissues to the surgical seam material.^[3] Suture positioning can aid in the quicker and more complete healing of the tissues involved.^[4] It promotes primary wound healing while still preventing secondary infections. It is critical to remember that the right form of suture marker

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in dentistry is just as crucial as the procedure because it aids in correctly penetrating and protecting the unification of the tissue.^[5]

Suture techniques utilized in dentistry consist of the fundamental loop method, interrupted suture technique, vertical mattress technique, and horizontal mattress technique. The fundamental loop technique is the most broadly utilized in dentistry and is frequently used to coapt tension-free, cellular surgical flaps. Interrupted suture is used to shut wounds.^[6,7]

Our group has enormous know-how and research experience that has been translated into the best publications.^[8-22]

The rationale of this study is to decide the knowledge and awareness of diverse suturing techniques used for intraoral wound closure among undergraduate students and what type of suturing techniques students prefer the most.

MATERIALS AND METHODS

An online opinion poll was set and circulated to many of the adolescent population. The form included 15 queries. The study population was decided to be 100. It was an online placing wherein reviewers had been concerned about this research for checking the rationality of the test. The facts were assembled, confirmed, organized, and examined. All statistical evaluations were achieved with the use of SPSS software version 20.0 (IBM Chicago). The Chi-square test was achieved, wherein it was decided that if the *P* is located to be much <0.05 then it is far statistically significant. The facts were imported to SPSS and the descriptive records with frequency evaluation were achieved. The received facts had been represented graphically as bar charts. Participants' consent was obtained before the start of the questionnaire study.

RESULTS

It was found that the majority of the participants were females with 54% while the remaining 46% were male. The majority of the participants were between the ages of 21.22 and 23 years old. The *P* for this association was $P = 0.463$ which is statistically not significant.

Figure 1 shows that 65% of the participants were aware of different suture techniques. This correlation is statistically insignificant, $P = 0.032$.

The association between the gender of participants and the responses when asked which suturing techniques are depicted in Figure 2. This pie chart shows that 50% of the participants used interrupted technique, 38% used simple continuous technique, 8% used vertical mattress, and 4% used horizontal mattress.

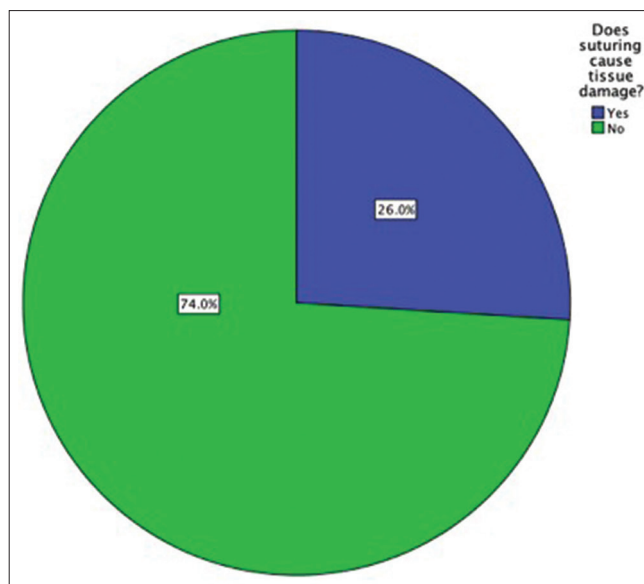


Figure 1: Pie chart showing the responses to whether suturing causes tissue damage. Individuals who opted for Yes are depicted as blue and those who opted for No are depicted as green. Twenty-six percent of the participants believe suturing sometimes can cause more tissue damage. Moreover, the rest 74% believe suturing does not cause tissue damage

Figure 3 shows the responses when asked which suturing technique is most commonly used. It was found that 58% of the participants opted for interrupted suturing technique and the rest 42% opted for simple continuous technique.

The responses when asked which is the best type of suture materials are depicted in Figure 4. The bar chart shows that 33% of the participants opted for natural type of suturing material 57% opted for synthetic type of suture material, and the rest 10% opted for monofilament as the best suture material.

Figure 5 shows the relationship between the gender of participants and the responses when asked which suturing technique is the most difficult. It was found that 6% used interrupted technique, 11% used simple continuous technique, 42% used vertical mattress, and 40% used horizontal mattress. Figure 6 shows the responses of participants when asked if different suturing techniques can cause any kind of delay in the healing period of wounds. It was found that 61% of the participants believed that the suturing techniques can affect the healing period of wounds differently and the other 39% different suturing techniques could not affect the healing period of wounds differently.

Figure 7 shows the responses when asked whether suturing is necessary after extraction. It was found that 42% of the participants think it is necessary to suture after an extraction and the rest 58% do not find the necessity to suture after extraction.

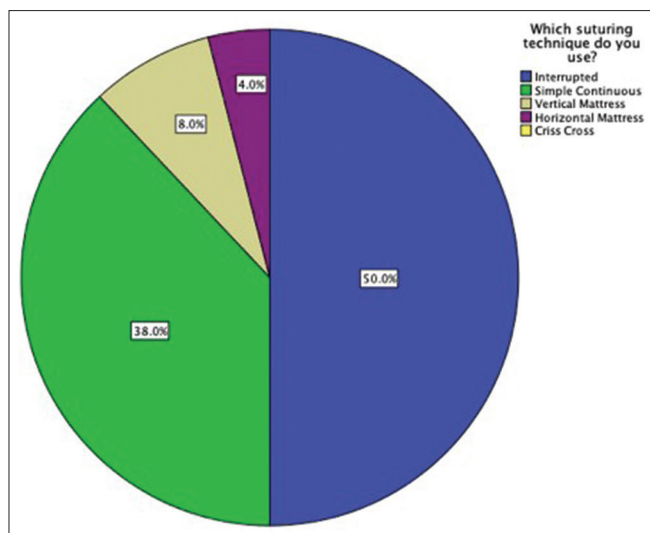


Figure 2: Pie chart showing the responses when asked which suturing techniques are used. The X-axis characterizes the gender of the participants involved and the Y-axis characterizes the responses when asked which suturing techniques are used. Individuals who opted for interrupted (blue), simple continuous (green), vertical mattress (golden), and who opted for horizontal mattress (violet). Fifty percent used interrupted technique, 38% used simple continuous technique, 8% used vertical mattress, and 4% used horizontal mattress

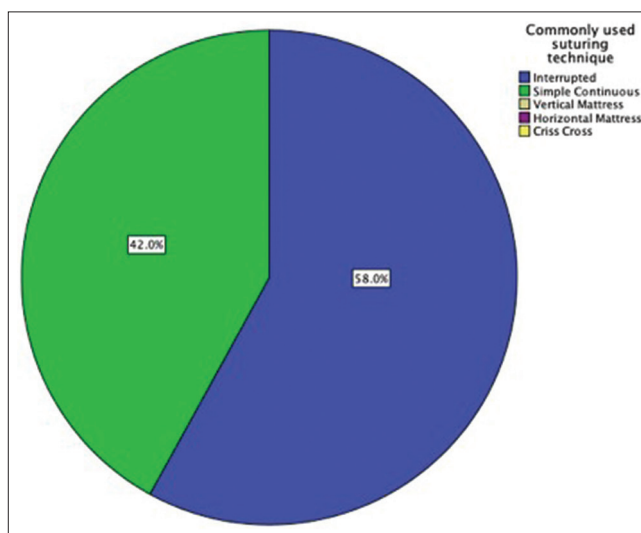


Figure 3: Pie chart showing the responses when asked which suturing technique is most commonly used. The X-axis characterizes the gender of participants involved and the Y-axis characterizes the responses when asked which suturing technique is most commonly used. Individuals who opted for interrupted (blue) and who opted for simple continuous (green). Fifty-eight percent of the participants opted for the interrupted suturing technique and the rest 42% opted for simple continuous technique

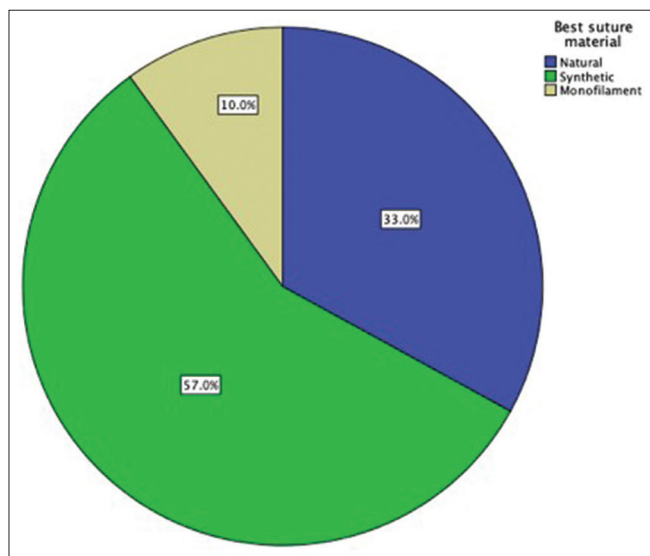


Figure 4: Pie chart showing the awareness of the best suture material among dental students. Individuals who opted for natural are depicted as blue, who opted for synthetic green, and monofilament is depicted as golden. Thirty-three percent of the participants opted for a natural type of suturing material 57% opted for synthetic type of suture material and the rest 10% opted for monofilament as the best suture materials

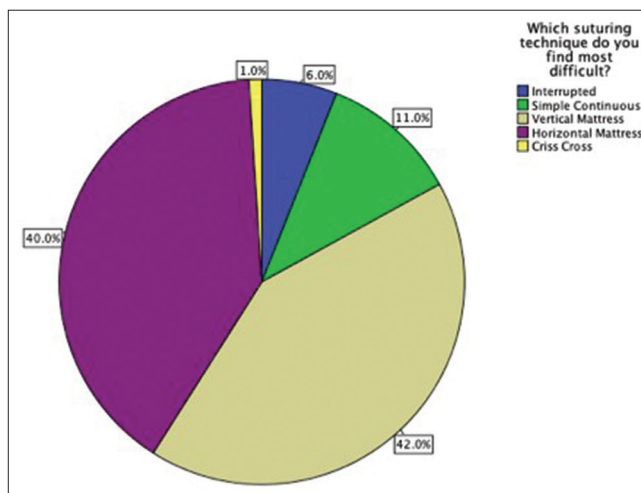


Figure 5: Pie chart showing responses to the most difficult type of suturing technique according to dental students. Those who opted for interrupted are depicted as blue, simple continuous as green, vertical mattress as golden, and who opted for horizontal mattress is depicted as violet. Six percent used interrupted technique, 11% used simple continuous technique, 42% used vertical mattress, and 40% used horizontal mattress

The responses when asked whether suturing causes tissue damage is depicted in Figure 8. It was found that 26% of the participants believe suturing sometimes can cause more tissue damage and the other 74% believe suturing does not cause tissue damage.

DISCUSSION

There are many methods of suture materials that can be used in dental surgery. However, it is important to recognize the properties of surgically purchased suture materials, the biological action of relieving, and the relation of the suture material with the compassing tissue.

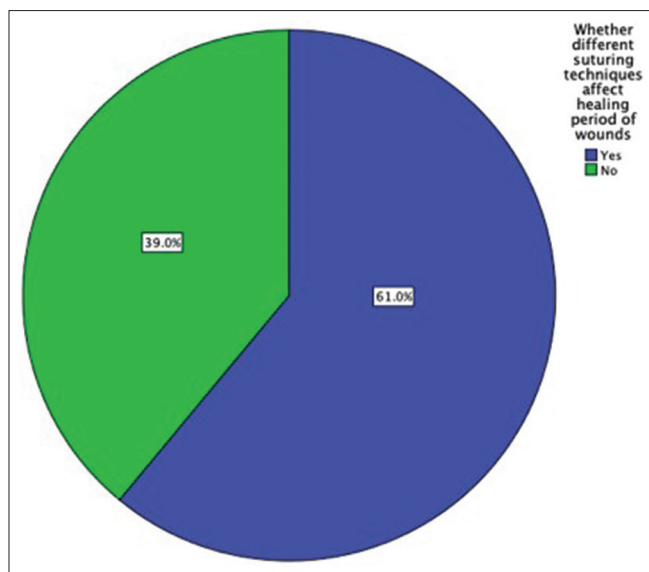


Figure 6: Pie chart showing the response to whether different suturing techniques affect the healing period of wounds. Individuals who opted for Yes are depicted as blue and who opted for No is depicted as green. Sixty-one percent of the participants believed that different suturing techniques could affect the healing period of wounds differently and the other 39% different suturing techniques could not affect the healing period of wounds differently

Wound assistance is mostly required till the recovery procedure has improved to such a quantity that the tissue can face up to purposeful forces.^[23]

According to a study that was conducted by Griffin *et al.*,^[24] simple interrupted sutures were the most utilized in many surgical operations. This is in accordance with the results of our study. This requires an equal quantity of tension, anchor suturing permits the facial, and lingual flaps to be located independently from every other.^[25,26] A study by Malay *et al.* found that when asked what type of suture technique is given to patients after an extraction, about 98% of the participants use a simple interrupted suturing technique.^[27,28]

According to one study, it was found that interrupted sutures have great tensile strength and can be placed easily and other advantages such as reducing cases of wound edema, etc.^[29] According to a study by Osunde *et al.*,^[30] at the 24 and 48 h postoperative evaluations, the suture-free method resulted in decreased discomfort, edema, and trismus. Thus, in some cases, it can be said that suturing is not required; this finding can also be confirmed by another study by Waite and Cherala^[31] which showed significant postoperative outcomes in multiple instances of impacted third molar that required sectioning performed without suturing (secondary healing).

Multifilament sutures tend to have a higher risk of stimulating infection when compared to monofilament

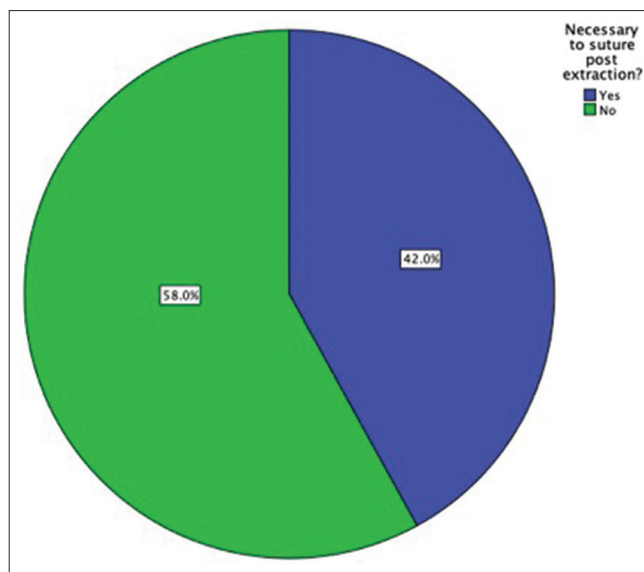


Figure 7: Pie chart showing the responses to whether it is necessary to suture post extraction. Individuals who opted for Yes are depicted as blue and those who opted for No are depicted as green. Forty-two percent of the participants think it is necessary to suture after an extraction and the rest 58% do not find the necessity to suture after extraction

sutures because they may enhance bacterial adhesion to adjacent sterile regions through capillary action, hence boosting the infection process.^[32,33] Another study by Reddy^[34] revealed that when questioned if they were aware of the available options in dentistry, 91% of the clinicians were aware and only 9% were not, which is identical to the results obtained in our study and thus revealed that majority of the test population were conscious of the different suture techniques.

CONCLUSION

To be a skilled surgeon, you must be familiar with sutures, needles, equipment, and technique. It can be said there is no suture that is better than others in every way. Refined and correct soft-tissue manipulations throughout different suturing procedures are able to provide effective healing of tissue and good esthetic results. However, can there be a better suturing technique and suture material in future as the advances in technology progresses? This study also raised awareness about various suture procedures.

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Conflicts of interest

There are no conflicts of interest.

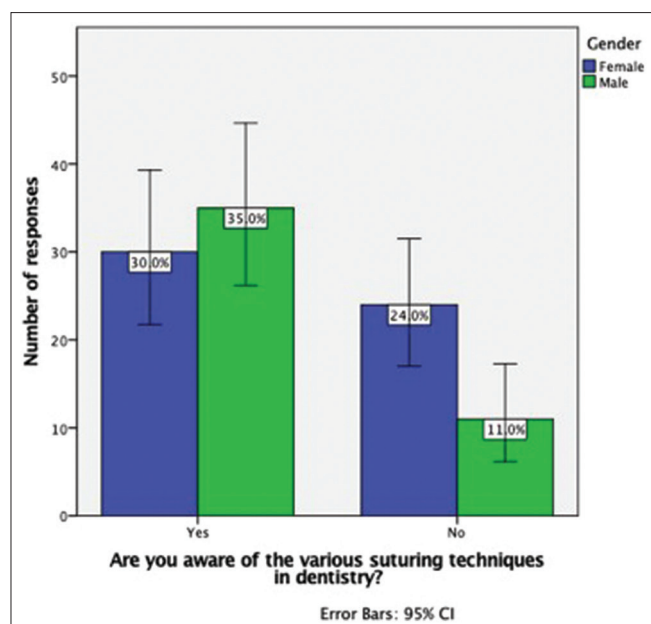


Figure 8: Bar chart showing the relation between the gender of participants and the awareness of participants regarding the various suturing techniques. The X-axis characterizes the gender of participants involved and the Y-axis shows the awareness of various suturing techniques. Individuals who opted for Yes (blue) and who opted for No (green). Sixty-five percent 65% of the participants were aware of different suture techniques and the rest 35% were not aware of the suturing techniques. Pearson Chi-square ($P = 0.032, >0.05$) which is statistically insignificant

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