

# KNOWLEDGE ABOUT SUTURING TECHNIQUE IN EXTRACTION WOUNDS AMONG DENTAL STUDENTS -A SURVEY

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## ABSTRACT

Suturing is the process of joining two surfaces or edges together along a line by sewing. The aim of the study was to find out the different types of suture technique in extraction wounds. The study was focused to assess the different types of suturing techniques in extraction wounds. The sample size of the study was about 100 participants, a set of questionnaire is being created by use of Google form software, the data collection software score. The results were collected and statistically analysed. There is a significant relation between the dental students and their knowledge about the different suture techniques seen in extraction wounds. This study created awareness on different suture techniques and improved the knowledge about suturing techniques which are absolutely necessary to become a competent surgeon.

**KEYWORDS** :Extraction wounds, Suturing, Suture technique

## INTRODUCTION:

Successful dental suturing is dependent on accurate coaptation of the flaps. Various methods and materials have been used for precise flap placement. Suturing has remained the most popular method. The term 'suture' describes any strand of materials utilized to ligate blood vessels (Ashok *et al.*, 2014). The primary objectives of dental suturing is to position and secure surgical flaps in order to promote optimal healing which provide support for tissue margin until they heal without dead space and reduce postoperative pain. Inadequate suturing may result in flap skipping, exposed bone and delayed wound healing (Varma *et al.*, 1974).

The technique of closing wounds by means of needle and thread is several thousand years old. The history of surgical suture can be traced back to ancient Egypt (Prato *et al.*, 2000). The desired qualities of a suture thread include the tensile strength that is appropriate for respective use, tissue biocompatibility. It is important the clinician select the specific suture thread (Silverstein, 2005).

There are different types of suture techniques that are used in dentistry such as the simple loop technique, interrupted suture technique, horizontal mattress technique and vertical mattress technique. The simple loop technique is the most commonly used technique in dentistry and is routinely used to coapt tension free, mobile surgical flaps. Interrupted suture is used for wound closure with tension free flaps. (Silverstein and Kurtzman, 2005). Mattress suture technique are generally used to resist muscle pull, evert the wound edges, and adapt the tissue flaps highly to the underlying suture (Meyer, 1988).

Final decisions about tooth selection should be made during the trial insertion stage of the denture and should be confirmed through consultation with the patient before extraction and suitable sutures should be given to preserve bone architecture as this will impact the final restorative and prosthetic outcome(Jain, Nallaswamy and Ariga, 2019., ; Jyothiet *al.*, 2017; Duraisamyet *al.*, 2019., ; Selvan and Ganapathy, 2016., ; Ganapathyet *al.*, 2016., ; Ajay *et al.*, 2017., ;Ganapathy, Kannan and Venugopalan, 2017., ; Jain, Ranganathan and Ganapathy, 2017; Ashok and Suvitha, 2016., ; Ashok *et al.*, 2014., ; Venugopalanet *al.*, 2014)

Aloe Vera is known for its soothing and healing effects on burn and other wounds, authenticating its use in treatment of suturing wounds and treating oral lesions.(Subasree, Murthykumar and Dhanraj, 2016).The bacteria most commonly involved in stitch abscess are streptococci and Staphylococcus aureus. When left untreated it affects the lymphatic vessels and reaches the circulation causing serious conditions. The borders of the area of redness are generally not sharp and the skin may be swollen. Lymphatic vessels are involved which leads to infection spread and cellulitis.(Vijayalakshmi and Ganapathy, 2016)

Knitted suture cords impregnated with Aluminium Chloride show superior results in terms of hemostasis and gingival inflammation. Potassium Aluminium Sulphate to produce minimal gingival inflammatory changes good for wound healing .(Kannan and Venugopalan, 2018);(Basha, Ganapathy and Venugopalan, 2018). The purpose of the study was to create awareness of different suture techniques which will enable better understanding in clinical performance in extraction wounds.

## **MATERIALS AND METHOD:**

It was a questionnaire based study, on assessing the different suturing techniques in extraction wounds .The participants were dental students .A total of eight questions were asked to a batch of 100 participants to elicit awareness about the various suturing techniques in dental extraction wounds.The study was done under a university setting; it was done under a similar ethnicity of population The data collected was analysed, presented statistically and were discussed

Then the results were imported for statistical analysis using SPSS statically software.Statistical test and inferential statistics were done keeping as independent variable and suture technique as dependent variable .The data was reviewed by one external reviewer and was imported to SPSS and variables defined chi-square was done on the data obtained .The type of analysis was done was correlation and association

## **RESULTS AND DISCUSSION :**

The data collected from the google form were tabulated in SPSS and descriptive statistics were obtained .Out of the 100 dental students.76% of the dental students were undergraduates and 24% were post graduates (Fig 1). 92% of the students were aware of simple loops and 8% were not aware (Fig 2).76% of the students were aware of anchor suturing technique and 24% were not aware (Fig 3). 81% of the students were aware of interrupted suture and 19% were not aware ( Fig 4).81% of them were aware of horizontal mattress suture and 19% were not aware( Fig 5). 28% of the dental students were aware of vertical mattress suture and 72% were not aware (Fig 6).82% were aware of figure of 8 suture and 18% were not aware(Fig 7)

Simple interrupted suturing is the most common technique used in which both sides of incision require the same amount of tension, anchor suturing allows the facial and lingual flaps to be positioned independently from each other, so reducing the time spent for tying knots but needing time for removal.(Nelson, Funakoshi and O'Leary, 1977) There was no significant difference among the three types of techniques but in other study shows anchor suturing after third molar removal seems to provide better periodontal healing(Cetinkayaet *al.*, 2009)When choosing a suture material, it is important to consider the location of

wound, static and dynamic wound tension, presence of wound infection or fever and cost of suture material.

If fever or chance of infection is high, then deep sutures composed of synthetic, monofilament sutures are desirable, as braided sutures are associated with higher rates of infection and can be rapidly degraded by infection or fever. (Stegman, 1978) For running intradermal sutures, polypropylene, poliglecaprone 25 or glycomer 631 can be considered. (Stegman, 1978) They exhibit minimal tissue reactivity. Silk is best for approximation of mucosal and intertriginous areas. However, when the cosmetic appearance is important silk should not be used.

Knowledge of the suture, needles (type, size, shape), instruments, and techniques are absolutely necessary in order to be a competent surgeon. There is no suture superior to the others in each aspect. The differences in terms of tissue reaction and bacterial adhesion between sutures should be always considered in the selection of the appropriate suturing material. Delicate and proper soft tissue handling during various suturing techniques can insure optimal tissue healing and high esthetic result (Koshak, 2017)

The participants who took the survey were most undergraduate (76%) and the rest were post graduates dental students (24%) 92% of the dental students were aware of the simple loop technique suture A study by silver stein Hetal stated that the simple loop suture was the most commonly used suturing technique in dentistry (Silverstein, 2011) 81% of the dental student's preferred interrupted suture was used in urgent situation and 91% was not aware In a study by Hassan H Koshak .et al stated that the most commonly used suture in immediate situations was interrupted suture .(Koshak, 2017)

81% of the dental students were aware of horizontal mattress suture was the strongest suture 19% of them were not aware In a study by Hassan H Koshak et al stated that the horizontal suture was the strongest and prevents flap from being inverted into the cavity (Koshak, 2017) 72% of the dental students were not aware of vertical suture used in wounds were edges tend to evert 28% were aware

In a study by Koshak et.al stated that vertical mattress suture technique were used to get eversion of wound margin (Koshak, 2017) 82% of the dental patient was aware that figure of 8 suture technique was used to close at the extraction socket and 18% were not aware In a study by silverstein LH stated that the figure of 8 suture technique was used to be close surgical flaps and socket (Silverstein, 2011)

## **CONCLUSION:**

Knowledge of the suture, needles, instruments and technique are absolutely necessary in order to be a competent surgeon .There is no suture superior to others in each aspect. Delicate and proper soft tissue handling during various techniques of suturing can insure optimal tissue healing and high aesthetic results. The study created awareness regarding different suture techniques. This will enable better understanding of students in clinical performance with regards to management of extraction wounds and advocate necessary training parameters among undergraduates and postgraduates.

## **ACKNOWLEDGMENTS:**

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## **AUTHOR CONTRIBUTION:**

Author 1 ( Debarundavid ) carried out the study by collecting data and drafted the manuscript after performing the necessary statistical analysis . Author 2 ( Dr. Dhanaraj ) aided in conception of the topic , has participated in the study design , statistical analysis and has supervised in preparation of the manuscript . Author 3 ( DrManjari ) has participated in the study design and coordinated in developing the

manuscript . All the authors have discussed the results among themselves and contributed to the final manuscript

### CONFLICT OF INTEREST:

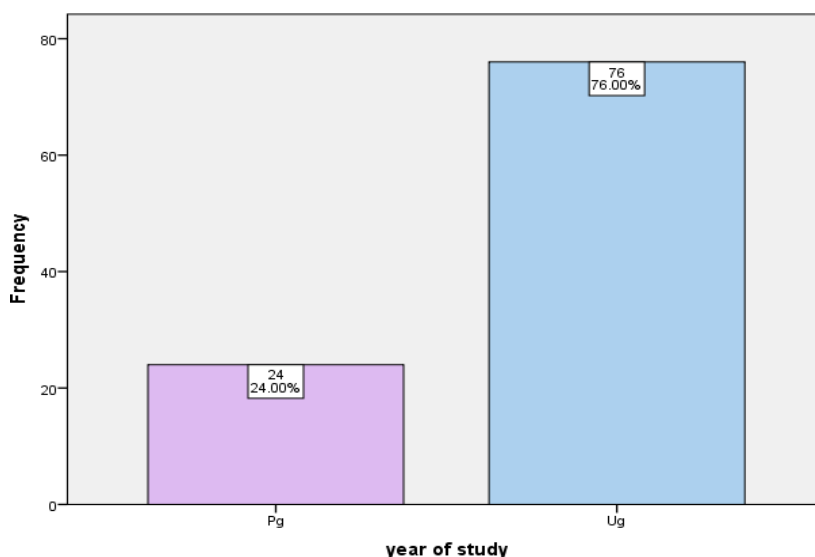
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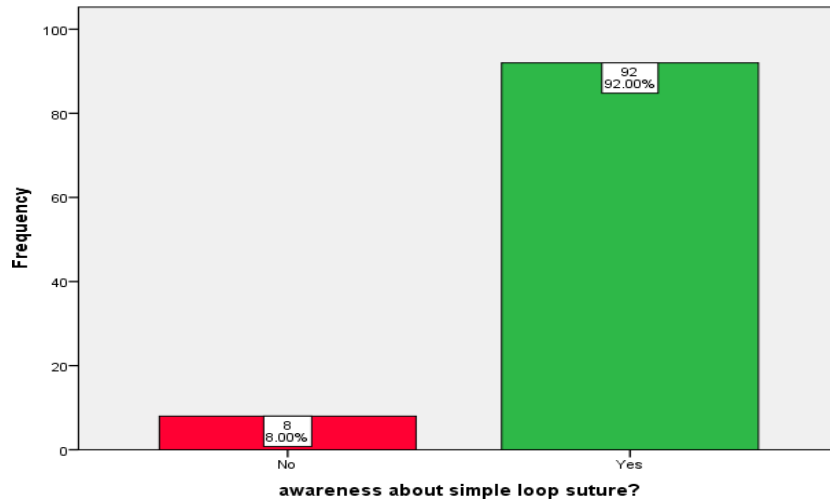
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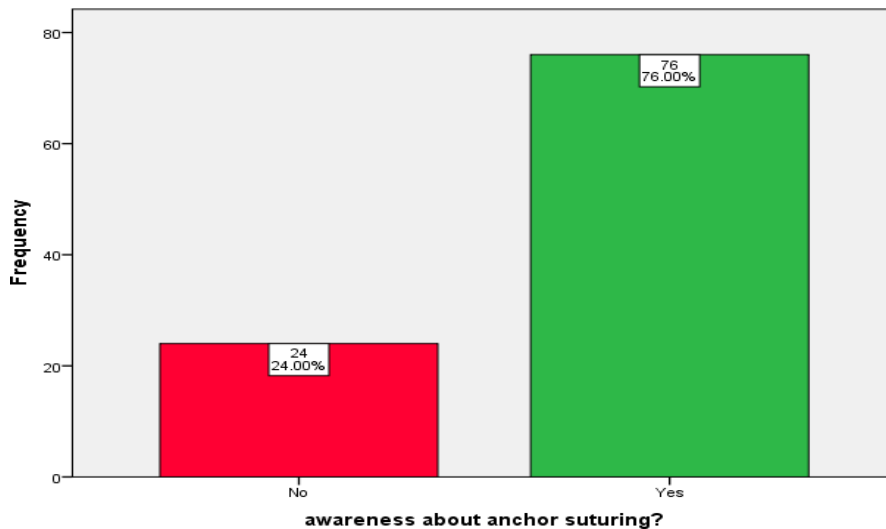


**Figure 1 :** Graph shows the percentage of undergraduate and postgraduate involved in the study. X axis

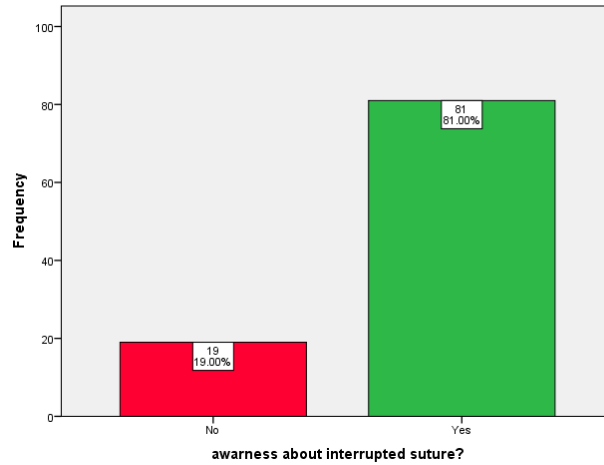
shows the undergraduate and postgraduate students involved in the study and Y axis shows the percentage of the students. 24% were post graduates (purple), 76 % were undergraduates (blue)



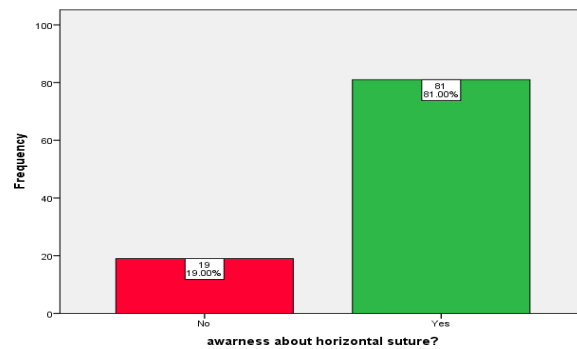
**Figure 2:** Graph shows percentage of Awareness about simple loop suture technique. X axis shows the positive and negative responses regarding awareness of simple loop suturing technique in extraction wounds and Y axis shows the percentage of responses. 92 % were aware about simple loop suture( green ) and 8% were not aware (red)



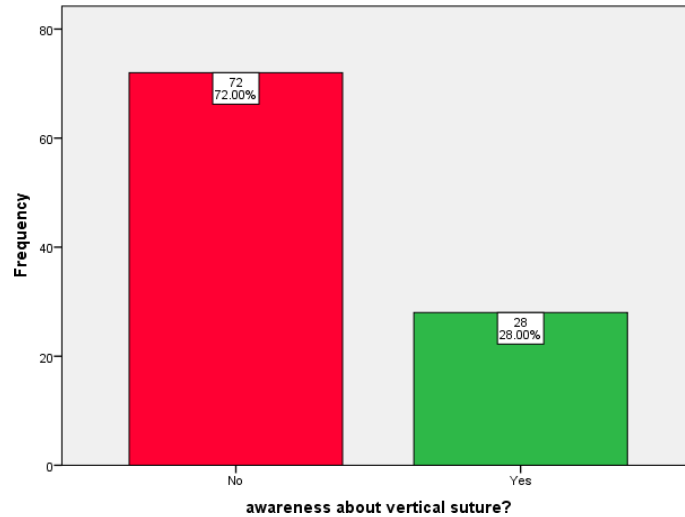
**Figure 3 :** Graph shows the of Awareness about anchor suturing technique . X axis shows the positive and negative responses regarding awareness of anchor suturing technique in extraction wounds and Y axis shows the awareness of responses. 76 % were aware about anchor suturing technique ( green ) and 24% were not aware (red)



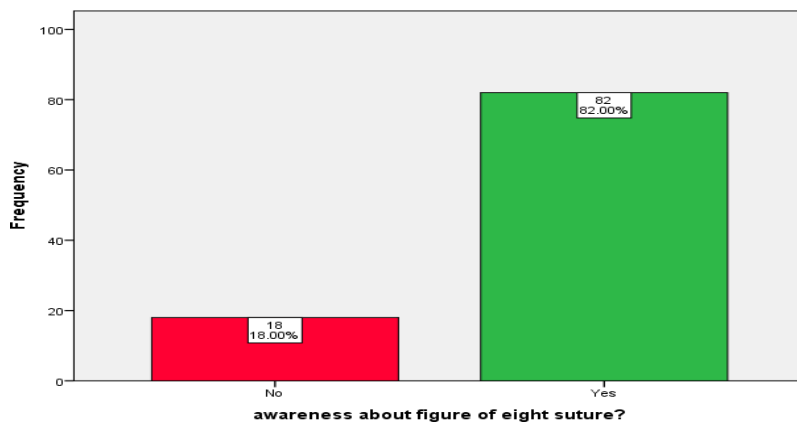
**Figure 4 :** Graph shows the of Awareness about interrupted suturing technique.X axis shows the positive and negative responses regarding awareness of interrupted suturing technique in extraction wounds and Y axis shows the percentage of responses. 81% were aware about interrupted suturing (green) and 19% were not aware (red )



**Figure 5 :**Graph shows percentage of Awareness about horizontal mattress suturing . X axis shows the positive and negative responses regarding awareness of horizontal mattress suturing technique in extraction wounds and Y axis shows the of responses. 81% were aware about horizontal mattress suturing (green) and 19% were not aware (red )

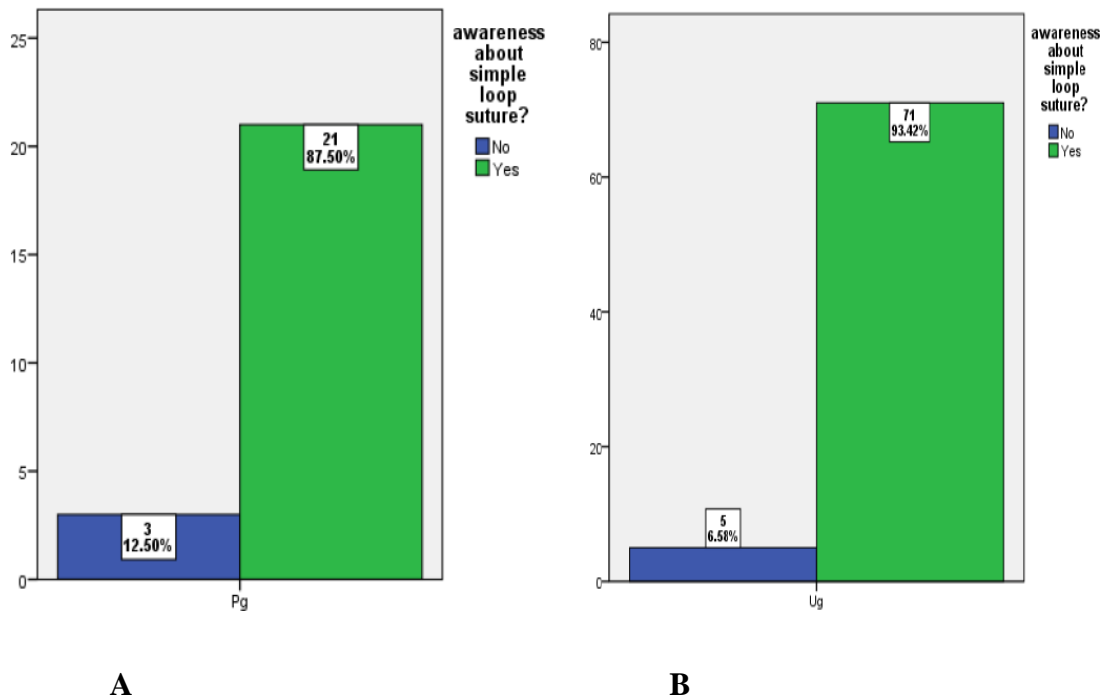


**Figure 6 :** Graph shows the of Awareness about vertical suturing technique . X axis shows the positive and negative responses regarding awareness of vertical suturing technique in extraction wounds and Y axis shows the of responses. 28% were aware about vertical suturing technique (green) and 72% were not aware (red )

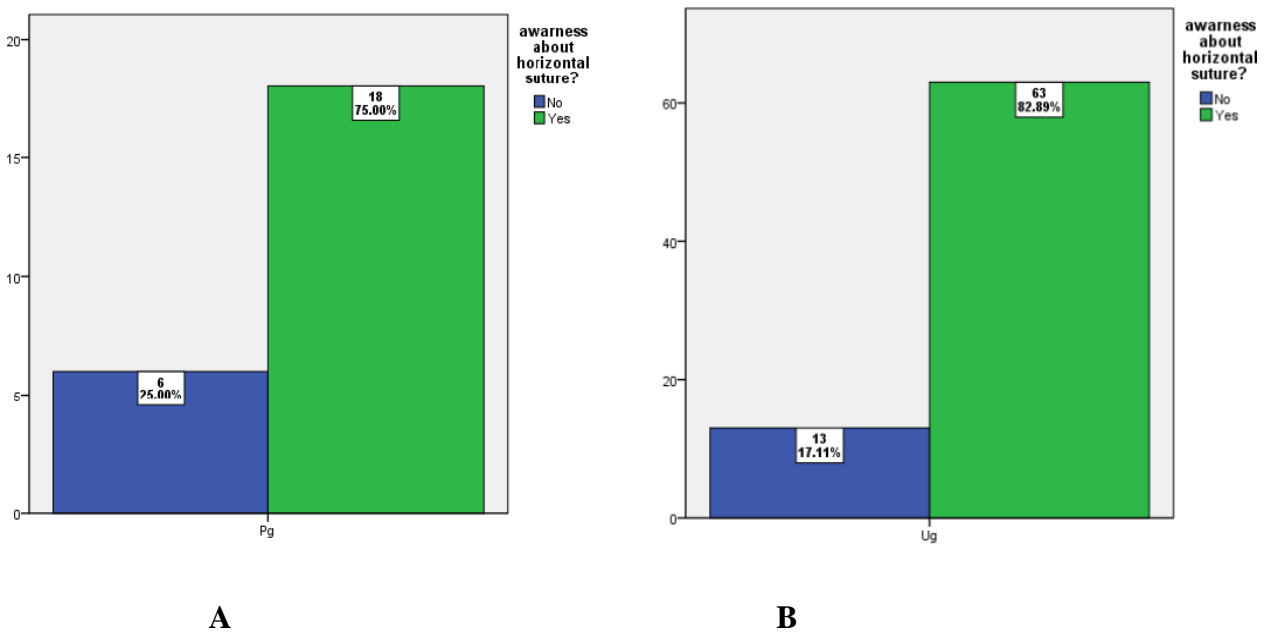


**Figure 7 :** Graph shows the of Awareness about figure of eight suture technique.X axis shows the positive and negative responses regarding awareness of figure of eight suturing technique in extraction wounds and Y axis shows the of responses. 82% were aware about figure of eight suture technique (green) and 18% were not aware (red )

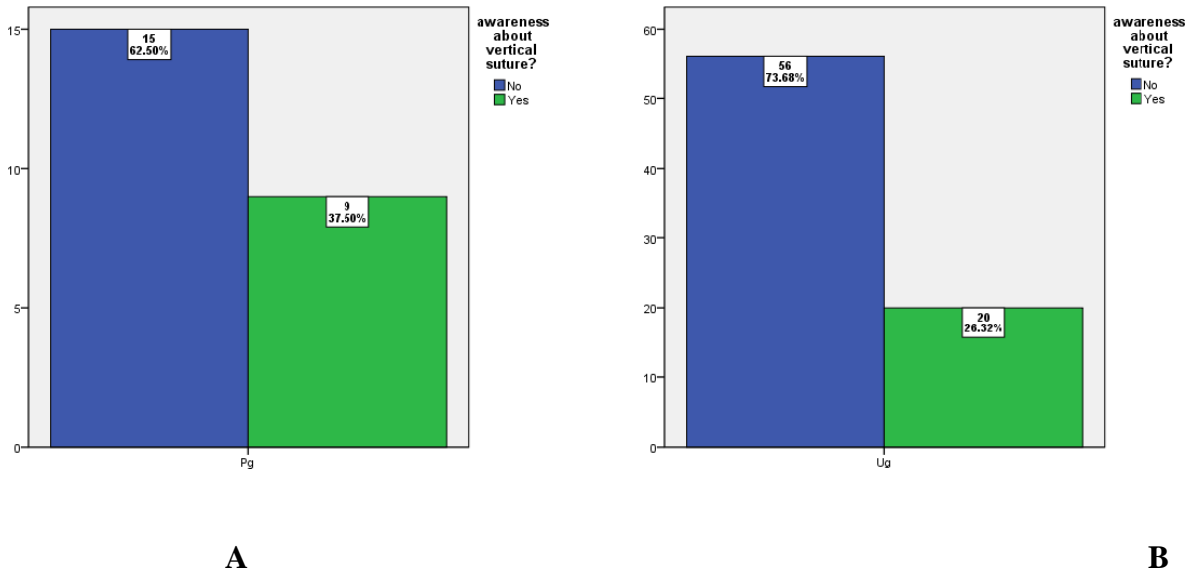




**Figure 8** :Bar graph showing association between year of study and awareness about simple loop suture . X axis represents year of study and Y axis represents the responses of awareness about simple loop suture in A (PG) and B (UG). The awareness was more among the undergraduates about simple loop suture compared to postgraduate students with a statistically significant difference.(Pearson Chi square Test; $P=0.01$ ,  $P<0.05$ ).



**Figure 9** :Bar graph showing association between year of study and responses about awareness about horizontal mattress suture . X axis represents year of study and Y axis represents the awareness about horizontal suture in A (PG) and B (UG) .The awareness was more among the undergraduates about simple loop suture compared to postgraduate students with a statistically significant difference.(Pearson Chi square Test; $P=0.01$ ,  $P<0.05$ ).



**Figure 10** :Bar graph showing association between year of study and responses about awareness about vertical suture . X axis represents the year of study and the Y axis represents the awareness about vertical suture in A (PG) and B (UG).The awareness was more among the undergraduates about simple loop suture compared to postgraduate students with a statistically significant difference.(Pearson Chi square Test; $P=0.01$ ,  $P<0.05$ ).