



## A SURVEY ON AWARENESS AMONG UNDERGRADUATES REGARDING THE USE OF LOCAL ANESTHETICS IN EXTRACTION

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### ABSTRACT

Local anesthesia is defined as loss of sensation in a circumscribed area. It is one of the most important pain management methods in extraction of tooth and various other procedures. Use of local anesthetics in a safe and effective method enables patients' pain less treatment and also help in relieving the anxiety of patients during the treatment. Local anesthetics used can retain the patient's consciousness and also help in relieving the pre and post treatment effects. The action of local anesthetics in extraction depends on the type, the technique and also on the condition of the given patient. Various indications and contraindications should also be considered while its usage.

**KEYWORDS :** Local anesthesia, composition, technique, complications, contraindications

### INTRODUCTION

Local anesthetics are agents with extraordinary efficacy in dental practice. Pain management helps in eliminating patient's anxiety and also makes the procedure in an undisturbed manner. They act by interrupting neural conduction by blocking the sodium ion channels within the neural membrane<sup>[1]</sup>. A given amount of the local anesthetic solution acts by readily blocking the requisite number of sodium channels for impulse transmission. Various mechanism of nerve blocks and infiltration are used for anesthetizing teeth in maxilla and mandible specifically. Inappropriate use, quantity and methods of techniques can lead to various complications. Allergy is supposedly to be the only absolute contraindication. Toxicity and potential interaction need to be considered.

The survey was conducted to enlighten the concept of use of local anesthetics in extraction in undergraduates through online surveys. The questionnaire included various aspects of use of local anesthetics in extraction procedure including the awareness among the people on local anesthetics, its indications and contraindications. Its mode and duration of action is also included. Knowledge about the various techniques of administration is also addressed. A vague discussion about the complications is also included.

The prime idea behind the survey is to analyses the knowledge among the undergraduates about the theoretical as well as technical aspects of local anesthesia in extraction. The statistical analysis then obtained emphasizes the region of concepts where students must be more educated.

### AIM:

The present survey was aimed at creating an awareness among the undergraduates regarding the use of local anesthetics in extraction. The various concepts of local anesthesia including its usage, contents, indications, contraindications and few complications are also included to improve the knowledge on local anesthesia.

### METHODOLOGY:

The survey was conducted in an online based questionnaire format in google forms and was sent to various groups of undergraduate's students. The responses of each question among hundred students are collected, summarized and analyzed. The statistical analysis through percentage is then interpreted and a conclusion is formatted.

### Statistical Assessment:

The statistical analysis of the above survey gives us key data. The interpretation is as follows:

An astounding of 84.8% of students are aware of the uses of local anesthesia in extraction and a mere of 13% are aware but aren't familiar with the uses.

A total of 76% students are sure that local anesthesia is used to promote analgesia while the patient is fully conscious, whereas 23% are unaware of the actual effect it has on human body.

A majority of 86% students knew lidocaine acts for 4-6 hours and 13% weren't aware of the same.

About 76% of undergraduates were correctly aware that nitrous oxide is contraindicated during pregnancy.

56% students had accurately answered that the maximum dose of lignocaine without adrenaline that can be administered to a patient is 4-6mg but about 43% were unaware of the same.

To give the nerve block, LA should be deposited near main trunk was correctly answered by about 66% of the undergraduates whereas 23% of the students were in a confused state.

It is extremely surprising that almost 56% of the students are having knowledge that the preferred method of administering local anesthetic in hemophilic patients is Intraligamentary and approximately 43% didn't have knowledge regarding the same.

The students showed exceptional accuracy of 61% and 62% in relation to the use and action of sodium metabisulphite in local anesthetic cartridge in former and neck of condyle being the target area in Gow-gates technique in the later.

About 66% students were aware that Gow gates technique is a synonym of closed mouth technique for mandibular nerve block.

Majority of approximately 60% students knew that infraorbital anesthesia involves anterior superior alveolar nerve.

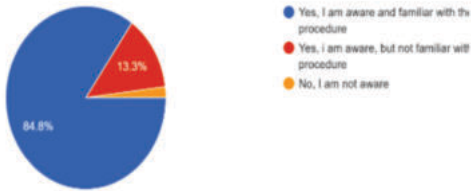
About 66% of students had knowledge with respect to area PSA nerve block is used to anesthetize i.e., maxillary 1st, 2nd and 3rd molars. An exceptional 77% undergraduates were aware that the local anesthesia is ineffective in presence of

infection at the site if administration. A minority of students were aware that IANB is contraindicated with respect to hemophilia, which suggests that majority of the students lack knowledge about the same.

A good 68% of students had awareness regarding the cause of trismus during nerve block administration that is damage to medial pterygoid.

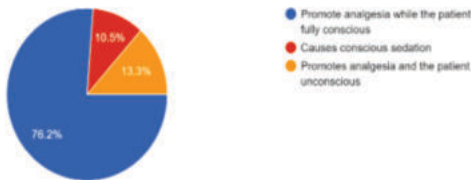
1. Are you aware about the use of local anesthetics in extraction?

105 responses



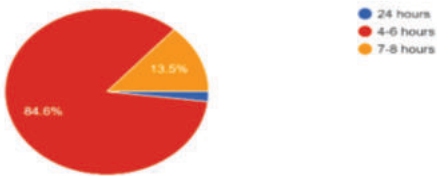
2. What is the action caused after the application of local anesthetics?

105 responses



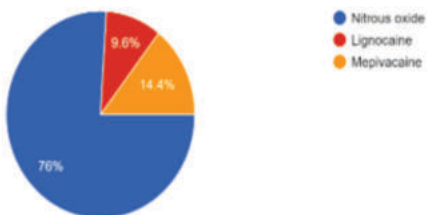
3. How long does a local anesthesia (Lidocaine) act?

104 responses



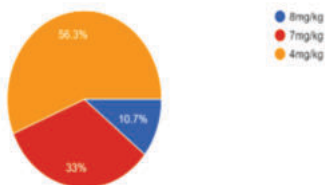
4. Which of the following is contraindicated for extraction during pregnancy?

104 responses



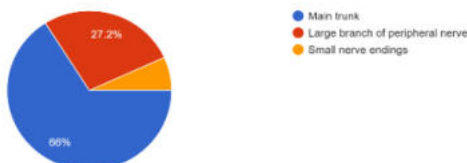
5. The maximum dose of lignocaine without adrenaline that can be administered to a patient is

103 responses



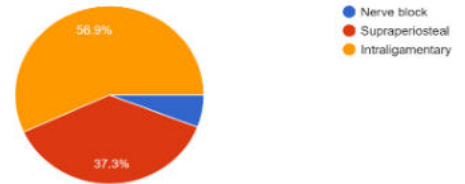
6. To give the nerve block, LA should be deposited near

103 responses



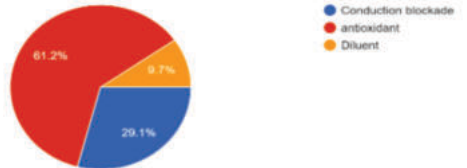
7. Which is the preferred local anesthetic in Hemophilic patients?

102 responses



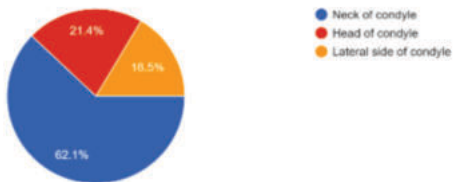
8. Sodium Metabisulphite is added to local anaesthetic cartridge for

103 responses



9. In case of Gow-Gates technique the target area is

103 responses



10. The closed mouth technique for mandibular nerve block is

103 responses



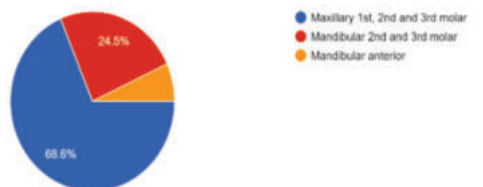
11. Infraorbital anesthesia involves which nerve

102 responses



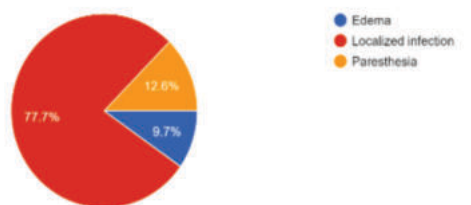
12. PSA nerve block is used to anesthetize completely

102 responses

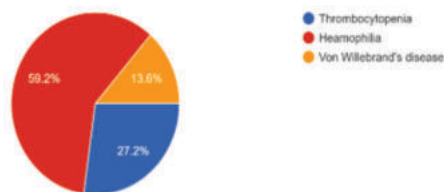


13. In which of the following conditions is local anesthesia ineffective?

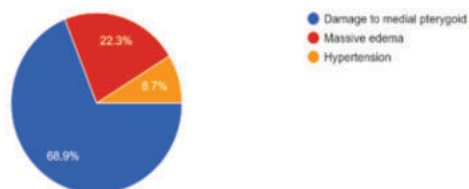
103 responses



14. IANB is contraindicated in patients suffering from which of the following conditions  
103 responses



15. Trismus during nerve block is a result of  
103 responses



## DISCUSSION:

Awareness among undergraduates regarding the use of local anesthetics in extraction was discussed, out of which most of the people were aware about its usage in extraction. The remaining 13% of the students can be educated by theoretical as well as clinical exposure.

Knowledge regarding the action caused by local anesthetics is very important. The analgesic action caused by these agents without affecting the consciousness of the patient must be addressed. Analgesic agents help in reducing post operative pain control and prevention of central sensitization. Majority of the students were correctly aware about this concept of analgesia<sup>[2]</sup> and the rest can be educated through theoretical classes.

Local anesthetics usually used are amide or ester type based on the chemical linkage present. Lidocaine is one of the most commonly used local anesthetic in dentistry<sup>[3]</sup>. The amount of dosage used depends on the presence of epinephrine. The duration of action of different types of local anesthetics must be educated to the students, so as to provide quality treatment to the patients. Around 85% of the students are correctly aware about the duration of action of lignocaine, and the remaining must be acknowledged by conceptual based studies.

Contraindications of any drug must be carefully dealt. History taking of patients is very crucial. Students must be aware and must be correctly educated regarding various contraindications of any drug and condition. Patient must be informed regarding the condition and the procedure to be undertaken.

The studies at present reveal that the second trimester is best suitable for carrying out the dental procedures.<sup>[4]</sup> Nitrous oxide being an absolute contraindication for pregnant patients, must be always considered.

Anatomical considerations are of at most importance while educating students about the various techniques used for local anesthetic administration. Infiltration and nerve blocks must be thoroughly educated so as to understand the correct position of its deposition.

Studies have proven that local infiltration analgesia provides better treatment outcome and also helps in reducing the postoperative pain<sup>[5]</sup>. Inappropriate administration of the solution will provide inadequate treatment modality as well as increased chair side time. More than 50% of the students were

correctly aware about the correct deposition region, the remaining portion must be acknowledged through clinical demonstrations.

Hemophilic patients may have hemorrhagic problems; hence it is considered as one of the most crucial complications at oral level in terms of bleeding. These patients are known to bleed from multiple sites and also causes postoperative complications<sup>[6]</sup>. Intraligamentary techniques are effective in short treatments<sup>[15]</sup>. Being aware about these techniques will help in providing necessary treatment for the required people. 40% of the students were not aware of the correct technique which is definitely a matter of concern and must be educated through theoretical approach. This will not only improve the theoretical knowledge but also help in clinical practices.

The various components of local anesthetics contribute towards its proper functioning. The properties of each constituent must be well studied. Reducing agents in local anesthetic solutions act as reducing agent. These components compete for present oxygen content. These are usually added in 0.05%- 0.1%<sup>[7]</sup>. The components along with its properties are acknowledged through theoretical as well by giving reference to standard text books.

Various modes and methods of nerve blocks help in providing the required quality treatment for the patient. Nerve blocks may be intraoral or extraoral, even these can be done by keeping the mouth closed or open. This depends on the present condition of the patient. Gow gates technique is used for mandibular teeth anesthesia. This method provides anesthesia in the auriculotemporal region<sup>[8]</sup>. The technique along with the application methodology should be educated to the students by proper clinical approach.

Gow gates technique is otherwise known as closed mouth technique. The anesthetic solution is administered at the neck of the condyle of the mandible. Exact position as well as the correct volume of solution is necessary for providing the adequate action<sup>[9]</sup>. More than 50% of the undergraduates were aware about this, the remaining must be equally trained. The knowledge on this technique being known as the closed mouth technique must be upskilled through classes and through dummy training.

Anatomical considerations of nerves and the region of supply must be understood for proper technique. The nerves supplying the maxilla and mandible varies, hence the action of supply must be learnt separately. The infraorbital nerve provides anesthesia to the teeth present anteriorly<sup>[10]</sup>. For understanding the concept of action of each technique, anatomy of each nerve must be well versed. This can be tutored through diagrammatic representations as well as video demonstration of action of nerves.

Posterior superior alveolar nerve technique is used for anesthetizing teeth in the posterior region of maxilla. This nerve anesthetizes second as well as third maxillary molar completely, it doesn't fully anesthetize the first molar. Due to the position of this nerve, this technique is not widely practiced by dentists<sup>[11]</sup>. The procedure and the action of each nerve must be well educated before contemplating any technique. The portion of undergraduates who are unaware about this theoretical concept must be well educated through clinical practices.

The ineffectiveness of each technique must be equally dealt with the success of any treatment. For this to be accomplished various complications that can arise must be discussed. Localized infection surrounding any region of the tooth must be evaluated, so as to understand the success of the procedure. There are various complications to be understood while performing dental treatments. This includes infections,

Edema, ocular complications and others <sup>(12)</sup>. This level of understanding helps in providing the students with appropriate treatment in future clinical practices as well.

The success of any nerve block technique comprises of the basic knowledge about the position, the anatomical considerations as well as the effect caused. The inferior alveolar nerve block is one of the most common anesthetic techniques used for mandibular teeth <sup>(13)</sup>. The complication of each nerve block technique must be dealt separately. The most common complication of an inferior alveolar nerve block is seen in patient with hemophilia. This disease causes multiple clots in various regions that makes the outcome unpleasant. The techniques and postoperative care of patients with hemophilia must be separately educated to the students. The complications we come across during and after the administration of local anesthetics varies. Persisting pain after the procedure is one of the most common complications <sup>(14)</sup>. Though trismus occurs rarely, it is definitely a matter of concern. Mostly these effects can be avoided by using short needles for the procedure. Various theories are put forward to understand the cause of occurrence of trismus. The damage to the medial pterygoid is the primary cause. Though the concept is well versed to more than 60% of the students, the remaining must be tutored through more clinical training.

### CONCLUSION:

It is concluded that awareness among undergraduates about the composition, action and usage is desirable, whereas the knowledge regarding the procedure is below average. The students must be educated by more clinical demonstration of procedures and must be tutored to handle various cases in their clinical practices.

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