



NUMBNESS EVALUATION OF INFERIOR ALVEOLAR NERVE BLOCK THROUGH RATING SCALE

Research outcome



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BACKGROUND

In this research, we aim to develop a tool to aid dentists in communicating and evaluating numbness, changing what is described subjectively to what is objective, after inferior alveolar nerve block with the numeric rating score for numbness by using EPT on mandibular canine after IANB injection.

Moreover, we also aim to analyze the numeric rating score for numbness, the time in which patients are completely numb, the correspondence of patients' experiences to their given numbness score, and the correspondence of patients' anxiety.

OBJECTIVE

To create a measurable scale of numbness in inferior alveolar nerve block.

HYPOTHESIS

H₀: at numeric rating score for numbness ≤ 8 , then chance of complete numbness (EPT = 64[negative]) $\geq 90\%$

H₁: at numeric rating score for numbness ≤ 8 , then chance of complete numbness (EPT = 64[negative]) $< 90\%$

MATERIAL AND METHOD

Patients participating in this study includes patients over the age of 15 years who came to the oral surgery clinic, College of Dental Medicine, Rangsit University to receive any treatment that required inferior alveolar nerve block, in which patients have a normal sensation at the ipsilateral lower lips and chin and no history of allergy to mepivacaine. Patients excluded from this study are patients who are unable to cooperate, presented with large restoration, large caries, has been treated with root canal treatment, or has a periapical lesion at the ipsilateral lower canine, and patients who are allergic to Mepivacaine.

Numeric rating score for numbness data will be and the process is to be repeated until a negative result for EPT is presented with a maximum of 4 cartridges of 2% mepivacaine with 1:100,000 epinephrine or until the instructor of the operators consider that no more injection should be administered.

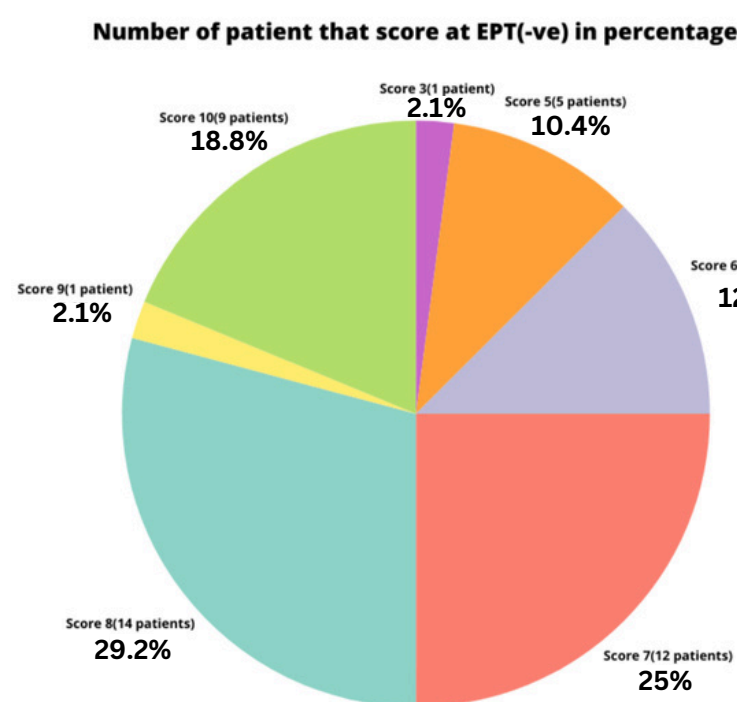
DATA ANALYSIS

The binomial test was used to find the correspondence between the numeric rating scores and the chance of negativity of EPT. The binomial distribution is a probability evaluation for the outcome of either success or failure, it is a statistical test used to determine whether the observed proportion of successes in a sample differs significantly from an expected proportion. It is particularly useful when analyzing data consisting of two possible outcomes (e.g., success/failure, yes/no, 1/0). For the 3 characteristics of binomial distribution followed by 1) the number of observations or trials is fixed, 2) independent trials, the outcome of each trial does not affect the outcome of another, and 3) the probability of success remains the same across all trials.

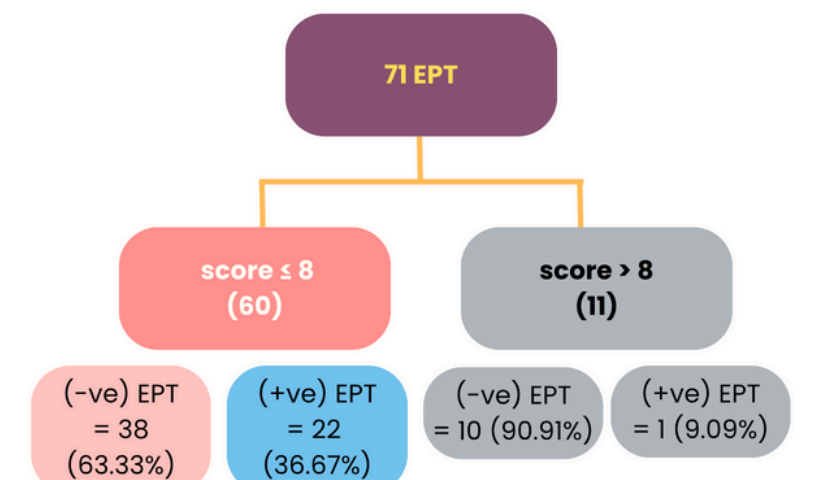
RESULT

From the overall subject 48 subjects the test proportion was specified at 0.9, the result showed the exact statistic significant. From the 48 patients, there where 71 EPT performed, in which, 60 where rated a numeric rating score for numbness of ≤ 8 . There were 38 (63.33%) negative EPT and 22 (36.67%) positive EPT.

Assumed that the patient rated a numeric rating score for numbness of ≤ 8 would have a chance of $< 90\%$ that correspond to alternative hypothesis (H₁)



Shows the number of patients' numeric rating score for numbness at negative EPT in percentage.



Shows the EPT performed and distribution of results.

Keywords : inferior alveolar nerve, numbness, numeric rating scale

Clinical significance : The binomial test indicated the proportion of chance of numbness in patient who rated ≤ 8 was expected 0.9, statistic significant.

CONCLUSION

The result of this study has given us more information on how to successfully determine the objective form of numbness level that the patients are perceiving instead of using a subjective verbal communication used in today's dental practice. From this research, we believe that when patients rate a numeric rating score for numbness at a higher rate, they would be more likely to have a negative EPT which implies that there is a likely chance of complete numbness. It is significant that at numeric rating score for numbness ≤ 8 , then chance of complete numbness (EPT = 64[negative]) $< 90\%$. There is a high chance that patients would be completely numb after approximately 4 minutes after injection. Regarding the relation of experience of local anesthesia injection, anxiety, and the score rated by patients regarding numbness, further study is required.





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BACKGROUND

In this research, we aim to develop a tool to aid dentists in communicating and evaluating numbness after inferior alveolar nerve block with the numeric rating score for numbness by using EPT on mandibular canine after IANB injection.

Moreover, we also aim to determine the significance of the difference of numeric rating score for numbness, the time in which patients are completely numb, the correspondence of patients' experiences to their given numbness score, and the correspondence of patients' anxiety.

OBJECTIVE

To create a measurable scale of numbness in inferior alveolar nerve block.

HYPOTHESIS

H0 : at numeric rating score for numbness ≤ 8 , then chance of complete numbness (EPT = 64[negative]) $\leq 90\%$

H1 : at numeric rating score for numbness ≤ 8 , then chance of complete numbness (EPT = 64[negative]) $> 90\%$

CONCLUSION

The result of this study has given us more information on how to successfully determine the objective form of numbness level that the patients are perceiving instead of using a subjective verbal communication used in today's dental practice. From this research, we believe that when patients rate a numeric rating score for numbness at a higher rate, they would be more likely to have a negative EPT which implies that there is a likely chance of complete numbness. There is a significant difference in numbness of score 7 and above versus 6 and below. There is a high chance that patients would be completely numb after approximately 4 minutes after injection. Regarding the relation of experience of local anesthesia injection, anxiety, and the score rated by patients regarding numbness, further study is required.

MATERIAL AND METHOD

Patients participating in this study includes patients over the age of 15 years who came to the oral surgery clinic, College of Dental Medicine, Rangsit University to receive any treatment that required inferior alveolar nerve block, in which patients have a normal sensation at the ipsilateral lower lips and chin and no history of allergy to mepivacaine. Patients excluded from this study are patients who are unable to cooperate, presented with large restoration, large caries, has been treated with root canal treatment, or has a periapical lesion at the ipsilateral lower canine, and patients who are allergic to Mepivacaine.

Numeric rating score for numbness data will be collected only when the EPT result is negative, therefore, the process is to be repeated until a negative result for EPT is presented with a maximum of 4 cartridges of 2% mepivacaine with 1:100,000 epinephrine or until the instructor of the operators consider that no more injection should be administered.

DATA ANALYSIS

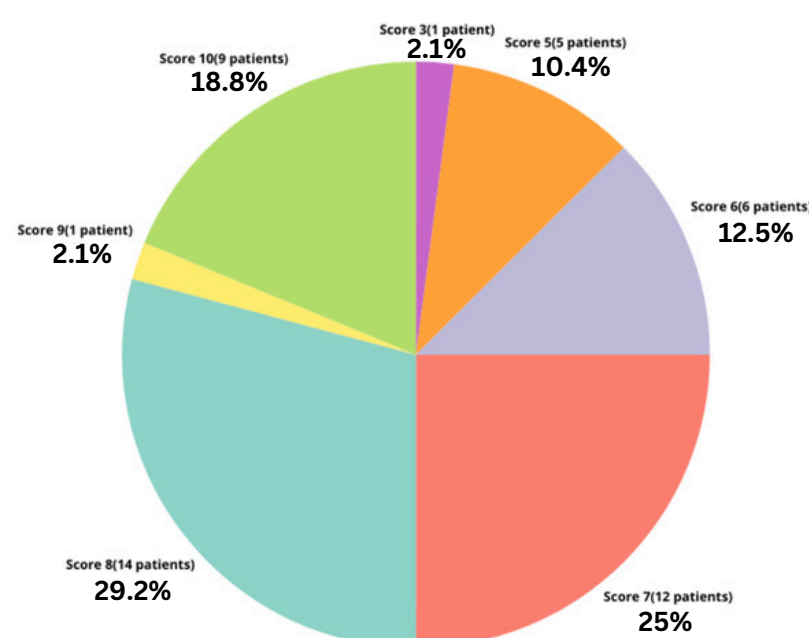
The binomial test was used to find the correspondence between the numeric rating scores and the chance of negativity of EPT. The binomial distribution is a probability evaluation for the outcome of either success or failure, it is a statistical test used to determine whether the observed proportion of successes in a sample differs significantly from an expected proportion. It is particularly useful when analyzing data consisting of two possible outcomes (e.g., success/failure, yes/no, 1/0). For the 3 characteristics of binomial distribution followed by 1) the number of observations or trials is fixed, 2) independent trials, the outcome of each trial does not affect the outcome of another, and 3) the probability of success remains the same across all trials.

The descriptive statistics is to summarize categorical and numerical data in an informative way, both numerically and graphically. Descriptive statistics are used to help describe key features or characteristics of data, such as the shape of their distribution, where the center lies, and how the data vary about that center.

RESULT

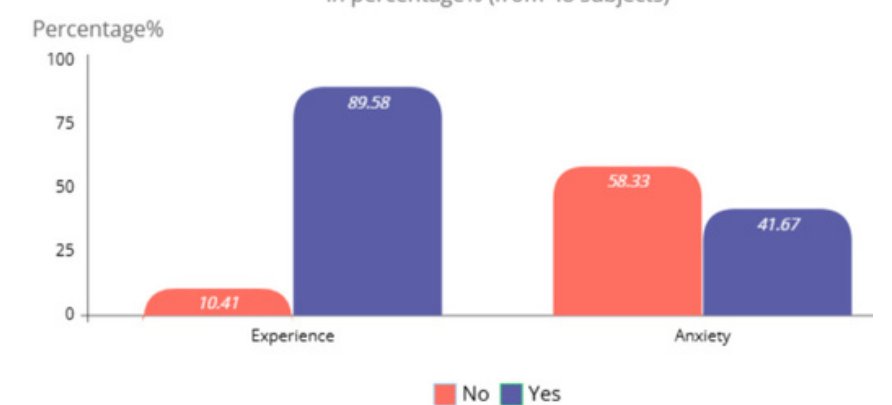
From 48 patients, 20 patients were having anxiety before the operation while 28 did not have any anxiety. From the 28 nonanxious patients, 7 patients gave a higher rating in their 2nd evaluation whereas 21 patients did not give a higher rating as their EPT results were negative since the first evaluation. From the 20 anxious patients, 6 patients gave a higher rating in their 2nd evaluation whereas 14 patients did not give a higher rating for the same reason mentioned above. There were only 20 anxious patients, in which 3 patients had rated low anxiety, 15 patients had moderate anxiety, and only 2 patients rated having high anxiety.

Number of patient that score at EPT(-ve) in percentage



Shows the number of patients' numeric rating score for numbness at negative EPT in percentage.

Experience and anxiety in percentage% (from 48 subjects)



Shows the percentage of people who had prior experience and the patients' anxiety at that time.

Clinical significance : The binomial test indicated the proportion of chance of numbness in patient who rated ≥ 8 was not less than the expected 0.9, $p=0.00$ (1 sided)

Keywords : inferior alveolar nerve, numbness, numeric rating scale

