

ORIGINAL ARTICLE

The Effect of Oral and Nasal Breathing on Pain Perception during Inferior Alveolar Nerve Block

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ABSTRACT

Background: Dental pain and anxiety is challenging problem during procedures. Breathing pattern has strong correlation with pain perception. Nasal breather patients have less pain perception than oral breather.

Aim: To assess the role of breathing pattern and its impact on pain perception during painful dental procedures like dental local anaesthesia injections.

Methods: 300 patients were randomly selected from dental departments of Islam dental college during 1st Jan 2020 till 31 Dec 2020 period. Verbal pain intensity scale was used among oral and nasal breather cases. Data was collected in proforma. Results were analysed statistically by SPSS version 23.

Results: Among 300 cases, 150 cases had mild pain, 89 cases had moderate pain and 61 cases had severe pain. Among 150 mild pain cases, 120 mild pain cases were nasal breather while 89 oral breather cases had moderate pain and 61 oral breather cases had severe pain. Nasal breather patient had mild pain perception than oral breather.

Conclusions: Nasal breather has mild pain perception during dental anaesthesia than oral breather. Education and training of patient to practice nasal breathing can be recommended for oral breathers to become nasal breather preoperatively, this will help to reduce anxiety and pain perception during dental local anaesthesia injections.

Keyword: Oral and nasal breather, pain perception, local anaesthesia

INTRODUCTION

In dental procedures the simple action of administering local anesthetics often brings major anxiety and is associated with pain. Local anesthetic injection may not only generate pain and fear, but also be a triggering factor related to medical emergencies in dental offices, with vasodepressor syncope and hyperventilation as major psychogenic reactions^{1,2}. So, the association of anesthetic agents and techniques has been used to decrease nociceptive impulses in surgical stages³ and different measures have been used to reduce dental pain of local anaesthesia in literature⁴ including nasal breathing training exercises^{4,5}. Breathing is one of the most vital function of living bodies. Generally oral breather patients are irritable, stressed out and fatigued whereas nasal breathers have active parasympathetic system than oral breathers⁵. Also, there is less amount of endogenous epinephrine released in nasal breathers which may contribute to lower anxiety and pain perception^{5,6}. Studies have revealed that oral breather has more pain perception than nasal breather during LA in dentistry⁵⁻⁹.

In light of the above, this study was aimed at observing the difference in pain perception during IANB in oral and nasal breather.

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MATERIAL AND METHODS

Three hundred cases were randomly selected from dental departments of Islam dental college during 1st Jan 2020 till 31 December 2020 period. Selective age range was between 15 to 50 years age. Medically compromised and psychiatric patients were excluded. Approval of Islam dental ethically committee has explained to each patient about the study. Written consent was signed. Direct Inferior alveolar nerve block technique was used by same operator for anaesthetising mandible teeth. Verbal pain intensity scale was used. 0 with no pain, 1-3 mild pain, 4-7 moderate pain, 8-10 severe pain. Each patient was verbally explained about pain intensity scale. Benzocaine gel was not used before giving inferior alveolar nerve block with 2% lignocaine with 100,000 IU epinephrine. Immediately after dental LA, pain intensity scale of needle pricking was asked and documented in each patient's proforma.

RESULTS

Out of 300 patients, 128 cases were male and 172 cases were female. 167 cases were oral breather, among these, 68 cases were male and 99 cases were female. 133 cases were nasal breather, among these, 60 cases were male and 73 cases were female. There was no significant difference among nasal and oral breather cases with gender.

Table 1: Correlation of gender with breathing pattern

	Oral breather	Nasal breather	Total
Male	68	60	128
Female	99	73	172
Total	167	133	300

Total mild pain cases were 150. 72 male cases had mild pain and 78 cases were female. Total moderate cases were 89. 34 cases had moderate pain and 55 cases were female. Total severe cases were 61. 21 cases were male and 39 cases were female. There were no significant differences among gender and pain severity.

Table 2: Correlation of gender with pain severity

Pain scale	Male	Female	Total
Mild	72	78	150
Moderate	34	55	89
Severe	21	39	61
Total	128	172	300

Total 150 cases had mild pain. 120 cases were nasal breather, while 30 cases were oral breather. 89 cases had moderate pain. 6 cases were nasal breather and 83 cases were oral breather. 61 cases had severe pain. 7 cases were nasal breather and 54 cases were oral breather. Our study shows that nasal breather cases have mild pain perception. While moderate and severe pain perception is more common in oral breather. There was a statistically significant correlation between VAS and breathing ($p < 0.05$)

Table 3: correlation of breathing pattern with pain severity

Pain scale	Nasal breather	Oral breather	Total
mild	120	30	150
moderate	6	83	89
severe	7	54	61
Total	133	167	300

DISCUSSION

Local Anaesthesia is often the only perceived painful part of the medical or dental procedure, and fear associated with LA injection has been reported to be a factor in avoiding dental treatment¹⁻⁴. Several factors may influence pain awareness, being this a complex process. Previous studies have examined variables that might be involved in painful LA injections and tested possible ways of minimizing the discomforts perceived at the time of injection. Variables included tissue distensibility¹⁰, speed of injection¹¹, patient characteristics¹², psychological aspects⁴ and temperature¹³. Simple and non-medical measures to reduce stress level during dental procedures are preferably adopted⁶⁻⁸. Nasal breathing is a natural process than oral breathing. Inhaling and exhaling air through nose stimulates parasympathetic system that decreases heart rate and release less adrenaline⁹. Our body reacts differently to whether air comes into body through nose or mouth. Deep nasal breathing relaxes our body including increases of CO₂ saturation in blood, which creates a calming effect. Cycle of hemisphere dominance controlled by closing nostrils and forcibly breathing through another nostril¹⁴⁻¹⁵. Studies have shown the most important and fundamental way of helping patients to relax physically is to teach them proper breathing techniques^{9,12-16}.

Diaphragmatic breathing is a relaxed form of breathing. Use of the diaphragm for breathing reduces tension in the chest and provides more oxygen for the body per breath⁹. This is simple, safest cheapest, most accessible handle to control pain and fear during stressful procedures in dentistry⁹.

In our study, nasal breathers reported mild pain (VAS 1-4) during inferior alveolar nerve block. On the contrary, oral breather cases reported moderate to severe pain (VAS 5-9). More mild pain cases were observed in nasal breather 120 as compared to oral breather 30. Moderate pain cases were high 83 in oral breather as compared to nasal breathers 6. Similarly, severe pain cases were high 54 in oral breathers as compared to nasal breathers⁷. Keeping in view the results of this study, we can devise measures to ensure patient nasal patency preoperatively. If there is nasal blockage, we can ask patient to use nasal decongestion spray preoperatively and also educate him regarding nasal breathing exercises to decrease the perception of pain during IANB^{9,14,15}. Simple measures to enhance nasal breathing can also make positive effect on general body health and in decreasing dental local anaesthesia pain perception with no financial cost, as compared to doing procedure under IV sedation and General anaesthesia.

Limitation of the Study: The current study had a few limitations in terms of reliance on self-subjective evaluation of breathing patterns rather than a true picture ascertained through clinical assessment by a professional. Another limitation is of the method chosen for sampling as it was a public dental setting, the majority of study subjects were of low social strata and little educational background, and hence exclusion of people from other social strata may lead to under-representation of the general population.

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