

The Effect of Walk on Pain Perception in Patient Undergoing Local Anesthesia

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ABSTRACT

Objective: To understand impact of walk on pain control in patients presenting with acute pulpitis and pain experienced during inferior alveolar nerve block.

Study Design: It was quantitative correlational by design.

Place and duration of study: Department of Operative Dentistry, Dental Section, Islam Dental College, Sialkot.

Materials & Methods: 300 patients from the Dental Section of Islam Dental College Sialkot were included in this study. The correlation of movement/walk and pain during local anaesthesia was determined. Numeric pain scale was used to document pain. Activity was measured by the number of minutes of walk of the patient.

Results: There is a significant association between physical activity/exercise and pain. Statistical significance between pain and exercise was -0.135 .

Conclusion: Pre-operative assessment of physical activity may be a predictor of pain perceived by patients. Therefore, it is important to educate and consider patient's physical activity to manage pain during the dental treatment. Life style modification may seem insignificant but has proven positive impact in pain management.

Keywords: Exercise, Local anaesthesia (LA), nerve block.

INTRODUCTION

Life style plays a significant role in modifying our body physiology and this directly and indirectly impacts our overall health. Physical activity like walk or running improves body metabolism and adaptation capacity. Pain during local anaesthetic injection activates the body homeostatic system. Body's capability to adjust to such situations of pain and anxiety is dependent upon multiple factors, amongst which walk and physical activity are important. Pain experienced during Inferior alveolar nerve block (IANB) also requires body ability to respond to such situations¹. An element of fear is associated with IANB injections reported as reason for avoiding dental treatment². Multiple factors have been reported for these findings like, physiological, psychological and emotional factors^{1,3,4}. But role of activity and association with pain perception has not been thoroughly evaluated.

Physical factors influence the patient's perception during dental treatment, so the patient's level of physical activity, body response to sympathetic stimulation impacts pain control⁵. Anxiety of dental treatment puts the patient in state of apprehension⁶.

Restlessness and fear are common among dental patients. Most patients are apprehensive when present in a clinical setting⁶. Anxiety and stressful situation requires effective sympathetic regulation by the body to overcome such situations⁷. Therefore the patient's physiological response to adjust to such anxious state depends upon how good is the patient's physical ability. Physical activity in the form of walk and exercise play significant role in controlling such situations⁸.

Exercise and pain has strong correlation proven by a number of studies¹⁷, which state that major generators of

anxiety are anaesthetic injections and perception of pain related to local anaesthesia¹¹. Our aim was to estimate the efficacy of physical activity and its correlation with pain levels during inferior alveolar nerve block.

PATIENTS AND METHODS

Three hundred patients visiting Dental Section of Islam Dental College were included in the study. Study was quantitative correlational design in nature. After getting approval from the institutional ethical committee, the non-probability purposive sampling technique was used for data collection. Age range of the patients was between 10-70 years. Patients on anti-psychotic medication, sedative and hypnotics were excluded from the study.

Pain perception was documented using the numeric pain scale. No pain was recorded as 0 while severe pain was recorded as 10¹⁵. Mild pain was scaled from 1-3, moderate pain was scaled from 4-6 and severe pain was scaled from 7-10. Walk and physical activity was documented using the number of minutes of walk. No activity was scaled as 0, 10 minutes' walk was scaled as very light walk, 20 minutes' walk was scaled as light walk, 30 minutes' walk was scaled as moderate walk and 40 minutes' walk was scaled as heavy walk. Data analysis and correlation was determined using SPSS version 23.

RESULTS

Three hundred patients were enrolled in the study patient's age range was between 10-70 years. 172 patients were females while 128 patients were males. Mild pain was reported in 144 patients, 95 patients reported with moderate pain while 61 patients reported with severe pain. Patient with heavy walk reported with mild pain, 48 patients

out of 75 reporting with moderate walk presented with mild pain. 44 patients out of 105 with light walk presented with mild pain, 28 out of 59 patients reporting with very light walk presented with mild pain and 23 out of 60 patients reporting with no walk presented with mild pain. There exist a statistical significance between walk and pain perception to 0.090. Tables 1 represents the gender distribution, table 2 represents the number of minutes of walk, table 3 represents the perceived pain and table 4 represents the cross tabulation between walk and pain, table 5 represents the correlation between walk and pain. Figure 1 gives frequency distribution of age. Walk and pain reported were of statistical significance in this study.

Table 1: Gender Frequency

Gender				
	Frequency*	Percent*	Valid Percent*	Cumulative Percent*
F	172	57.3	57.3	57.3
M	128	42.7	42.7	42.7
Total	300	100.0	100.0	100.0

Table 2: Walk

Walk					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no walk (0 minutes)	60	20.0	20.0	20.0
	very light walk (10 minutes)	59	19.7	19.7	39.7
	light walk (20 minutes)	105	35.0	35.0	74.7
	moderate walk (30 minute)	75	25.0	25.0	99.7
	heavy walk (40 minutes)	1	.3	.3	100.0
Total		300	100.0	100.0	

Table 3: Numeric pain Scale

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mild	144	48.0	48.0	48.0
	Moderate	95	31.7	31.7	79.7
	Severe	61	20.3	20.3	100.0
Total		300	100.0	100.0	

Table 4: Walk and numeric pain scale

Walk & Numeric Pain Scale Cross tabulation					
Count		Numeric Pain Scale			
		1	2	3	Total
Walk	no walk (0 minutes)	23	22	15	60
	very light walk (10 minutes)	28	19	12	59
	light walk (20 minutes)	44	35	26	105
	moderate walk (30 minute)	48	19	8	75
	heavy walk (40 minutes)	1	0	0	1
Total		144	95	61	300

Table 5: Correlations

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	13.691 ^a	8	.090
Likelihood Ratio	14.483	8	.070
N of Valid Cases	300		

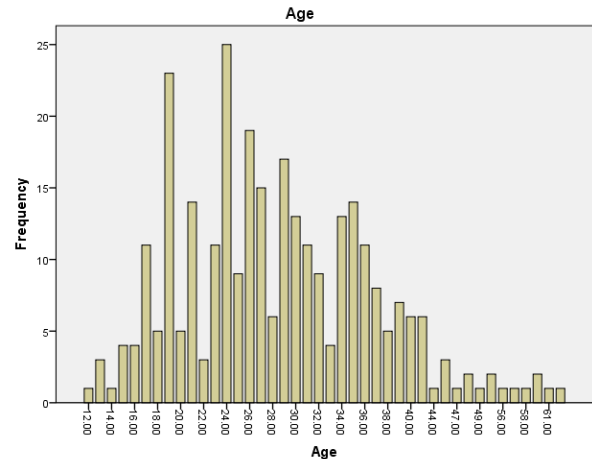


Fig 1: Frequency of Age

DISCUSSION

Life style is one factor that has impact on all spheres of life. Physical activity is fundamental for optimal health. Walk is one of the best forms of physical activity that improve metabolism and overall health. In order to improve the quality of dental care clinician's should focus on life style modification along with advancement in endodontics¹⁸.

In this study, we investigated the impact of walk on patients who were undergoing inferior alveolar nerve block. We hypothesized that patients undergoing local anaesthesia injection will benefits from habit of physical exercise like walk. Although there is evidence that dental practices are effective at reducing dental pain using various pain management techniques like local anesthesia, oral sedation, inhalational sedation, pre-medication and other pain management techniques and equipment¹⁹⁻²⁰. Focusing on the patient's life style including, oral breathing, adequate body hydration, balanced diet intake, exercise and adequate sleep have been neglected. This study is aimed at identifying the correlation of physical activity and pain.

Statistical significance was found between walk and pain control in patients undergoing local anaesthesia injection. This strongly suggests that exercise¹⁷ helps in better pain control in patients undergoing inferior alveolar nerve block.

Physical activity¹⁷ and sleep hours have proven to be a major reason of pain experienced by patients. Therefore, assessing the effects of exercise and other life style modifications will not only help clinicians chose methods to reduce anxiety and pain in dental patients, but will also positively impact the pain management during therapy. In fact, regular exercise and sleep will improve the chances of pain control with reduce anxiety. There exists a significant association between physical activity/exercise and pain. Statistical significance between pain and exercise was 0.090.

Exercise is a proven methodology of effective pain control¹³. Increased levels of biological stress due to sedentary life style has been linked heightened pain perception, suggesting a significant relationship between the patient's biological stress, sleep deprivation and perception of pain intra-operatively¹⁴. Emotional well-being is strongly related with physical activity, while sedentary life

style heightens anxiety thus increasing pain perception before and after dental therapy⁹⁻¹⁰. Research has proven the effectiveness of adequate physical activity and its impact on pain perception¹². While other studies have proven the role of exercise and physical activity in controlling pain¹⁵.

To improve the quality of dental care clinicians must focus on life style modifications. Just educating the patients of regular walk or physical activity will have positive outcome on the patient's well-being and quality of dental care will improve subsequently.

CONCLUSION

Pre-operative assessment of patient's stressors like dental anxiety, sleep deprivation and exercise are major predictors of pain. Simple life style improvement like walk, exercise and sleep play an important role in dental care. Professionals need to evaluate life style of their patients for optimal dental care. No doubt, advancement in sedation and pain management is outstanding, but with simple life style modifications a clinician can prevent his patients from the potential risks associated with sedation and anaesthesia.

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