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Research Article

EVALUATION OF POST-OBTURATION PAIN IN PATIENTS WHO UNDERWENT ENDODONTIC THERAPY- AN IN-VIVO STUDY

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A B S T R A C T

The present study was conducted to evaluate post-obturation pain after root canal treatment using Visual Analogue Scale (VAS). VAS consists of a straight line with the endpoints defining extreme limits such as 'no pain' and 'worst pain imaginable'. A cross sectional study was conducted involving dental patient who require RCT (Root Canal Treatment) who reported to Aimst University Dental Hospital. A total of 50 patients were selected. Questionnaire was given to patients 48 hours after root canal therapy.Data collection was fast and painless and did not pose any risks to the participants. VAS scale (visual analogue scale) was used to record post-operative pain level. It was concluded that prevalence of pain 48 hours after obturation was low (80%) amongst patients receiving root canal treatment in Aimst University Dental Hospital, Mild pain (18%) and moderate pain (2%) were experienced as well and severe pain which requires immediate management was not reported. Both genders, male and female, have not much difference in pain experience following root canal treatment.

INTRODUCTION

Development of pain after completion of root canal treatment may undermine patients' confidence in the clinician and acceptance of the procedure. The ability to predict its prevalence and forewarn the patient may go some way towards enabling coping strategies.[1]Prevention and management of post endodontic pain (PEP) is an integral part of endodontic treatment. Informing patients about expected post endodontic pain (PEP) and prescribing medications to manage it can increase patient confidence in their dentists, increase patients' pain threshold, and improve their attitude toward future dental treatment.[2][3]According to previously published data, pulp therapy and root canal treatment (RCT) induce more frequent and more severe postoperative pain than do other dental operative procedures.[4][5]In the literature, reported frequencies of PEP range from 1.5[6] to 53%.[4] The large range is apparently due, in large part, to differences in definitions of post endodontic pain. Most studies that investigated the prevalence of post endodontic pain referred to flare-up, which was defined as severe pain and/or swelling after endodontic treatment, requiring an unscheduled appointment and active treatment. Therefore, patients who experienced pain after endodontic treatment and did not require active treatment were excluded from those studies.[7]

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The relationship between incidence and intensity of flares-ups and the vitality of the treated teeth has been investigated, yet with conflicting results. Mor et al. [8]found that flare-ups more often followed endodontic treatment in nonvital teeth and after retreatment than in vital teeth. However, Harrison et al. [9][10]reported that the incidence and intensity of flare-up were unrelated to tooth vitality. No correlation has been found between pulp status and any PEP[11][12] PEP (not limited to flare-up) is very frequent after endodontic treatment, and more than 50% of those who feel any PEP experienced severe pain [4]. Nevertheless, no study has evaluated the incidence and severity of PEP after re-treatment and after initial RCT of teeth with vital or necrotic pulp [4].

The present study was conducted to evaluate post-obturation pain after root canal treatment using Visual AnalogueScale (VAS). VAS consists of a straight line with the endpoints defining extreme limits such as 'no pain' and 'worst pain imaginable'. VAS has been demonstrated to be sensitive to treatment effects. They were found to correlate positively with other self-reporting measures of pain intensity.

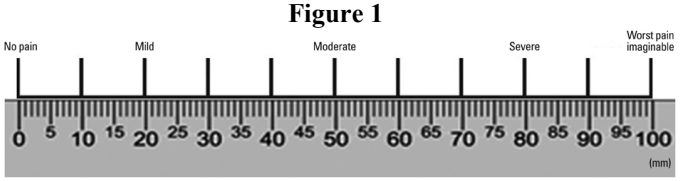
MATERIALS AND METHODS

A cross sectional study was conducted involving dental patient who require RCT (Root Canal Treatment) who reported to Aimst University Dental Hospital. A total of 50 patients were selected. Questionnaire was given to patients 48 hours after root canal therapy. All patients underwent root canal treatment

in Aimst Dental Hospital will be eligible to take part in this research, no specific inclusion or exclusion criteria are considered.

The research title was explained to the participants and the procedure was explained in full before obtaining consent. It was also stressed that participantswere fully voluntary and their personal information would not be exposed to any outside sources. Personal information was not written on the case history forms as well to preserve anonymity. Informed written consent was obtained from all the patients and participation are voluntary. Data collection was fast and painless and did not pose any risks to the participants. VAS scale(visual analogue scale) was used to record post-operative pain level.(Figure 1)

Figure 1



0–4 mm – No pain
5–44 mm – Mild pain
45–74 mm – Moderate pain
75– 100 mm – Severe pain

Scoring and interpretation

Using a ruler, the score is determined by measuring the distance (mm) on the 10-cm line between the "no pain" anchor and the patient's mark, providing a range of scores from 0–100. A higher score indicates greater pain intensity. Based on the distribution of pain VAS scores in patients who described their postoperative pain intensity as none, mild, moderate, or severe, the following cut points on the pain VAS have been recommended: no pain (0–4 mm), mild pain (5–44 mm), moderate pain (45–74 mm), and severe pain (75– 100 mm)

RESULTS

The frequency Table 1 categorises the involving participants into 2 groups based on their gender- males and females. Based on the table, 18 out of the total of 50 participants are males, constituting 36% of the total participants. However, female participants comprise of the other 64% of the total participants, the total number of female participants involving in this research.

Table 1 Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	18	36.0	36.0	36.0
	female	32	64.0	64.0	100.0
	Total	50	100.0	100.0	

The frequency Table 2 divides pain score into 3 groups based on post-obturation pain level experienced by patients who undergone root canal treatment. In this study, the pain score as devised by Visual Analog Scale (VAS) is used. This scale describes pain into 3 groups which are no pain, mild pain and moderate pain. The first group (No Pain) is range from 0-4mm based on a ruler. The second group (Mild pain) is range from 5-44mm based on a ruler. The third group (Moderate pain) is range from 45-74mm. In this study, 40 out of 50 participants do not experienced any pain (No pain) which constitutes 80% of total sample. 9 out of 50 participants experienced mild pain after undergone RCT which constitutes 18% of total sample. Lastly, only 1 out of 50 experienced moderate pain which constitutes 2% of total sample. Hence, most of the patients does not experienced any pain after root canal treatment. Only minority of patients who experienced mild or moderate pain after root canal treatment.

Table 2 VAS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No pain	40	80.0	80.0	80.0
	mild pain	9	18.0	18.0	98.0
	moderate pain	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

The Table 3 demonstrates the relationship between the gender of the participants and the pain score observed among the 50 samples obtained.

Out of 50 samples obtained, there are 18 male participants and 32 female participants.

Among 18 male participants, 16 experienced no pain and only 2 experienced mild pain after root canal treatment.

Table 3 Gender * VAS Crosstabulation count

		VAS			Total
		No pain	mild pain	moderate pain	
GENDER	male	16	2	0	18
	female	24	7	1	32
Total		40	9	1	50

Among 32 female participants, 24 experienced no pain, 7 experienced mild pain and only 1 experienced moderate pain after root canal treatment.

Thus, there are no statistically significant difference between both genders.

Following the Chi-Square analysis Table 4, P value was estimated to be 0.453 (normal $P < 0.05$) which was statistically non-significant.

Table 4 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.582[a]	2	.453
Likelihood Ratio	1.966	2	.374
Linear-by-Linear Association	1.544	1	.214
N of Valid Cases	50		

DISCUSSION

This research was conducted as post-obturation pain is a common phenomenon in endodontic therapy. The knowledge of the risk of pain has often hindered the patients from accepting root canal treatment. Thus, the clinical significance of the research is to develop the patient's confidence in their dentist as well as to develop a wider acceptance of the public towards root canal treatment. On the other hand, from a dental personnel's point of view, the result allows the physician to predict the occurrence of pain following root canal treatment which can increase their confidence in preventing and managing post-endodontic pain. Positive attitudes towards endodontic therapy and effective coping strategies of post endodontic pain therapy can be significantly instilled in both parties, in line with the objectives of this research.

The experience of post obturation pain is high according to Ng Y-L et al. [1]This can be attributed to the tooth vitality before root canal treatment,[13]number of visits taken for the root canal treatment, type of tooth being treatedand preoperative status of the teeth.[14][15] In this study, most of the patients (80%) experience no pain at all 48 hours after root canal

treatment. The inconsistency might be due to several limitations such as small sample size, guided root canal treatment of students by specialists in Aimst and inability to measure the objective signs of pain. Other reported potentially influencing factors such as presence and severity of preoperative pain, number of visits taken, presence of radiographic periapical lesion, history of previous root canal treatment, intracanal irrigant and medicament used and pulp status were not investigated in this study.

Gender was taken as an independent variable that would potentially be an important prognostic factor of post-obturation pain. From the results, there is no statistically significant difference between both genders. The odds of occurrence of post-obturation pain were equal for both genders. This low prevalence of pain experience was inconsistent with some studies, such as Ng Y-L et al. and Glennon et al. [1][16]According to Ng Y-L et al [1]the odds of occurrence of post-obturation pain were significantly lower in males compared with female patients. Various hypotheses have been proposed to explain female predominance in pain prevalence. The most common argument is that women tend to seek and accept treatment more willingly, as the presence of symptoms is readily perceived as indicators of disease by females. Furthermore, physicians believe that women suffer more commonly from psychosomatic illnesses and that their pain is governed by emotional factors. A more legitimate explanation is based on emerging evidence that biological differences between genders may explain increased pain prevalence in females. However, from the results obtained, both genders seem to seek and accept treatment equally well, regardless of biological difference and emotional status.

The visual analogue scale (VAS) was used in this research as a measurement of pain as it is a unidimensional measure of pain intensity and has been widely used in diverse adult populations, as stated by Gillian A. Hawker, Samra Mian, Tetyana Kendzerska and Melissa French.[17]The pain VAS is a continuous scale comprised of a horizontal (HVAS) or vertical (VVAS) line, usually 10 centimeters (100 mm) in length, anchored by 2 verbal descriptors, one for each symptom extreme. A higher score indicates greater pain intensity. Based on the distribution of pain VAS scores in postobturation patients who described their postoperative pain intensity as none, mild, moderate, or severe, the following cut points on the pain VAS had been recommended: no pain (0–4 mm), mild pain (5–44 mm), moderate pain (45–74mm), and severe pain (75– 100 mm). Normative values were not available.

The advantages of VAS include acceptability, reliability, validity and sensitivity according to Gillian A. Hawker, Samra Mian, Tetyana Kendzerska and Melissa French.[17]The pain VAS requires little training to administer and score and has been found to be acceptable to patients. The test–retest reliability has been shown to be good, but higher among literate than illiterate patients. For construct validity, the pain VAS has been shown to be highly correlated with a 5-point verbal descriptive scale (“nil,” “mild,” “moderate,” “severe,” and “very severe”) and a numeric rating scale (with response options from “no pain” to “unbearable pain”).

The VAS is widely used due to its simplicity and adaptability to a broad range of populations and settings. Its acceptability as a generic pain measure was demonstrated in the early 1970s. Limitations to the use of the pain VAS include the following: older patients may have difficulty completing the pain VAS due to cognitive impairments or motor skill issues, scoring is more complicated than other pain scale, and it cannot be administered by telephone, limiting its usefulness in research.

CONCLUSION

Within the limitations of this study, the following conclusions could be drawn:

1. The prevalence of pain 48 hours after obturation was low (80%) amongst patients receiving root canal treatment in Aimst University Dental Hospital. Mild pain (18%) and moderate pain (2%) were experienced as well and severe pain which requires immediate management was not reported.
2. Both genders, male and female, have not much difference in pain experience following root canal treatment. This shows that the perception of pain is not affected much by biological differences and emotional status though women are generally thought to have a lower pain threshold.

Factors such as small sample size taken (50), high efficacy of the dental students, guidance of root canal treatment by lecturers and better quality of treatment could be the contributing source of the result obtained.

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