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Perception of Pain in Orthodontic Patients

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1. Introduction

Pain during orthodontic treatment is the one of the most cited negative effect from orthodontic force application. This is a major concern for both patients as well as clinicians. Pain is a subjective response, which shows large individual variations. It is dependent on factors such as age, gender, individual pain threshold, magnitude of force applied, emotional status etc.,(1)This pain can negatively affect the quality of life and cause patients to discontinue treatment.(2)Orthodontic pain can also be associated with other complications like root resorption, caries formation, gingival and periodontal problems, allergic stomatitis etc.,(3).The intensity of orthodontic pain is comparable to the general pain felt with a wasp sting(4).The two most important aspects of pain and discomfort in orthodontic treatment are its intensity and duration. These has clinical implications(5,6).The causes of orthodontic pain can be due to the protrusion of the brackets and wires from the buccal surfaces of the teeth, which can irritate the lining of the cheeks and make them sore. The other cause can be the pressure which they exert on the teeth to bring in the desired tooth movement.(7,8)A survey comprising of a basic proforma and a visual analog scale was given randomly to around 50 patients, who were under various stages of orthodontic treatment visiting a private dental hospital in Chennai.

Aim

This survey aims to

- Evaluate whether orthodontic treatment is a painful procedure
- The actual patient's perspective with respect to pain and other inconveniences caused during various stages of orthodontic treatment.

2. Material and Methods

The present descriptive study is a cross sectional survey including a Visual Analog Scale (VAS) to denote the level of pain during orthodontic treatment procedure felt by patients patients visiting private dental hospital in Chennai City, Tamil Nadu, India. This survey was carried carried out during the month of June 2015.

a) Study Area:

The study was carried out in private dental hospital in Chennai.

b) Study Population:

Study population comprised of random patients visiting private dental hospital in Chennai.

c) Study Sample:

Patients were selected by means of simple random sampling for the study.

d) Study Design:

The questionnaire was divided into two sections.

Section A focussed on demography details of the respondents-name, gender, age, occupation, address, and a proforma which is as follows:

I) Type of Malocclusion

Seletal

a) CLASS I
b) CLASS II
c) CLASS III

Dental

a) a)ANGLE'S CLASS I MALOCCLUSION
b) b)ANGLE'S CLASS II MALOCCLUSION
i) DIVISION I ii) DIVISION II
c) ANGLE'S CLASS III MALOCCLUSION

Functional

II) Specific Abnormalities:

a) Crowding
b) Spacing
c) Rotations
d) Proclination
e) Deep Bite
f) Open Bite
g) Retroclination
h) Cross Bite
i) Scissor Bite

III) Stage of Orthodontic Treatment:

a) Separators
b) Initial Levelling And Aligning
c) Bite Opening
d) Retraction/Space Closure
e) Intrusion Mechanics
f) Settling
g) Debonding
h) Retainers

IV) Type of Wire Used

V) Dimensions of the Wire

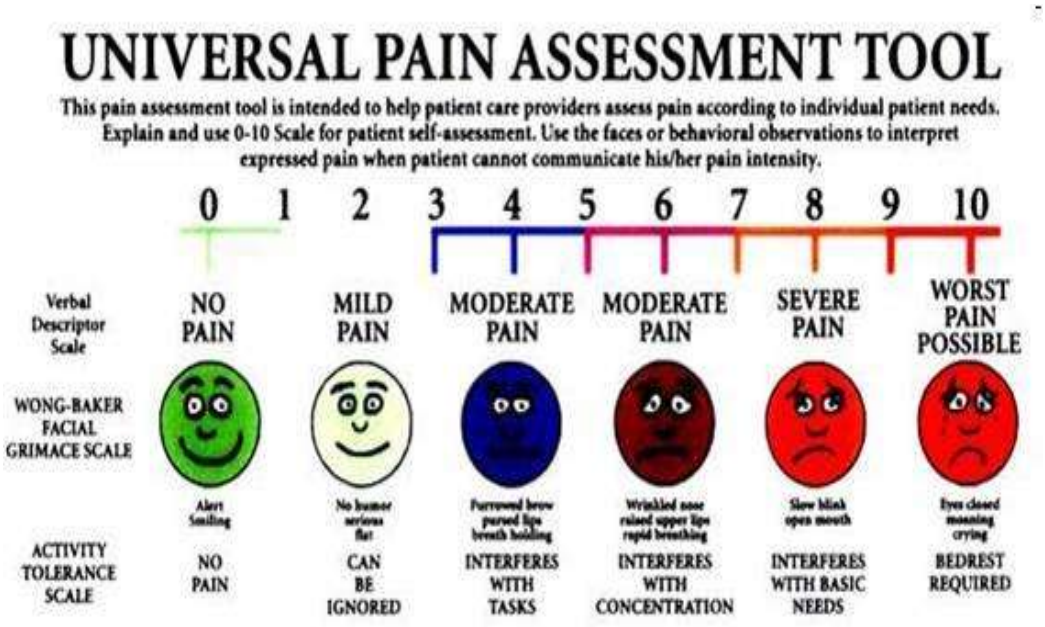
a)NiTi wire	a) 0.014"
b)Stainless steel wire	b) 0.016"
c)TMA	c)16 * 22
	d)17 * 25
	e)19 * 25

VI) Type of Technique Used

a) BEGG'S TECHNIQUE
b) PRE-ADJUSTED EDGEWISE APPLIANCE(MBT)

VII) Duration of Treatment

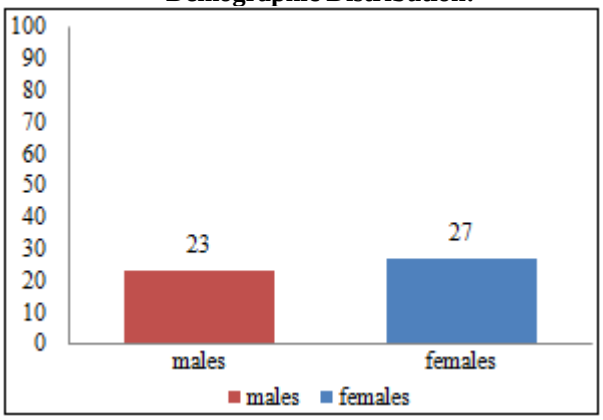
Section B focussed on a Visual Analog Scale(VAS) on a scale of 0-10,wherein the patients indicated their level of pain from the range of 0(No pain) to 10(Worst Possible Pain)



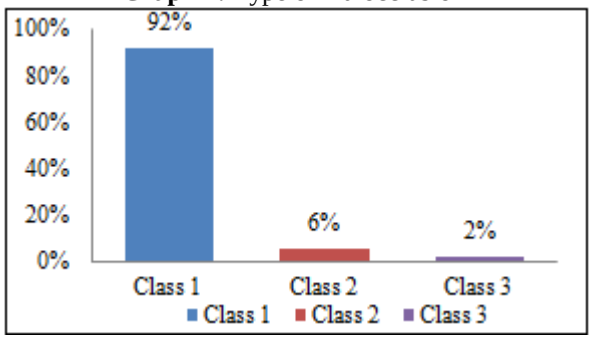
The purpose of study and procedure was explained to the patients. The proforma containing the Visual Analog Scale was distributed to 50 patients including both males(n=23) and females(n=27) of varied age groups(13-38 yrs) visiting a private dental hospital in Chennai.

3. Results

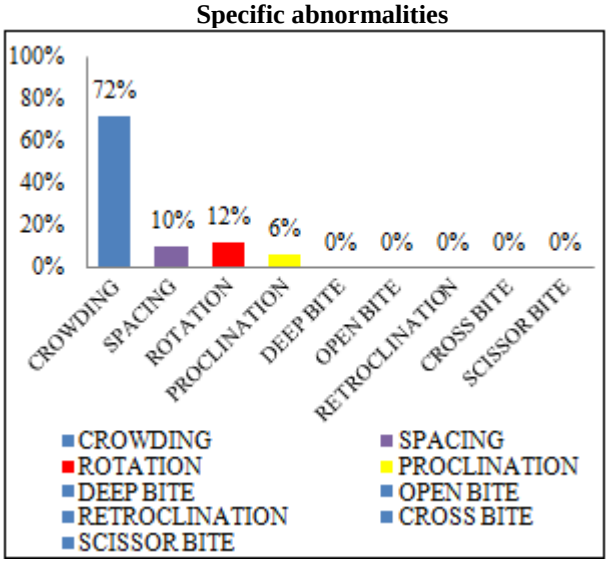
Demographic Distribution:



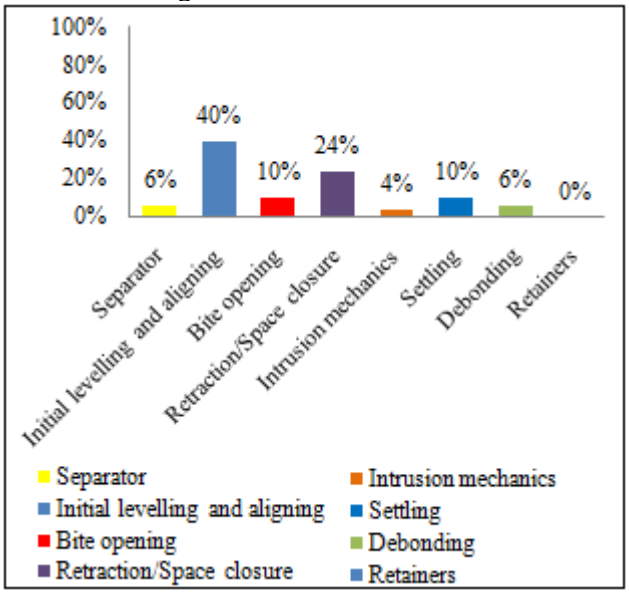
Graph 1: Type of malocclusion



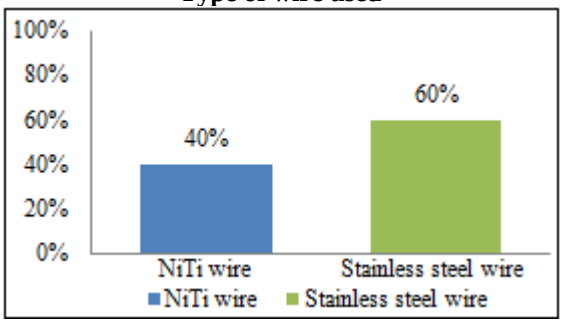
Graph 2
Specific abnormalities



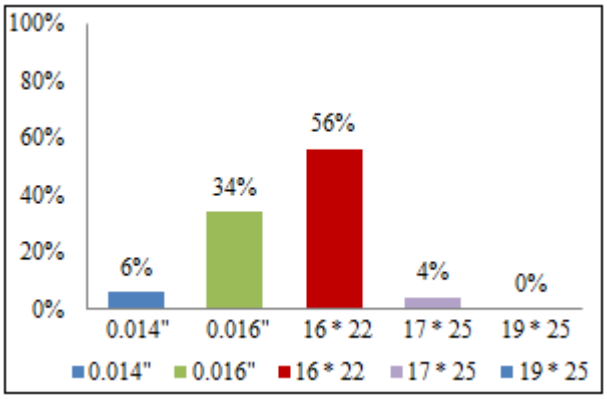
Graph 3
Stage of Orthodontic Treatment



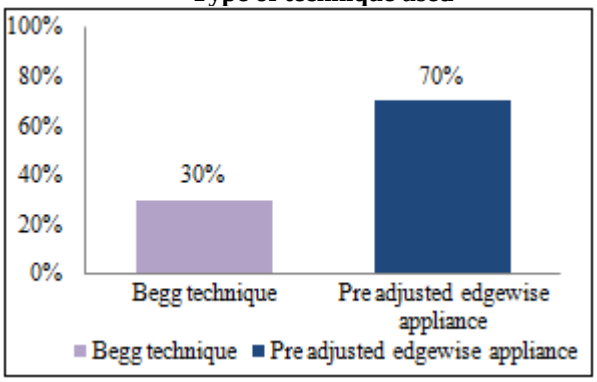
Graph 4
Type of wire used



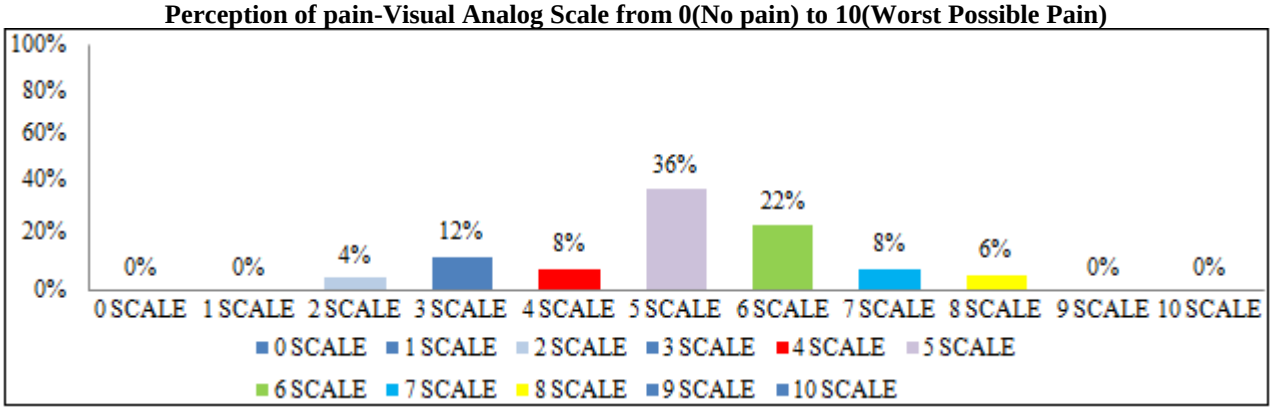
Graph 5
Dimensions of the wire used



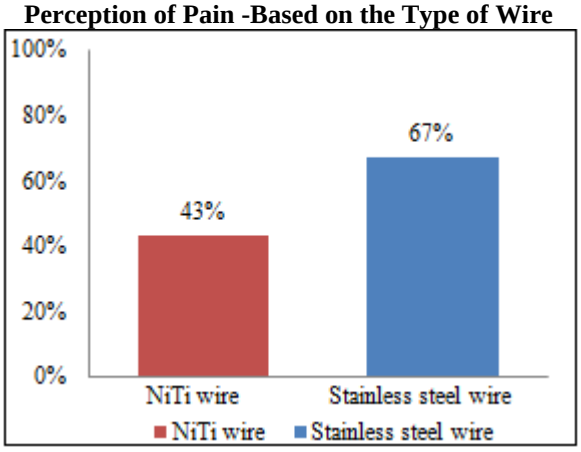
Graph 6
Type of technique used



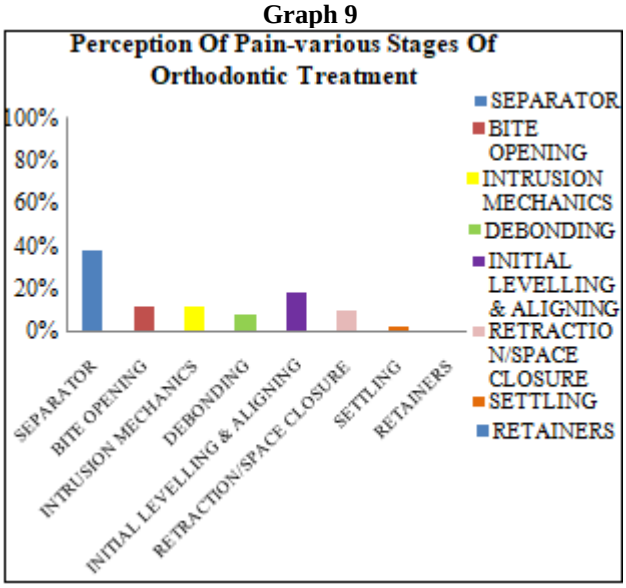
Graph 7
Perception of pain-Visual Analog Scale from 0(No pain) to 10(Worst Possible Pain)



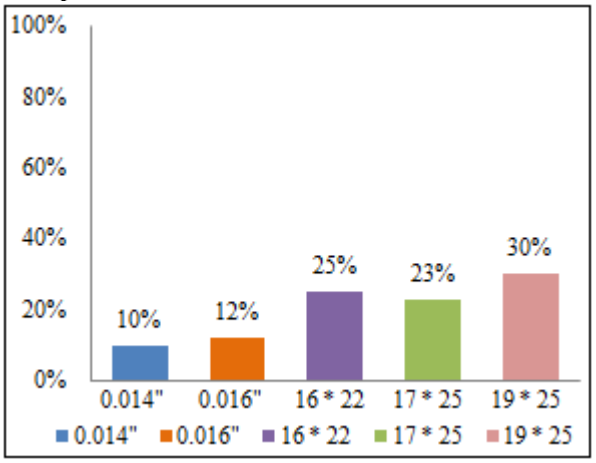
Graph 8
Perception of Pain -Based on the Type of Wire



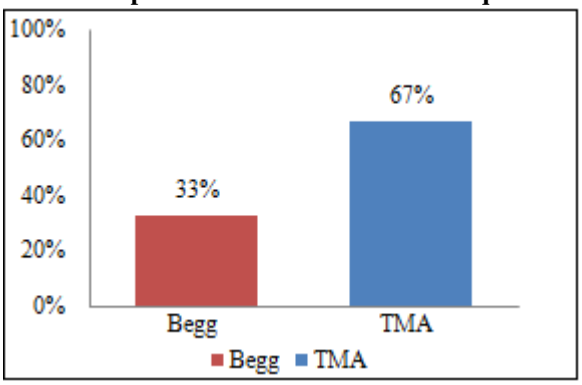
Graph 9



Graph 10
Perception of Pain-Based on the Dimensions of Wire



Graph 11
Perception of Pain-Based on Technique



4. Discussion

Results showed that 67% of the people exhibited pain and discomfort when stainless steel wires were used,and 33% exhibited pain while using NiTi wires. This indicated that the level of pain during orthodontic treatment was lower when NiTi wires were used. Similarly a study conducted by M. Larrea(Spain,2011) revealed that the total pain and maximum level of pain were lower in group of patients fitted with NiTi arch wires than in the group fitted with Stainless Steel Archwires,athough pain for both the groups receeded at the same time.(9)

38% of the pain was felt during the separator phase, 18% during initial levelling and aligning,12% of pain was felt during bite opening and intrusion mechanics,10% in retraction/space closure,8% in debonding,2% in settling phase. Similarly, a study was conducted by Omur Polat(Turkey,2007),it was found the worst pain was exhibited during the separators placement.(10)
30% of the pain was seen when 19 * 25wires were used,25% when 16*25 wires were used,23% when 17* 25 wires were used,12% when 0.016" wires were used and 10% when 0.014" wires were used.This indicates that the perception of pain was less when 0.014" wires were used. Similarly, a study was conducted by Erdinc AM(Turkey,2004) it was found that there was less pain elicited when 0.014" wires were used.(11)

33% people exhibited pain when Begg technique was used and 67% people exhibited pain when Pre Adjusted Edgewise technique was used. Similarly, a study was conducted by Dr Percy (1956,USA)were it was found that the level of discomfort was less while using Begg technique.(12)

Around 6%people gave a score of 8 and 8% of the people gave a score of 7 in the visual analog scale which indicated severe pain interfering with basic needs, ,around 22%of the people gave a score of 6 and 36% of the people gave a score of 5,which indicated that it was moderate pain ,interfering with concentration,8% people gave a score of 4,indicating moderate pain, interfering with tasks,12% people gave a score of 3 and 4% people gave a sccore of 2 indicating mild pain. This indicates that majority of the people felt pain arising during orthodontic treatment is of a moderate-severe category.

5. Conclusion

In terms of orthodontic treatment, there is an increased apprehension from the patients regarding the pain during the treatment. There is a need to streamline the research in this area. Newer methods which can effectively control should be devised so that more number of people will opt for this treatment for correcting malocclusion.

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