Pain Management in Orthodontics

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Abstract

Every patient faces one discomfort or the other during treatment. Pain and discomfort are the frequent side-effects of the orthodontic therapy with fixed appliances. Surveys have shown that pain is among the most cited negative effect of orthodontic treatment. Orthodontic pain has been found to be dependent on some factors such as gender, age and pain threshold of a patients, force applied during treatment, emotional state of patient and cultural differences.

A large percentage of Orthodontists underestimate the pain of their patients in connection to orthodontic treatment and many are also not aware that their patients self-medicate with nonprescription pain relievers. Pain from orthodontic treatments have negative effects on oral hygiene efforts, adherence with appointments and patients overall satisfaction with orthodontic treatment outcomes. Patient's pain assessment is a recognized aspect of the Oral Health-Related Quality of Life (OHRQOL) assessment. Researchers have assessed general OHRQOL in connection with orthodontic treatment outcomes. However, research on orthodontic patients' quality of life during their treatment is scarce. This review will therefore highlight factors that cause orthodontic pain and the management.

Key words: Pain, Management, Orthodontic Practice

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REVIEW ARTICLE

Introduction

The International Association for the Study of Pain defines pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage while discomfort is a disagreeable sensation, an annoying condition1, Research shows that 90% of Orthodontic patients reported that their treatment was painful and 30% considered ceasing treatment prematurely because of the pain they experienced [2,3,4] . Orthodontic treatment is not a one-off and therefore communicating with patients about pain and pain management should be an integral part of routine Orthodontist-Patient interactions.

Patient's pain assessment is a recognized aspect of the Oral Health-Related Quality of Life (OHRQOL) assessment. Researchers have assessed general OHRQOL in connection with orthodontic treatment outcomes. However, research on orthodontic patients' quality of life during their treatment is scarce. Hence this review.

Total pain considerations encompasses physical, psychological, cultural, social, and spiritual factors influencing the degree of pain felt by the individual. Other factors also include previous pain experiences, present emotional state, stress level, cultural differences, individual pain threshold, the magnitude of the force applied, gender and age of the patient. Pain threshold is the least level of pain which a subject can recognize while Pain tolerance level is the greatest level of pain which a subject can or is prepared to tolerate.

Pain during orthodontic treatment is caused by a combination of pressure, inflammatory oedema and ischemia. Compression of the periodontal ligament by the tooth results in an inflammatory response mediated by cytokines and prostaglandin. The end result is tenderness and pain. Since pain is one of the primary reasons for patients noncompliance with treatment and a major reason for missing appointments it is therefore crucial to educate providers more comprehensively about how to predict pain more accurately and how to communicate with patients successfully about pain management strategies[5-10]. However, research suggests that pain management has been largely neglected and that orthodontic education lacks pain management training[22 ,23,24]. There seems to be a wrong consensus that pain management merely requires common sense and the ability to follow basic medication procedures. Pain and its management need to be given stronger considerations.

Causes Of Pain During Orthodontic Therapy

Pain during fixed orthodontic treatment increases gradually from the fourth hour to the 24th hour and returns to a normal degree on the seventh day.11 - 15 . Patients can experience pain from the following procedures: Separator placement, band placement and cementation, arch wire ligation, band and bracket removal, Inter proximal stripping, raising bite to prevent occlusal interference, broken appliances, overextended arch wire and appliance type, conventional /self- ligating brackets, lingual braces, removal appliances like tongue rake, debonding procedure, premature contact, excessive force and others.

Patients complaints during treatment include pain during appointments, pain for a few days after an appointment, pain from the braces affecting daily life, pain from braces causing change in diet, teeth hurt when chewing or biting, pain makes it difficult to brush the teeth, pain makes it difficult to floss the teeth, pain from wearing inter-maxillary elastics and Temporomandibular joint pain.

Pain Management

There are basically two goals to pain management. First is prompt relief of pain and the prevention of recurrence. Patients need to be pain free at night, at rest during the day, and then pain free during activities. I

For the health care providers, it is important to treat pain effectively rather than encourage the acceptance of pain by the patient and family1.
The management of pain rests on three pillars:

- Pain assessment
- Pain measurement
- Pain treatment

The pain patients experience as their teeth are moved orthodontically can be described as acute and moderately intense, inflammatory in nature, and characterized by marked individual variations. Such pain can be assessed through several methods as described below.

Pain Assessment Tools

- The visual analogue scale (VAS),
- McGill pain questionnaire (MPQ),
- Verbal Rating Scales (VRS)

The VAS, particularly the graded and linear horizontal scale, has been shown to be the most reliable and accurate tool in the evaluation of subjective experiences such as pain.

Pain Rating Scale
Adapted from Wong Baker faces scale

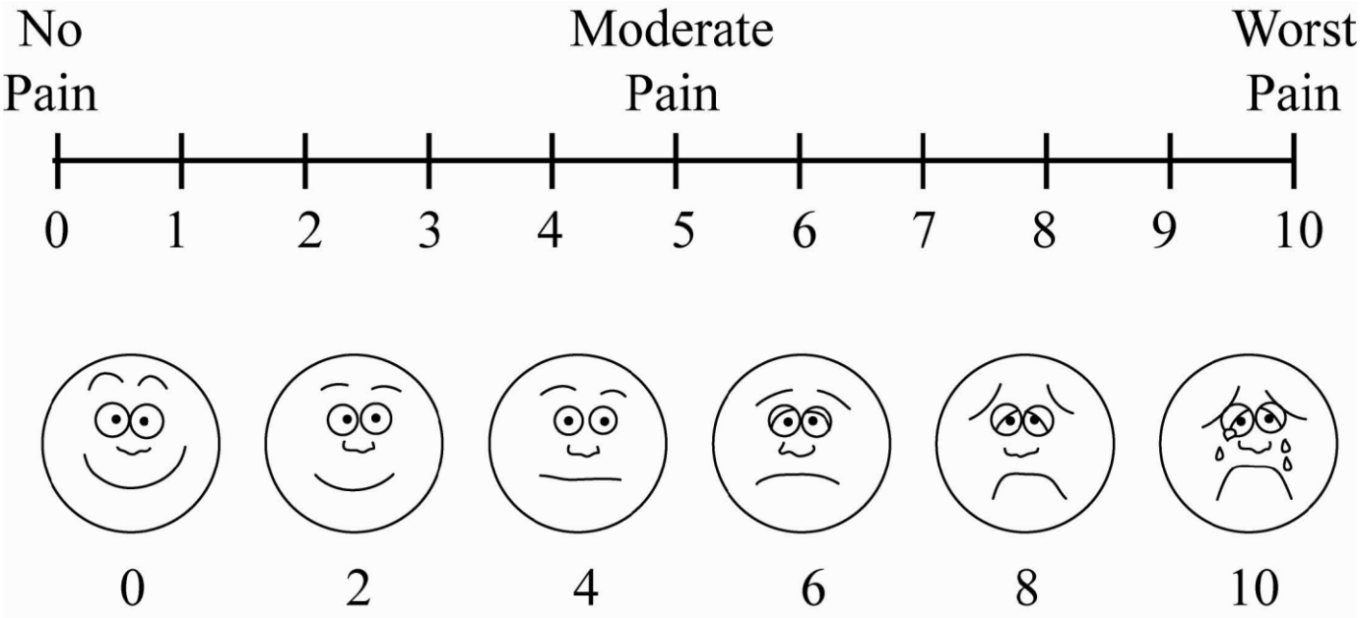

Figure 1: Pain Rating Scale Adapted from Wong Baker Faces Scale

Pain Management in Orthodontics involves both

Ÿ Non Pharmacological and
Ÿ Pharmacological methods.
Ÿ
Ÿ Non Pharmacological pain management involves both individual and family counseling. The psychological support should involve
Ÿ Good communication with patients and relations
Ÿ Patient education
Ÿ Basic counseling about the procedure and what to expect
Ÿ Helping patients develop realistic expectations for future

Methods of Pain Control[20-23]

There are various methods that can be employed to control pain in Orthodontics. This includes:

Ÿ Masticatory bite wafers,
Ÿ Anaesthetics gels
Ÿ Analgesics
Ÿ Application of low-level laser therapy to the periodontal tissues
Ÿ Transcutaneous Electrical Nerve Stimulation (TENS)
Ÿ Vibratory stimulation of the periodontal ligament

However, the use of Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) is the preferred method of pain control which is related to fixed orthodontic appliances. Although it has been found to cause minimal reduction in tooth movement which has no clinical relevance.

Pharmacological Method

Depending on the intensity of the pain, as a first line of action, orthodontists can consider an optimal dose of Paracetamol, If this is ineffective, then a non steroidal anti-inflammatory drugs.

Anti-inflammatory drug (NSAID) such as Ibuprofen, in a short term analgesic dosage of 200 to 400 mg at a time, renewable after six hours, but not to exceed 1,200 mg per day, adjusted to the weight and age of the patient, for a total of five days or fewer.

The inflammatory nature of pain makes NSAIDs a good choice for orthodontic pain control. Recent studies have reported on the control of the inflammatory response using preoperative analgesics. If NSAIDs are given before the procedure, the body absorbs them before prostaglandin production and the inflammatory response is decreased.

Premedication with an NSAID has been found to be effective in managing orthodontic pain17,28. Research showed that these medications delayed the onset of pain and decreased initial pain experiences if taken 1 hour before certain orthodontic procedures. Pre-procedural and post-procedural pain medication gave the most effective and long-lasting pain relief.

Another method of pain control is the use of light forces. These can be use of light forces from

Ÿ Braided or shape memory orthodontic wires
Ÿ Elastic power chains
Ÿ Self-ligating brackets

These reduce the intensity of force delivered to teeth and, accordingly, pain felt by patients.

However, despite these research findings, there is no standard of care for analgesic use in the pain management of orthodontic patients. It is more common for orthodontists to simply tell their patients to take analgesics as needed, leaving pain management decisions up to their mostly adolescent patients and their parents. It is therefore, imperative that patients should be discouraged from self-medication. The prescription classification given by the Orthodontist should consider, age of patient, health and past medical history of patient, type of adjustment at current appointment and patient's sensitivity to pain as noted in initial appointments.

It is therefore concluded that all patients deserve individualized and effective responses from orthodontists to the pain and discomfort they experience. Orthodontists must strive to reduce the impact of pain and discomfort patients feel because this is a necessity for maintenance of the quality of their daily lives. They must also be ever vigilant, always listening to their patients and responding to their needs so that their recollections of orthodontic treatment will bring smiles to their faces which are testimonies not only to impeccably aligned teeth but also to memories of a pleasant, not a suffering, passage in their lives.

It is therefore recommendations that

1. Future research should explore whether increased patient-provider communication about pain management could improve patients' QOL during orthodontic treatment and ultimately their treatment cooperation and satisfaction.

2. Pain management should be made part of the orthodontic curriculum

3.Orthodontist should give prescription to patients as and when necessary and not encourage patients to self medicate.

4. Pre procedural and post procedural analgesics should be carried out for patients as and when necessary.

5. The Nigerian Association of Orthodontists (NAO) should provide pain management protocol to manage Orthodontic patients.

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