

Assessment of Pain Experience After Simple Tooth Extraction

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ABSTRACT

Background

The most commonly performed procedure in oral surgery is tooth extraction. In most instances, the healing of the socket after a tooth is removed proceeds without complications. Despite advancements in dental care, pain remains a significant concern post-operatively.

Pain after dental procedures can impact patient comfort, quality of life, and satisfaction with treatment outcomes. Effective pain management is crucial for promoting recovery and reducing patient distress.

Objective

To evaluate the intensity and duration of pain experienced by patients following a simple tooth extraction, and to explore the influence of demographic factors (such as gender) using McGill Pain Questionnaire.

Study Design

This study was performed in the department of oral surgery from 05/08/24 to 05/10/24.

The study includes patients of both genders, ranging in age from 20 to 80 years, who sought tooth extraction in the Oral Surgery department.

Material & Methods:

100 patients undergoing extraction of both genders were recorded. Pain assessment was recorded on McGill Pain Questionnaire (Constant pain, shooting pain, dull pain, and pain when chewing and biting).

Out of 100 patients, males were 60 and females were 40. Pain characters was constant in 34, shooting in 20, mild in 13, when chewing in 8 and none in 25 cases. The difference was significant ($P < 0.05$). Pain occurred in 52 chronically inflamed teeth and 38 grossly decayed teeth. The difference was significant ($P < 0.05$).

Conclusions:

Pain followed by tooth extraction is very common. The use of analgesics and anti-inflammatory after the extraction procedure is recommended for the healing process to occur without causing any discomfort to the patient.

Introduction

Dental extractions, including simple tooth extraction, are common procedures performed worldwide. Despite advancements in dental care, pain remains a significant concern post-operatively. Pain after extraction of a tooth is a very common part of healing process, though it can be supervised very easily through proper care and medication. Postoperative pain after tooth extraction is very common and peaks within the first 24 to 48 hours.

A standard procedure of dental extraction starts with administration of local anesthesia. As soon as the anesthesia wears off, the patient starts feeling discomfort due to the trauma to the surrounding tissues. Inflammation, trismus, bruising and minor bleeding are common after tooth extraction offering the overall discomfort. The literature usually focuses on pain associated with impacted third molars. Pain is an essential element during the simple tooth extraction, and can even discourage the patient from seeking dental treatments³.

The current study was to assess the pain experienced following a simple tooth extraction. The intensity and duration of the pain were measured using the McGill Pain Questionnaire.

Objectives

The goal of this study is to evaluate the intensity and duration of pain experienced by patients following a simple tooth extraction, and to explore the influence of demographic factors (such as gender) using McGill Pain Questionnaire.

Study Design

This randomized controlled study was performed in the department of oral surgery in School of Dental Sciences, KVV, Karad from 05/08/24 to 05/10/24.

The study comprises of 100 patients, both males and females, who visited the department of oral surgery for tooth extraction between 20 years to 80 years.

Sample Size

The factor of interest of participating as sample among the population was considered as 50%.

That is, $P=50\%$

$$\text{Sample size} = Z^2 Pq / L^2$$

Where, Z = normal standard varies at 95%

$$= 1.96$$

P = population proportion has factors of interest
 participating in this

$$q = 100 - p$$

L = margin of error at 90%

$$= 10\%$$

Therefore,

$$\begin{aligned} \text{Sample size} &= (1.96)^2 \times (50)^2 \times (50) / (10)^2 \\ &= 100 \end{aligned}$$

Criteria

Inclusion Criteria

- All healthy participants
- Age range between 20-80 years
- All tooth that are indicated for extraction

Exclusion Criteria

- Pregnant women
- Lactating mothers
- Patient with an allergy of local anesthetic solution
- Medically compromised patient
- Uncooperative patient
- Impacted tooth

Ethical approval for study

The research has been approved to begin by the institutional ethics committee (protocol no: 100/2024-25) titled, “assessment of pain experienced after simple tooth extraction” by Krishna Vishwa Vidyapeeth, Karad on 03/08/2024.

Materials and Method

Participants were selected through a lottery system. The study included 100 patients, consisting of 60 males and 40 females. onsent was obtained from all the participants taking part in study. Participants name, age, gender etc. was recorded.

All the participants were prepared for routine tooth extraction procedure and were given 2.5 ml of anesthetic solution containing 2% lignocaine as anesthetic solution with 1:100,000 epinephrine as vasoconstrictor to achieve a complete nerve block. The procedure followed a standard aseptic surgical technique for both the extraction and the anesthesia administration. The nature of pain was indicated (yes/no) using 5 descriptors using McGill Pain Questionnaire (Constant pain, shooting pain, dull pain, and pain when chewing and biting).

Table 1: Distribution of patient

Total -100		
GENDER	Males	Females
NUMBER	60	40

Table 2: Pain character reported by patient

Pain Character	Number	P value
Constant	34	0.05
Shooting	20	
Mild	13	
When Chewing	8	
None	25	

FIGURE 1: Pain character reported by patient

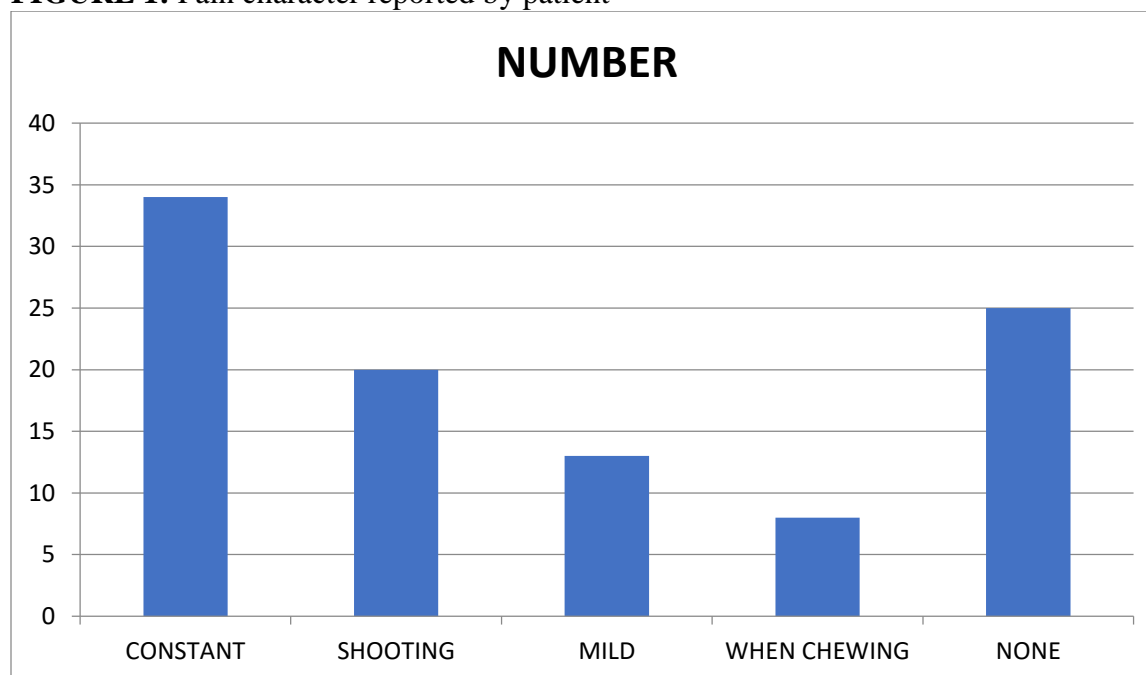
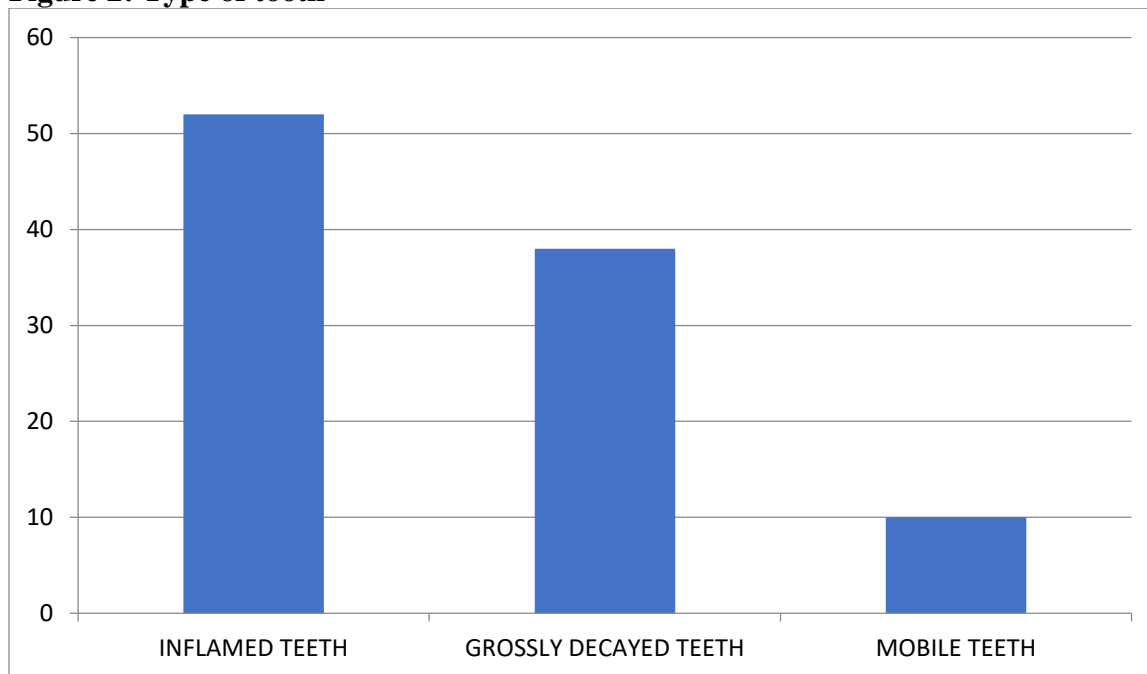


Table 3: type of tooth

Type Of Tooth	Number	P value
Chronically inflamed teeth	52	0.02
Grossly decayed	38	
Mobile teeth	10	

Figure 2: Type of tooth



Result

[Table 1] shows that a total of 100 samples were selected for the study out of which 60 were males and 40 were females.

[Table 2] shows that the pain character was constant in 34 patients, shooting in 20 patients, mild in 13 patients, pain when chewing in 8 patients and absent in 25 patients ($P < 0.05$).

[Table 3] shows that the pain occurred in 52 inflamed teeth, 38 grossly decayed teeth and 10 mobile teeth. The difference was significant ($P < 0.05$).

Discussion

Among the various procedures performed in the dental clinic such as, Root Canal Treatment, Pulpectomy, restorations, one of the common treatments is extraction. The extraction can be simple tooth extraction or extraction for impacted molar. Extraction is usually followed by complications such as hemorrhage, nerve injury, hematoma, swelling, trismus, postoperative pain, etc. Although these complications are typically minor, managing them remains a significant concern. While most complications are uncommon, certain issues, such as post-operative pain, occur more frequently. Pain management is a crucial aspect of dental procedures, particularly after tooth extractions, as it plays a significant role in patient recovery and satisfaction. Pain assessment following a simple tooth extraction involves evaluating various factors, including pain intensity, duration, and its impact on daily activities. Many studies are done to evaluate the various pain management methods and to examine the different pain experiences of patient

following tooth extraction. Present study is conducted to assess the post-operative pain after simple tooth extraction.

Out of 100 patients 40 were females and 60 males. Pain character was constant in 34 patients, shooting in 20, mild in 13, pain while chewing in 8 patients and absent in 25 patients. Pain occurred in 52 inflamed teeth, 38 grossly decayed teeth and 10 mobile teeth. Researchers have reported favorable outcomes from specific interventions in reducing post-extraction pain, the methodological differences across studies hinder the establishment of universally applicable guidelines (Bucci P et al.)⁴. Hence, a unified perspective to pain assessment, based on thorough research, is important for improving pain management strategies in dental practices.

On the day of extractions within few hours after the withdrawal of local anesthesia, 75% of patients experienced pain. Predominantly males experienced more pain than females. Patients with habit of tobacco show lower pain intensity while normal patients without any habit experienced more pain. Mild pain was experienced by most of the patients on the day of extraction. 63% of patients used analgesic on the day of extraction. (Gan TJ)⁵ A cross-sectional study was performed to study the level of pain and adverse outcomes following a normal extraction. Pain was a predominant complaint patient felt till the third day with highest on the day of extraction and least on the third day. Eighteen percent of patients continued to experience pain even seven days after the extraction. Pain intensity linearly declined on 2nd to 3rd day i.e. mean score of 3.6/10 to 1.2/10. 2% patients experienced dry socket after the extraction of chronically inflamed teeth. In the study by Cheung et al³, acutely inflamed alveolus accounted for 88.4% of post-extraction site healing complications, with an incidence rate of 11.1%. In contrast, in the present study, acutely inflamed alveoli made up 11.4% of the post-extraction healing complications, with an incidence rate of 1.2%.

In terms of pain intensity, several studies show that the highest level of pain is often experienced in the first 24 hours after extraction. A study by (Jacobs et al)⁷ (2020) indicated that patients typically report moderate to severe pain during this period, which gradually decreases over the next few days. The intensity of pain can also vary depending on the complexity of the extraction, the type of anesthesia used, and the individual pain threshold of the patient. For instance, extractions of impacted teeth or those requiring surgical intervention tend to be more painful than simple extractions (Kumar & Patel, 2019)⁸.

Effective postoperative pain management is essential to reduce discomfort and improve patient outcomes. The management strategies for pain after tooth extraction include the use of local anesthetics, analgesics, and sometimes, anti-inflammatory medications. A study by (Singh et al.)⁹ evaluated the effectiveness of different analgesics, including non-steroidal anti-inflammatory drugs (NSAIDs) like ibuprofen, in managing pain after tooth extractions. The authors discovered that NSAIDs were effective in lowering pain intensity, particularly when taken shortly after the procedure. Opioids, although effective, are typically reserved for managing more severe pain or situations where NSAIDs do not provide adequate relief, due to their risk of side effects and potential for dependence (Wang et al., 2020).

Along with pharmacological interventions, the application of ice packs or cold compresses is a common recommendation to reduce swelling and provide analgesia. A study by (Lee and Choi)¹¹ demonstrated that cold therapy, when applied in the first 24 hours after extraction, significantly reduces pain and swelling compared to no cold therapy.

Conclusion

The study concludes that post-operative pain is a common complication after tooth extraction. Authors emphasize the significance of proper pain management techniques, which may include the use of analgesic, local anesthesia, during the procedure and sometimes sedatives or opioids for more complex procedure.

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