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Short Communication

Knowledge, awareness, and practice on the usage of pre-emptive analgesia during oral surgical procedures.

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Abstract

Background: Pre-emptive analgesia improves patients' quality of life after treatment by reducing post-operative complications and a more rapid return to their daily activities. The current study aims to evaluate knowledge, awareness, and practice on using pre-emptive analgesia during surgical procedures among private dental practitioners in Karachi, Pakistan.

Methodology: This survey-based descriptive study was conducted among private dental practitioners working in Karachi, Pakistan. The questionnaire has been designed to assess knowledge, awareness, and practice regarding the usage of pre-emptive analgesia. Part one focused on the socio-demographic characteristics of the participants, including age, gender, and level of experience. While Part two comprises ten multiple-choice questions regarding the knowledge, awareness, and practice of pre-emptive analgesia among private dental practitioners. The survey instrument was a self-administered questionnaire in the English language, and the questionnaire form was sent electronically to the study participants.

Results: About 98(74.2%) of participants are aware of pre-emptive analgesia usage during surgical procedures, but only 78(59.1%) practitioners know the mechanism of action of pre-emptive analgesia. While. Diclofenac sodium 35(26.5%) is most commonly used by private dental practitioners as pre-emptive analgesia.

Conclusion: The knowledge of oral pre-emptive analgesia was limited among dental practitioners. Most of them know that pre-emptive analgesics are used during oral surgical procedures, but many practitioners don't know their mechanism of action and method of administration.

Keywords

Diclofenac Sodium, Analgesia, Dental, Pre-Emptive, Pain.

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Introduction

The tooth's impaction is becoming more common because of inadequate space in the mandible for an erupting tooth. Among other teeth, impaction of the 3rd molar is more prevalent, ranging from 16.7% to 68.6%[1]. Surgical removal of the impacted tooth cause trauma to soft tissue and bone, which starts an inflammatory process that gives rise to pain, truisms, and swelling[2]. The International Association for the Study of Pain (IASP) defines pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage[3]. Pain is a sensory experience that may be associated with different physiologic principles. The patient usually links pain with dental treatment and tries to avoid or delay treatment, making it more difficult to treat[4].

Pre-emptive analgesia is an anti-nociceptive treatment that prevents altered processing of afferent input, amplifying post-operative pain. This help to alter painful stimuli resulting from tissue trauma in the central nervous system, thereby helping to reduce pain and increase patient comfort[5,6]. Pre-emptive analgesia is given by different methods to decrease central sensitization before the traumatic process begins. NSAIDs, Opioids, local anesthesia, and dexamethasone can relieve pain after surgery and fasten recovery[7]. Toradol is an NSAID used for moderate to severe pain management before or after surgery. NSAIDs are mostly prescribed after tooth extraction for pain control; they work by inhibiting cyclooxygenase (COX). COX is required for the conversion of arachidonic acid and prostaglandin. NSAIDs may have side effects such as gastric discomfort, headache, dizziness, allergic reaction, and affect blood clotting[8,9].

Dexamethasone is a synthetic adrenocortical steroid most used in oral and maxillofacial surgery because of its high potency and long half-life. It can be given orally, intravascular, intramucosal, or intramuscular in the masseter, gluteal, or deltoid region. Its effect on pain, trismus, and swelling vary according to the route of administration and whether given pre-operatively or post-operatively[10,11].

Different techniques and medicine are used for pre-emptive analgesics. The major reason for giving pre-emptive analgesia is fewer post-operative complications (pain, swelling, and trismus). Pre-emptive analgesia is now increasingly used because pain is controlled before the start of pain by giving nociceptive treatment. Such treatment help to reduce post-operative pain by preventing sensitizing CNS to afferent input. Therefore, pre-emptive analgesia improves patients' quality of life after treatment by reducing the post-operative complication and a more rapid return to their daily activities.

Our current aim of the study is to evaluate knowledge, awareness, and practice on using pre-emptive analgesia during surgical procedures among private dental practitioners in Karachi, Pakistan.

Methodology

This survey-based descriptive study was conducted among private dental practitioners working in Karachi, Pakistan, from 15-04-2022 to 01-05-2022. The study was conducted after approval of the Institutional ethics committee. The purpose of the study was clearly explained, and written consent was obtained from the participants. The study included a convenience sample comprising dental practitioners from all over Karachi who graduated from government or private institutes and have done post-graduation. The dental practitioners who worked in Karachi and were willing to give written informed consent were included in the study. At the same time, intern or dental students were excluded from the study.

The questionnaire has been designed to assess knowledge, awareness, and practice regarding the usage of pre-emptive analgesia. The questionnaire was designed in two parts and addressed voluntarily. Part one focused on the socio-demographic characteristics of the participants, including age, gender, and level of experience. While Part two comprises ten multiple-choice

questions regarding the knowledge, awareness, and practice of pre-emptive analgesia among private dental practitioners. The survey instrument was a self-administered questionnaire in the English language, and the questionnaire form was sent electronically to the study participants.

The calculated sample size of the study was 169 dental practitioners and was calculated using the formula n = [DEFF*Np(1-p)]/[(d2/Z21-α/2*(N-1)+p*(1-p)]. Data were collected using an electronic survey form link and tabulated in Microsoft Excel. The data was then imported from excel to the IBM SPSS version 23.0 and was used for statistical treatment.

Results

A total of 169 questionnaires were given to private dental practitioners, of which 132 participants completed the survey. Among them, 63(47.7%) were male, and 69 (52.3%) were female. The filled questionnaires were divided according to the level of experience (group 1 had less than ten years of experience, and group 2 had greater than ten years of experience). Among all participants, 97 (73.5%) were from less than ten years of experience, and 35 (26.5%) were from more than ten years of experience.

About 98 (74.2%) of participants are aware of pre-emptive analgesia usage during surgical procedures, but only 78 (59.1%) practitioners know the mechanism of action of pre-emptive analgesia. Diclofenac sodium 35(26.5%) is most commonly used by private dental practitioners, ketamine 5(3.8%) is least likely to be used, among others are tramadol 26(19.7%), and dexamethasone 22(16.7%) and 44(33.3%) practitioners think that all can be used as pre-emptive analgesia as shown in Figure 1.

About 95(72%) participants think that pre-emptive analgesia helps to reduce pain, swelling, and trismus after a surgical procedure. Of 52(39.4%) don't know about the method of administration of pre-emptive analgesia, but 75(56.8%) respondents think that pre-emptive analgesia has a vasoconstrictor effect as pre-emptive analgesia plays a great role in the elimination of pain after a surgical procedure and helps to reduce trismus and swelling post-operatively. Therefore, all dental practitioners need to know more about dentistry's usage, clinical practice, and importance.

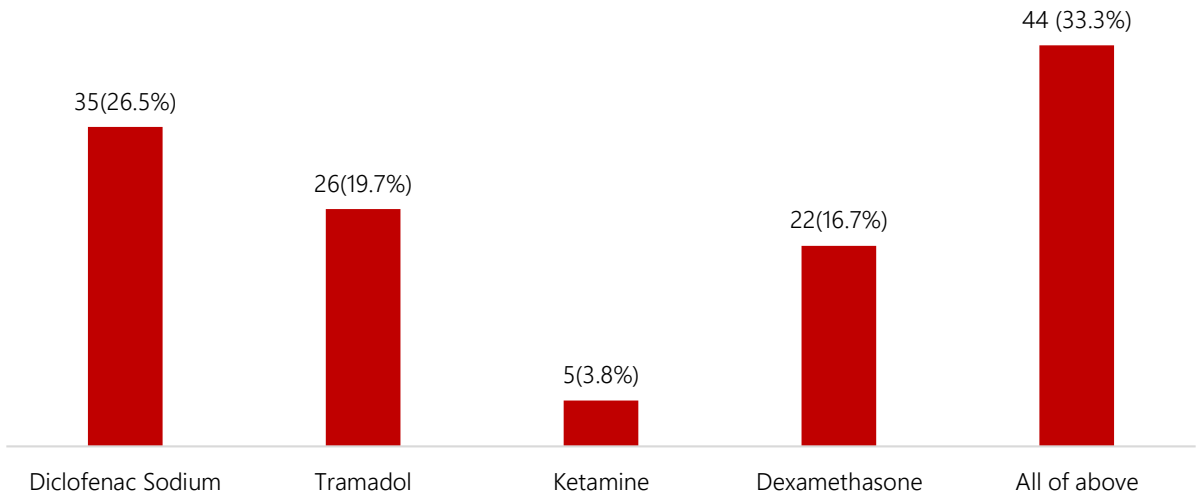

Figure 1: Commonly used pre-emptive analgesics among private dental practitioners.

Discussion

Inefficient day-to-day practice, private dental practitioners are becoming more aware of using more advanced techniques and technology for better patient satisfaction. This paper highlights pre-emptive analgesia usage during an oral surgical procedure as it decreases post-operative pain, swelling, and trismus. Hence it has a major influence on patient quality of life, so it should be included in the dental students' curriculum and a conventional surgical procedure protocol. This survey showed that about 98 (74.2%) participants who know about pre-emptive analgesia responded YES that they are aware of using pre-emptive analgesia during oral surgical procedures. Still, only 78 (59.1%) of dental practitioners know the mechanism of action of oral pre-emptive analgesia, and only 80 (60.8%) dentists know its mode of administration. This means that many dentists are using it but do not know how it works, so it should be included in the undergraduate teaching curriculum so many young dentists can provide quality treatment to their patients. The concept of pre-emptive analgesia was first discovered by Wolf based on his studies on pain hypersensitivity. The main objective behind its use is to prevent central sensitization before trauma and injury and to provide post-operative pain control. Pre-emptive analgesia can be given by different analgesia methods to get saved from the development of post-operative hyperesthesia[12].

Keerthana et al. conducted a survey-based study in India to assess the knowledge and awareness level of pre-emptive analgesia among dental students, showing that only 38% of dental students know the use of pre-emptive analgesia. For commonly used analgesics, 47% answered diclofenac sodium, 27% answered ketamine, and 26% answered tramadol[13]. As noted from our study, many of them are using diclofenac sodium 35(26.5%), about 26(19.7%) are using tramadol and dexamethasone 22(16.7%), and only 5(3.8%) as single pre-emptive analgesia for better patient outcome.

Rilna et al. conducted a split-mouth study in India to assess the post-operative complication (pain, swelling, and trismus) after surgical removal of 3rd molar. Participants with bilateral mandibular 3rd molar were included, and 1 hour before removal of 3rd molar, dexamethasone (8 mg) orally was given. It was assessed on 2 and 5 days and has shown that 8 mg dexamethasone improved the patient comfort as a low pain score was reported, and mouth opening was significantly better. Still, the swelling was not significantly reduced with dexamethasone[14]. In this survey, about 71(53.8%) private dental practitioners responded yes, that it is necessary to use pre-emptive analgesia before oral surgical procedure.

Jarrah et al. conducted their study in two clinics of oral and maxillofacial surgery to assess the combined effect of dexamethasone and ibuprofen compared with dexamethasone alone. Both were injected intramuscular (deltoid muscle) 1 hour pre-operatively, and there was less post-operative swelling and trismus with the combined use of Dexamethasone and Ibuprofen as opposed to use alone. There was no significant difference in pain intensity between these two groups[15]. In our study, different private dental practitioners used different types of pre-emptive medicine according to their level of knowledge has reported that it helped to better alleviate post-operative pain 97(73.5%), less chance of trismus and swelling 95(72%) as compared to without pre-emptive treatment in the oral surgical procedure.

A study was conducted by Ricardo et al. to assess the efficacy of tramadol given before, immediately and after surgical removal of 3rd molar shows that 86% of the patient had better pain efficacy at 24 hours when given tramadol as pre-emptive analgesia (before) in comparison with 70% (immediately) and 36% (after) group. He also reported that there were fewer analgesics taken post-operatively by the patient when pre-operatively analgesics were used[16]. According to our study, more than one-third and less than two-thirds of dental practitioners know the duration of efficiency 77(58.3%) and vasoconstrictor effect 75(56.8%) of pre-emptive analgesia when used during the oral surgical procedure. The dental student-faculty should embolden to put forward the theoretical knowledge through books, journals,

and CME workshops, as well as a clinical demonstration to undergraduate dental students and dentists so they would have up-to-date knowledge regarding oral pre-emptive analgesia.

Conclusion

The knowledge of oral pre-emptive analgesia was limited among dental practitioners. Most of them know that pre-emptive analgesics are used during oral surgical procedures, but many practitioners don't know their mechanism of action and method of administration. However, about 53.8% of practitioners think that pre-emptive analgesia plays an important role in providing a better quality of treatment.

Conflicts of Interest

The authors have declared that no conflicts of interest exist.

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