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Research Article

Drug utilization pattern of analgesics in various departments of a tertiary care teaching rural dental hospital

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ABSTRACT

Background: The aim was to study drug utilization pattern of analgesics in various departments of a tertiary care teaching rural dental hospital.
Methods: A prospective and observational study was undertaken in 150 patients from January 2014 to February 2014. Relevant information was obtained from the interview as well the hospital case record. Structured and pre-tested format were used for compiling the data.
Results: The majority of the patients (46%) were in the age group 41-60 years. Common indications for analgesic use included endodontic diseases (61.3%), surgical procedures (41.33%), and periodontal diseases (27.33%). Three analgesic formulations were used leading to a total of 150 drug uses. Fixed-dose drug combination (FDC) of diclofenac sodium plus paracetamol (78.66%) was the most commonly prescribed analgesic formulation, followed by aceclofenac plus paracetamol (15.33%) and ibuprofen (6%). The average number of analgesics prescribed per patient was 1.94. Analgesics were prescribed for 3 days. Except ibuprofen, FDC of diclofenac sodium + paracetamol and aceclofenac + paracetamol have been included in the WHO model list of essential medicines. All analgesic drug formulations were prescribed by their brand names.
Conclusions: Drug utilization data can help to formulate appropriate clinical guidelines for drug use and facilitate rational use of medicines in population.

Keywords: Dentistry, Analgesics, Drug utilization study

INTRODUCTION

Drug utilization research was defined by WHO in 1977 as "the marketing, distribution, prescription, and use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences."[1] Drug utilization studies are powerful tools to ascertain the role of drugs in the society. Pain is a common complaint amongst dental patients, and its management has always been an integral part of dental care. Majority of painful dental conditions are due to inflammation of orodental or associated tissues and that can be because of various factors such as infection, trauma and following an operative procedure.[2] Analgesics are widely prescribed in dental practice for the relief of acute, chronic and postoperative pain, as well as for controlling adjunctive intra-operative pain.[3] The drugs of choice for painful dental conditions are non-steroidal anti-inflammatory drugs (NSAIDs), which act by inhibiting by cyclo-oxygenase enzymes that are responsible for the formation of prostaglandins that promote inflammation and pain.[4] Irrational use of analgesics can lead to reduction in quality of drug therapy, adverse drug reactions and economic burden on patients and society. These problems have led to the need for rationalization of analgesic use in dental practice. Studies investigating drug utilization pattern of analgesics amongst dentists are limited. Hence, the study was undertaken with an aim to study drug utilization pattern of analgesics in various out-patient departments of a tertiary care teaching rural dental hospital.

METHODS

A prospective observational study was undertaken over a period of 2 months from January 2014 to February 2014 in K.M. Shah Dental Hospital, attached to Sumandeep Vidyapeeth, Piparia, Vadodara, India. Prior to commencement of the study, the study protocol was

approved by the Institutional Ethics Committee. Written informed consent was obtained from participants who had volunteered for the study. 150 patients of any age and either sex, who were prescribed one or more analgesics, were included in the study. Outdoor patients were interviewed once at the time of recruitment. Relevant patient demographics and information pertaining to analgesics prescribed were collected from the interview as well the hospital case record. Structured and pre-tested format was used for compiling the data.

The data collected included name, age, sex, indications (diagnosis), and details of analgesics prescribed including name (brand/generic), dose, route of administration, frequency and duration of treatment. Data were analyzed for total number and duration of analgesic formulations prescribed, average number of analgesics per prescription (taking into consideration the number of ingredients in a multidrug formulation), number of fixed-dose drug combinations (FDCs) of analgesics prescribed, number of analgesics prescribed by international non-proprietary name (INN, generic name) or brand name and number of analgesics prescribed from the WHO model list of essential medicines (18th list, April 2013).

RESULTS

A total of 150 prescriptions containing one or more analgesics were collected for analysis. Patient demographics showed that out of 150 patients included in the study, 97 (64.6%) patients were males and 53 (35.3%) were females. It was found that the maximum patients (69, 46%) were within the age group of 41-60 years, and least number of the patients (5, 3.3%) were in the age group of <20 years. Demographic characteristics of patients are shown in Table 1.

In our study, it was observed that analgesics were prescribed for endodontic diseases, periodontal diseases, and surgical procedures. Endodontic diseases (92, 61.3%) were found to be the most common indication for analgesic use. This was followed by surgical procedures (62, 41.33%) and periodontal diseases (41, 27.33%) (Table 2).

Three analgesic formulations were prescribed amongst patients amounting to a total of 150 drug uses. Out of three formulations, one contained single active ingredient, whereas the rest two were FDCs. Diclofenac sodium plus paracetamol combination 50 mg+500 mg was the most commonly prescribed analgesic formulation (78.66%), followed by aceclofenac plus paracetamol 100 mg+500 mg (15.33%) and ibuprofen 400 mg (6%) (Figure 1).

The average number of analgesics prescribed per patient was 1.94. The duration of analgesic treatment was found to be 3 days in all drug uses.

All analgesic formulations were prescribed by their brand names. Only ibuprofen was matching the WHO model list of essential medicines, whereas FDCs of diclofenac sodium plus paracetamol and aceclofenac plus paracetamol were outside the model list.

Table 1: Demographic characteristics of patients.

Variables	n (%)
Gender	
Male	97 (64.6)
Female	53 (35.3)
Age (years)	
0-20	05 (3.3)
21-40	49 (32.66)
41-60	69 (46)
More than 60	27 (18)

Table 2: Disease pattern and number of patients.

Diseases/procedures	Number of patients n (%)
Endodontic diseases	
Chronic pulpitis	65 (70.65)
Periapical abscess	27 (29.34)
Surgical procedures	
Tooth extraction	23 (37.09)
RCT	39 (62.90)
Periodontal diseases	
Chronic generalized periodontitis	23 (56.09)
Acute periodontitis	18 (43.90)

RCT: Root canal treatment

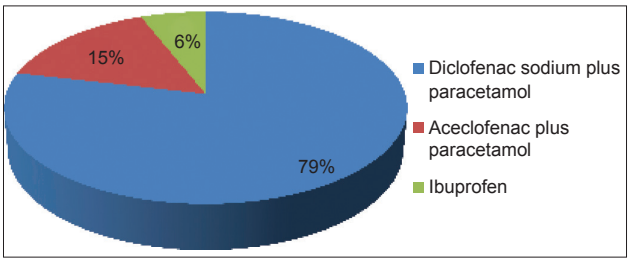

Figure 1: Pattern of prescribing of antimicrobials.

DISCUSSION

Pain due to oral pathological conditions and orthodontic procedures is one of the major concerns in dental practice.[5] Dental pain is best managed by removing the source of the pain, as far as possible, along with judicious use of non-opioid or opioid analgesics. Non-opioid analgesics are commonly prescribed and contribute to their widespread overuse in dentistry. In the present study, three major indications were found for analgesic use with endodontic diseases being the most common, followed by surgical procedures and periodontal diseases. Manasa and Das, Rauniar and Das. had similar results with endodontic diseases being the most commonly reported indication.[6,7]

In our study, FDC of diclofenac sodium plus paracetamol was found to be the most commonly prescribed analgesic formulation. However, when we compared our findings to that of other studies (Manasa and Das, Rauniar and Das) on dental outpatients, we found that diclofenac sodium alone was found to be the most commonly prescribed analgesic.[6,7] In a study among patients attending the dental outpatient departments at Manipal Teaching Hospital in Nepal, it was found that ibuprofen was found to be the most frequently prescribed analgesic.[8]

The average number of drugs per prescription reflects the standard of prescribing and baseline data for the same may serve as a target for an educational intervention in the future. Of the total 150 prescriptions containing NSAIDs, the mean number of drugs per prescription was found to be 2.58 in the present study. When we compared our findings to that of other studies carried out by Rauniar and Das, Kulkarni and Baig[6,8] on dental patients, we found the mean number to be 2.79 and 3 respectively. However, the average number of analgesics prescribed per patient (taking into consideration the number of ingredients in a multidrug formulation) was found to be 1.94 in our study. Except ibuprofen, diclofenac sodium plus paracetamol and aceclofenac plus paracetamol prescribed are not included in WHO model list of essential medicines. These two FDCs were prescribed in 94% of all drug uses. Combining two NSAIDs does not improve the efficacy of treatment as they act on the same enzyme and offer no synergism.[9] Such irrational combinations expose patients to unnecessary risk of adverse drug reactions and needlessly increase the cost of therapy.

All analgesic drug formulations were prescribed by their brand names. This is consistent with the finding of the study carried out by Rauniar et al. It is also observed that number of drugs prescribed by generic name is lower than brand prescribing in other studies done in India on dental patients.[8,10] Prescription by brand names increases the cost of therapy as compared to generic drug prescribing. Generic prescribing reduces the potential for confusion as only one name for a drug is used as well as reduces the number of brands that are stocked by pharmacists that in turn reduces the administrative inconvenience. It also increases the cost effective options for the patients. Moreover, it is important to note here that even Medical Council of India had advised the doctors registered under its authority to prescribe medicines using generic names. It reads as "every physician should, as far as possible, prescribe drugs with generic names and he/she shall ensure that there are a rational prescription and use of drugs."[11]

Drug utilization data may help to provide information on prescribing habits and to measure specific aspects of drug use and patient care. Developing and implementing standard treatment guidelines for various conditions and putting principles of evidenced based medicine in practice are two important measures for eliminating or at least minimizing irrational use of medicines.

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