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Original Article

Prescribing Pattern of Non-steroidal Anti-inflammatory Drugs in Dhaka City

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ABSTRACT

Introduction: *Non-steroidal anti-inflammatory drugs (NSAIDs) are the most commonly prescribed and used for the treatment of pain and inflammation. Though this type of drug contains many side effects, these are widely used. This study aimed to assess the prescribing pattern of NSAIDs in Dhaka city.* ***Methods:*** *This cross-sectional (descriptive) study was carried out in Dhaka City from July 2002 to June 2003 (1 year). The sample size of this study was 608.* ***Result:*** *In this study, among 608 prescriptions, MBBS doctors prescribed 63.8%. Most of the study people (71.4%) were in the age group of 15-45 years. In this study, the majority (59.7%) were prescribed for males. The chief complaint/clinical diagnosis was mentioned as fever (20.1%). In this study, the commonest prescribed NSAIDs were paracetamol (42.1), diclofenac sodium (21.9%); ibuprofen (10.4%); naproxen (5.9%); aspirin (1.6%), and other NSAIDs (18.1%) were prescribed respectively. NSAIDs were mentioned in generic names (4.9%) and trade names (95.1.%) of total prescriptions respectively. In this study, the commonest prescribed dosage from NSAIDs were tablet/capsule (83.7%); syrup (9.0%); suppository (3.0%); injection (2.0%); suspension (1.8%); topical application (0.5%) were prescribed respectively.* ***Conclusion:*** *The patients usually consulted with an MBBS doctor. The chief complaint/clinical diagnosis for which patients were prescribed NSAID is fever. The commonest prescribed NSAID is paracetamol. NSAIDs are mentioned in trade names in most cases. The commonest prescribed dosage from NSAIDs is tablet/capsule.*

Keywords: *Prescribing Pattern, Non-steroidal Anti-inflammatory Drugs, Dhaka City.*

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INTRODUCTION

Non-steroidal anti-inflammatory drugs (NSAIDs) are a drug class FDA-approved for use as antipyretic, anti-inflammatory, and analgesic agents [1]. These effects make NSAIDs useful for treating muscle pain, dysmenorrhea, arthritic conditions, pyrexia, gout, migraines, and used as opioid-sparing agents in certain acute trauma cases [2-4]. Topical NSAIDs (diclofenac gel) are also available for use in acute tenosynovitis, ankle sprains, and soft tissue injuries [5-8]. NSAIDs are among the most commonly prescribed class of medications globally and they account for approximately 5–10% of all medications prescribed each year [9]. Each day, it is estimated that 30 million people worldwide get benefit from their anti-inflammatory and analgesic effects [10]. More recently, increasing knowledge of NSAIDs' preventive effects against the development and progression of cardiovascular diseases (CVDs) and cancer has encouraged their use for the prevention of chronic diseases, as well as for acute pain [11-16]. For obvious reasons, the elderly are among the frequent users of NSAIDs, and the fact that this sub-population is highly involved in prescription and non-prescription medications, means that they are highly susceptible to polypharmacy, drug-drug interactions, and ultimately drug-related complications, and even death [17-23]. The mechanism of action of NSAIDs such as indomethacin, ibuprofen, and naproxen is the same as that of aspirin, namely, inhibition of cyclooxygenase. These drugs are used in the treatment of rheumatoid arthritis, osteoarthritis, acute attacks of gout or pseudogout, ankylosing spondylitis, and other seronegative spondyloarthropathies. However, the newer NSAIDs are not more effective than aspirin in the treatment of rheumatoid arthritis although some adverse reactions may occur less frequently with these drugs than with aspirin [24]. NSAIDs are one of the most common causes of adverse drug reactions [25]. Serious/fatal gastrointestinal problems including ulcer and bleeding have been frequently reported with chronic use of NSAIDs and thus, co-prescription of gastro-protective agents has paramount importance in preventing such risks [26-27]. In the elderly, it was estimated that 29% of fatal peptic ulcer complications were possibly due to NSAIDs [28]. Even in the USA, the side effects of long-term NSAID use cause nearly 103,000 hospitalizations and 16,500 deaths as has been reported by Feenstra J et al [29]. Besides, numerous other studies revealed a significant number of prescriptions of this group of drugs without proper diagnosis [30-31]. Despite this fact, gastro-protective agents were poorly co-prescribed along with NSAIDs and the other serious adverse effects reported with NSAIDs even amplify this concern [32]. There are very few studies in Bangladesh regarding the prescribing pattern of NSAIDs in Dhaka city. Thus, this study was conducted to assess the prescribing pattern of NSAIDs in Dhaka city.

OBJECTIVES

To assess the prescribing pattern of Non-steroidal anti-inflammatory drugs in Dhaka city.

METHODS

This cross-sectional (descriptive) study was carried out in Dhaka City from July 2002 to June 2003 (1 year). The sample size of this study was 608. The researcher himself collected prescriptions. After the selection of the pharmacy, the collection of prescriptions was started. The encounters that had the prescription containing NSAIDs only were included in the study design. The researcher collected a photocopy of a total of 608 prescriptions and the same

number i.c. 608 encounters (who purchased NSAIDs without prescription) were interviewed by structured questionnaires from randomly selected pharmacies to enroll in the study. It was designed by using baseline data of NSAIDs prescription patterns by the community with prescription of prescribers practicing in their chambers in Dhaka City. Here, data on ongoing events were collected, processed, simplified, tabulated then analyzed to assess the consumption of NSAIDs. Data were processed simplified, tabulated, and analyzed by using SPSS "(V.10.0)" software program.

RESULT

A total of 608 prescriptions were collected from randomly selected pharmacies of Dhaka Metropolitan City. Table 1 showed that out of the total of 608 prescriptions: 15.6% were prescribed by specialist doctors, 63.8% by MBBS doctors, and 20.6% were prescribed by unqualified prescribers. The study population was comprised of patients 'Below 15 years' (17.9%); '15-45 years' (71.4%); 'more than 45 years (7.1%) and 'age group not mentioned' (3.6%). Statistically, there was a relationship between the different categories of age groups of patients. '15-45 years' of the age group of patients were highly significant than other age groups of patients. Among the 608 prescriptions, 59.7% were prescribed for males and 39.1% were for female patients. Sex was not mentioned in 1.2% of prescriptions. Statistically, there was a significant relationship between different sex distributions of patients as shown in Table 2. Male patients were significantly higher than female patients. In table 3, the primary complaint/clinical diagnosis was mentioned as fever (20.1%); backache (15.6%); headache (12.0%); musculoskeletal pain (11.5%); traumatic injury (7.1%); dysmenorrhoea (5.3%); infective condition (4.6%); post-surgical pain (1.5%) and others (5.6%) of total prescription. Table 4 showed that the total number of the different types of drugs per prescription varied from 1 to 6. One drug was prescribed in 2.5%, two drugs were in 32.7%, three drugs were in 41.6%, four drugs were in 17.6%, five drugs were in 5.3% and six drugs were prescribed 0.3% prescriptions respectively. Table 5 showed that among the 608 prescriptions: the commonest prescribed NSAIDs was paracetamol (42.1). diclofenac sodium (21.9%); ibuprofen (10.4%); naproxen (5.9%); aspirin (1.6%) and other NSAIDs (18.1%) were prescribed respectively. Table 6 showed that, price-wise distribution of NSAIDs "less than 10Tk." (50.5%); "10-50Tk. (42.9%); "More than 50Tk" (5.8%); and "price unknown" (0.8%) were observed respectively. Table 7 Showed that NSAIDs were mentioned in generic names (4.9%) and trade names (95.1.%) of total prescriptions respectively. Statistically, a generic name is highly significant than mentioned trade name of drugs. Table viii showed that, the commonest prescribed dosage from NSAIDs were tablet/capsule (83.7%); syrup (9.0%); suppository (3.0%); injection (2.0%); suspension (1.8%); topical application (0.5%) were prescribed respectively. Statistically, there was a relationship between different dosage forms of the drug. Tablet/capsule was the highest significant form of drug.

Table 1: Category of the prescriptions (n=608)

Category of the prescriptions	Number	Percentage
Prescriptions of Specialist doctor	95	15.6
Prescriptions of MBBS doctor	388	63.8
Prescriptions of unqualified prescribers	125	20.6
Total	608	100

Table 2: Demographic characteristics of the study people (n=608)

Characteristics		Number	Percent	P-value
Age of the patients	Below 15 years	109	17.9	<0.001
	15-45 years	434	71.4	
	More than 45 years	43	7.1	
	Age not mentioned	22	3.6	
Sex of the patients	Male	363	59.7	<0.05
	Female	238	39.1	
	Sex not mentioned	7	1.2	

Table 3: Chief complaint/clinical diagnosis mentioned in prescription (n=608)

Chief complaint/clinical diagnosis	Number	Percent
Not mentioned	102	16.8
Fever	122	20.1
Backache	95	15.6
Headache	73	12
Musculo-skeletal pain	70	11.5
Traumatic injury	43	7.1
Dysmenorrhoea	32	5.3
Infective condition	28	4.6
Post-surgical pain	9	1.5
Others	34	5.6

Table 4: Total number of prescribed per prescription (n=608)

Total number of drugs.	Number	Percent
One (1)	15	2.5
Two (2)	199	32.7
Three (3)	253	41.6
Four (4)	107	17.6
Five (5)	32	5.3
Six (6)	2	0.3

Table 5: Type of prescribed NSAIDs (n=608)

Type of drugs	Number	Percent
Paracetamol	256	42.1
Diclofenac sodium	133	21.9
Ibuprofen	63	10.4
Naproxen	36	5.9
Aspirin	10	1.6

Table 6: Total cost of prescribed NSAIDs (n=608)

Total cost of NSAIDs.	Number	Percent
Less than 10tk	307	50.5
10-50tk	261	42.9
More than 50tk	35	5.8
Price unknown	5	0.8

Table 7: Percentage of prescription with generic names (n=608)

Generic/ Trade name prescribed.	Number	Percent	P-value
Generic names	30	4.9	<0.001
Trade name	578	95.1	

Table 8: Dosage form of NSAIDs (n=608)

Dosage form of NSAIDs	Number	Percent	P-value
tablet/capsule	509	83.7	<0.001
suspension	11	1.8	
syrup	55	9	
injection	12	2	
suppository	18	3	
topical application	3	0.5	

DISCUSSION

Among the total 608 prescriptions, MBBS doctors prescribed 63.8%. So, it was assumed that the bulk of the patients usually consulted with MBBS doctors. In this study, regarding the age group, '15-45 years' of patients (71.4%) consulted the doctor. This is the working class of active people. Their highest incidence may be due to their frequent sickness in the stressful busy city life in the competitive working environment. Regarding the sex distribution, 59.7% of prescriptions were for males while 39.1% of prescriptions for females were prescribed. In a study in South Africa, the investigator observed that analgesic products were prescribed to nearly three times as many females as males.[33] Chief complaint / clinical diagnosis was not mentioned in 16.8% of total prescriptions. It is not a good trend in terms of the rationale of prescribing. Fever (20.1%) was the commonest chief complaint about patients who consulted the prescribers. Backache (15.6%) and headache (12.0%) were mentioned as the chief complaints. It may be mentioned that prescribing NSAIDs were done mainly to relieve symptoms. Nonspecific pain in different parts of the body (knee pain, elbow pain, wrist pain,

and other nonspecific pain) due to nonspecific causes were mentioned as musculoskeletal pain (1.5%). Traumatic injury (7.1%) happened mainly due to minor road traffic accidents, falls from high, blunt injury, sports injury, and assault. In dysmenorrhea, NSAIDs were prescribed (5.3%). The release of prostaglandins by endometrium during menstruation may be a cause of severe cramps and other symptoms of primary dysmenorrhea; treatment of this condition with NSAIDs has been made with considerable success [34]. In infective conditions like pharyngitis, tonsillitis, urinary tract infection, respiratory tract infection NSAIDs were prescribed (4.6%). It may be discussed that the total number of prescribed drugs varied from 1 to 6. The common trend of prescribers is to prescribe 2 drugs (32.7%) & 3 drugs (41.6%). This finding is similar to that observed by others [35]. They found the mean number of drugs per prescription 3.13. A review was conducted by Palo Alto, CA, the USA indicated that approximately 75% of patients with chronic pain were prescribed at least analgesic, and most received 2 or more, while NSAIDs were the most commonly prescribed class of analgesics [36]. The commonest prescribed NSAIDs was paracetamol (42.1%). But, in one study in the department of emergency medicine, the University of Illinois at Chicago in the USA, it was observed that patients discharged with a prescription for acetaminophen (Paracetamol) containing narcotic analgesics do not receive appropriate written instructions [37]. Diclofenac sodium (21.9%) was prescribed as the second most common NSAID. Among arthritis patients with a recent history of bleeding ulcer, celecoxib was just as like as diclofenac plus omeprazole to cause recurrent bleeding [38]. In this study, Ibuprofen was prescribed in 10.4% of prescriptions. In another study in Yemen, it was also observed that many patients with chronic bone and joint pains were prescribed several analgesic or anti-inflammatory drugs, the most popular of which were indomethacin and ibuprofen at 47% and 45% respectively of prescriptions [39]. Total cost of prescribed NSAIDs was less than 10 Tk. in 50.5% of total prescriptions. In South Africa, investigators observed that analgesic agents represented 12.3% of the total number and 14.2% of the cost of products prescribed [33]. Genetic name was prescribed in only 4.9% of total prescriptions. As NSAIDs were also sold in the market in trade name therefore prescribers do not have many options in this regard. Pressures from pharmaceutical companies were also noticed as a cause of writing trade names. To prevent gastric adverse effects, no drugs were prescribed in 53.6% of total prescriptions. Regarding the dosage form of NSAIDs, tablet/capsule was prescribed 83.71% of total prescription. It was, might be, due to the easy convenience of the patient. In one study conducted in Dhaka, it was observed that pellet products should be reduced by 64% by strengthening the market strategy of pharmaceutical companies [40]. In another study in the USA, showed that routine use of intramuscular administration of NSAIDs for suspected enhanced analgesia appears unwarranted.[41]

Limitations of the study

The study was carried out in the Dhaka City area. Data from other districts or rural areas were not included. Thus, the study only reflects the prescribing pattern of NSAIDs with or without prescription in Dhaka City. Information like time taken for a history of illness, whether physical examinations were done or not- excluded from this study. The drug purchasers were not always

the end-users of the drug. In many encounters, it was not possible to ask the purchaser regarding details of the drug users. Such encounters were excluded from the study. Due to various reasons a lot of people are regularly entering into and also leaving the city. So, a vast population is floating in nature. The consumption of NSAIDs with or without prescription by this group of people could not be separately identified. So, they were included in this study. Drug purchase without a prescription does not always mean self-medication. In many cases, it was the continuation of the already prescribed treatment like drugs used for Ankylosing Spondylosis, Gout, Rheumatic Fever that was seen to be purchased without a prescription. Common judgment has been applied to exclude such drugs. Among the randomly selected pharmacies, those that did not have a photocopying facility nearby were excluded from the study. This study did not include "intervention" neither to the prescribers nor to the people who consume NSAIDs without prescriptions.

CONCLUSION

The patients usually consulted with an MBBS doctor. The chief complaint/clinical diagnosis is a fever for patients who consulted the prescribers. The commonest prescribed NSAID is paracetamol. NSAIDs are mentioned in trade names in most cases.

RECOMMENDATION

The commonest prescribed dosage from NSAIDs is tablet/capsule. Doctors need to be free from any pressure from the pharmaceutical companies and use the generic name and not the trade name while giving prescriptions.

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