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ORIGINAL ARTICLE

Prescribing Patterns of Nonsteroidal Anti-inflammatory Drugs in Several Pharmacies in Dhaka City

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Abstract

Background: Nonsteroidal anti-inflammatory drugs (NSAIDs) are the most commonly prescribed and used for the treatment of pain and inflammation. Though these type of drugs contains many side effects, they are widely used. **Objective:** The aim of this study was to assess the prescribing pattern of NSAIDs in several pharmacies in Dhaka city. **Methodology:** This was a cross-sectional descriptive study conducted in Dhaka City of bangladesh during the period from July 2002 to June 2003. Total 8(eight) thanas were included in the study, namely Cantonment thana & Kafrul thana in the north part, Ramna thana & Motijheel thana in the south part, Khilgaon thana & Tejgaon thana in the east part, Mohammadpur thana & Mirpur thana in the west part. From each Thana, 2 (two) pharmacies were selected randomly. So, 16 (sixteen) pharmacies were selected for this study. Six hundred and eighty (608) prescriptions were considered for analysis as per the guideline of WHO/DAP 92.3 "How to investigate drug use in the community". For statistical analysis, SPSS software was used. **Results:** Among a total of 608 prescriptions, MBBS doctors prescribed 63.8%. Most of the study people (71.4%) were in the age group of 15-45 years. The majority (59.7%) were prescribed for males. The chief complaint/clinical diagnosis was mentioned as fever (20.1%). The most commonly 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 in 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 MBBS doctors. 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. [*Journal of Current and Advance Medical Research, January 2024;11(1):34-40*]

Keywords: Prescribing Pattern; Nonsteroidal Anti-inflammatory Drugs; Pharmacies; Dhaka City

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Introduction

FDA-approved antipyretic, anti-inflammatory, and analgesic medications are known as nonsteroidal anti-inflammatory drugs (NSAIDs)[1]. NSAIDs are used to treat muscle pain, dysmenorrhea, arthritic diseases, pyrexia, gout, migraines, and as opioid-sparing medications in certain acute trauma cases because of these effects[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 5.0% to 10.0% 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, 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 29.0% 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 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 several pharmacies in Dhaka city. Thus, this study was conducted to assess the prescribing pattern of NSAIDs in several pharmacies in Dhaka city. The purpose of the present study was to assess the prescribing pattern of Nonsteroidal anti-inflammatory drugs in several pharmacies in Dhaka city.

Methodology

Study Design and Population: This was a cross-sectional descriptive study conducted in Dhaka City during the period from July 2002 to June 2003. Total 8(eight) thanas were included in the study, namely: Cantonment thana & Kafrul thana in the north part, Ramna thana & Motijheel thana in the south part, Khilgaon thana & Tejgaon thana in the east part, Mohammadpur thana & Mirpur thana in the west part. From each Thana, 2 (two) pharmacies were selected randomly. So, 16 (sixteen) pharmacies were selected for this study.

Study Procedure: Six hundred and eighty (608) prescriptions were considered for analysis as per the guideline of WHO/DAP 92.3 "How to investigate drug use in the community". The researcher himself collected prescriptions. After the selection of pharmacies, the collection of prescriptions was started. The researcher collected a photocopy of 608 prescriptions and interviewed by structured questionnaires from all randomly selected pharmacies. It was designed by using baseline data of NSAID prescription patterns by prescribers practicing in their chambers in Dhaka City. Data were collected, processed, simplified, tabulated then analyzed in order to assess the prescribing pattern of Nonsteroidal anti-inflammatory drugs in several pharmacies in Dhaka city.

Statistical Analysis: Statistical analysis was performed by Windows based software named as Statistical Package for Social Science (SPSS), versions 22.0 (IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.). Continuous data were expressed as mean, standard deviation, minimum and maximum. Categorical data were summarized in terms of frequency counts and percentages. Chi-square test was used for

comparison of categorical variables. Every efforts were made to obtain missing data. A two-sided P value of less than 0.05 was considered to indicate statistical significance.

Ethical Clearance: All procedures of the present study were carried out in accordance with the principles for human investigations (i.e., Helsinki Declaration 2013) and also with the ethical guidelines of the Institutional research ethics. Formal ethics approval was granted by the local ethics committee. Participants in the study were informed about the procedure and purpose of the study and confidentiality of information provided. All participants consented willingly to be a part of the study during the data collection periods. All data were collected anonymously and were analyzed using the coding system.

Results

A total of 608 prescriptions were collected from randomly selected pharmacies of Dhaka Metropolitan City. Out of the total of 608 prescriptions: 15.6% were prescribed by a specialist doctor, 63.8% by MBBS doctor, and 20.6% were prescribed by unqualified prescribers (Table 1).

Table 1: Category of the Prescriptions

Category of the prescriptions	Frequency	Percent
Prescriptions of Specialist doctor	95	15.6
Prescriptions of MBBS doctor	388	63.8
Prescriptions of unqualified prescribers	125	20.6
Total	**608**	**100**

'Below 15 years' (17.9%); '15-45 years' (71.4%); 'more than 45 years (7.1%) and 'age group not mentioned' (3.6%) comprised study population. A statistically significant relationship between the different categories of age group of patients (n=608; df=1) was observed. '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 distribution of patients as shown in Table 1 Male patients were significantly higher than female patients (n=608; df=1) (Table 2).

Table 2: Demographic Characteristics of The Study People (n=608)

Variables	Frequency	Percent
Age Group		
Below 15 years	109	17.9
15 to 45 years	434	71.4
More than 45 years	43	7.1
Age not mentioned	22	3.6
Gender		
Male	363	59.7
Female	238	39.1
Sex not mentioned	7	1.2

The chief 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 3).

Table 3: Chief Complaint/Clinical Diagnosis Mentioned in Prescription (n=608)

Chief Complaint/ Clinical Diagnosis	Frequency	Percent
Not mentioned	102	16.8
Fever	122	20.1
Backache	95	15.6
Headache	73	12
Musculoskeletal 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

In this study, it was observed 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 4).

Table 4: Total Number of Prescribed per Prescription (n=608)

Total Number of Drugs	Frequency	Percent
One (1)	15	2.5
Two (2)	199	32.7
Three (3)	253	41.6

Total Number of Drugs	Frequency	Percent
Four (4)	107	17.6
Five (5)	32	5.3
Six (6)	2	0.3

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 5).

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

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

In this study, “less than 10Tk.” (50.5%); “10-50Tk. (42.9%); “More than 50Tk” (5.8%); and “price unknown” (0.8%) were observed respectively (Table 6).

Table 6: Total Cost of Prescribed NSAIDs

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

NSAIDs were mentioned in generic names (4.9%) and in trade names (95.1.%) of total prescriptions respectively. Statistically, the generic name was highly significant than mentioned trade name of drugs (n=608; df=1) (Table 7).

Table 7: Percentage of Prescription with Generic Names

Drug Prescribed	Frequency	Percent	P value
Generic Names	30	4.9	<0.001
Trade Name	578	95.1	

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 significant relationship between different dosages and forms of the drug (n=608; df=1). Tablet/capsule was the highest significant form of the drug (Table 8).

Table 8: Dosage Form of NSAIDs

Dosage Form of NSAIDs	Frequency	Percent
Tablet/Capsule	509	83.7
Suspension	11	1.8
Syrup	55	9
Injection	12	2
Suppository	18	3
Topical Application	3	0.5

Discussion

Among the present study participants, 63.8% of the total 608 patients received their prescriptions from MBBS doctors. So, it was assumed that the bulk of the patients usually consulted with MBBS doctors. 70.4% of the participants were from the age group of 15 to 45 years. This high prevalence might be due to the age group being the working class of active people. Another contributing factor for this high incidence might be due to their frequent sickness in the stressful busy city life in a competitive working environment. Regarding the sex distribution, 59.7% of prescriptions were prescribed for the male population, while 39.1% of prescriptions were prescribed for the female population. 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 or 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 was done mainly to relieve symptoms. Nonspecific pain in the 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 75.0% 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 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]. Ibuprofen was prescribed in 10.4% of prescriptions in the present study, whereas in another study in Yemen, it was 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 47.0% and 45.0% 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 a pharmaceutical company[40]. In another study in the USA, showed that routine use of intramuscular administration of NSAIDs for suspected enhanced analgesia appears unwarranted[41].

There are some limitations of the study.The drug purchasers were not always the end-users of the drug. 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 prescription pattern of NSAIDs for this group of people could not be separately identified. Among the randomly selected pharmacies, those that did not have a photocopying facility nearby were excluded from the study. As the study carried out prescribing pattern of NSAIDs, this study did not include "intervention" neither to the prescribers nor to the people who consume NSAIDs without prescriptions. So, findings may not reflect the scenarios of the whole country.

Conclusion

Majority of patients consulted with MBBS doctors most of the time. The chief complaint/clinical diagnosis was fever, for patients who consulted the prescribers. The most common prescribed NSAID was paracetamol. NSAIDs are mentioned in trade names in most cases. The commonest prescribed dosage from NSAIDs was 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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Conflict of Interest
The authors declare ‘no conflict of interest.’ There is no conflict of interest regarding the publication of this paper.

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Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request. Any questions regarding the availability of the study's supporting data should be addressed to the corresponding author, who can provide it upon justifiable request.

Ethics Approval and Consent to Participate
All methods were performed in accordance with the relevant guidelines and regulations. The study lacked ethical approval

from the Institutional Review Board. As it did not involve animals, informed consent was deemed unnecessary.

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