

# PRESCRIPTION OF NON-STEROIDAL ANTI-INFLAMMATORY DRUGS IN ALBANIAN COMMUNITY PHARMACIES

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## Abstract

**INTRODUCTION:** Large number of medications is available to the public over the counter, obtained without a prescription. An example of these are over the counter analgesics, non-opioid analgesics with pain relieving effects. These agents include paracetamol and non-steroidal anti-inflammatory drugs such as acetylsalicylic acid, ibuprofen, and diclofenac, which can be consumed whenever required. Most of drugs are used for pain relief associated with many medical conditions including headaches, backaches, menstrual cramps, fever, and other pain related symptoms. These agents vary in their analgesic, antipyretic, and anti-inflammatory effects ranging from paracetamol, a good analgesic and antipyretic medicine with no anti-inflammatory effects to the non-steroidal anti-inflammatory drugs which possess powerful analgesic/antipyretic as well as exert anti-inflammatory actions.

*The aim of the paper* was to put in evidence the prescription of non-steroidal anti-inflammatory drugs in Albanian community pharmacies.

**METHODS:** A cross-sectional study was conducted for over 7 months, using a self-administered questionnaire. Pharmacists answered questions regarding prescription of non-steroidal anti-inflammatory drugs in Albanian community pharmacies.

**RESULTS:** The most frequently suggested over the counter analgesics were found to be Ibuprofen (57.8%) and Ketoprofen (47%). 86.2% of pharmacy professionals advised the maximum daily dosage, 19.6% advised taking over the counter non-steroidal analgesics after meals with plenty of water, 52.9% advised not to associate it with other medications. 26.4% of pharmacy professionals advised the preservation and 16.6% of them advised otherwise. About 80% of participants (pharmacy professionals) reported to have knowledge about the side effects, whereas 8% of them didn't have any knowledge. 67% of respondents indicated that they had experienced at least one side effect from a non-steroidal anti-inflammatory drugs (75% of them were mild adverse drug reactions and 7% severe adverse drug reactions) whereas 33% of them had no such reports in their pharmacies. Most participants said having non-steroidal anti-inflammatory drugs in different types of dosage forms but injection dosage form had mostly adverse drug reactions. About 85.2% of adverse drug reactions were related to gastrointestinal tract. Non-steroidal anti-inflammatory drugs were prescribed more in females (75%) and in the age group between 30 and 40 years old.

**CONCLUSION:** There is a need that patients should take advice, so that they gain useful information regarding the possible reactions of drugs associated with food and other drugs intake, side effects on health and the risk factors.

**KEYWORDS:** Ibuprofen, non-steroidal anti-inflammatory drugs prescription, pharmaceutical dosage form, adverse drug reaction.

## Introduction

Non steroidal anti-inflammatory drugs (NSAID) are medicaments with analgesic, antipyretic and anti-inflammatory effects (Hang et al. 2000). Certain NSAIDs including ibuprofen and aspirin have become accepted as relatively safe and available over the counter thus encouraging self-medication among the Albanian population for the relief the of pains, fever and inflammation. The outcome of self-medication and possible adverse drug reactions (ADR) are dependent on the quality of drug information given by the drug suppliers and their extent of use. The main ADR associated with NSAIDs relates to gastrointestinal (GI) and renal effects (Fillastre et al. 1997). These effects are dose dependent and in many cases pose serious risk of upper GI bleeding, ulcers, intestinal perforation and death. An estimated 10–20 NSAIDs associated upper GI adverse events resulting in 103,000

hospitalizations and 16,500 deaths per year in the United States have been reported (Feenstra et al. 2002). NSAIDs have also been reported to be associated with a relatively high incidence of renal ADR. The mechanism of these renal ADR is probably due to changes in renal haemodynamics through inhibition of prostaglandins. Analgesic nephropathy is less fashionable than it was 20 years ago since the dangers of analgesic mixtures became widely known and the sale of phenacetin, the most implicated drug, was banned in most countries (Matthew 1992). Moreover studies in a range of countries suggest that patients have little awareness of the risk of these medicines (Chroudhury et al.1997, Dde Broe 1998, Maxwell et al.2005).

## Methods

We carried out a cross-sectional survey study in Albanian community pharmacies. The questionnaire was attached to a social network of professional pharmacists and completed in a period of 7 months (from 19 June 2016 until 25 January 2017). 247 professionals visited the link but only 102 of them were participants (they responded the entire questionnaire). 3% invited friends to participate and none of them has shared the survey in his own profile; 18% were desktop users and 82% mobile users. Average time spent completing the survey, was 1;29 seconds.

The questionnaire, described in more detail elsewhere, included questions, like: Which over the

counter (OTC) drugs do you suggest to treat pain, what do you advise the patient when you prescribe OTC non-steroidal analgesics, do OTC non-steroidal analgesics have side effects and if they have been reported in your pharmacy, what type of adverse drug reactions are those, the form dosage of NSAIDs in your pharmacy and which of them have mostly adverse drug reactions, which system is more affected by adverse drug effects, NSAIDs are prescribed more in males or females, and in which age group NSAIDs are more prescribed.

## Results

The most frequently suggested OTC analgesics were found to be *Ibuprofen* (57.8%) and *Ketoprofen* (47%), and the least one was *Migretil* (0.9%) (figure 1).

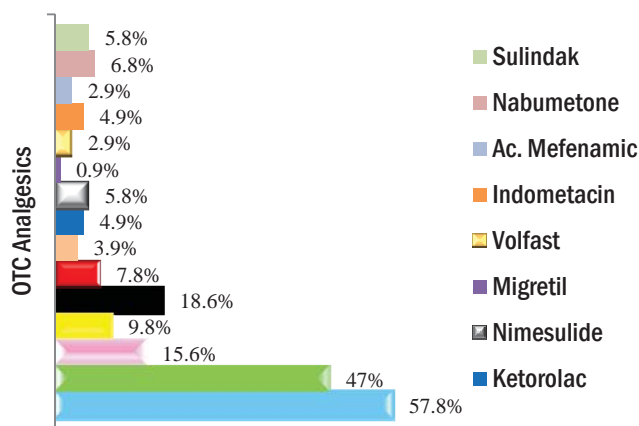


Figure 1. OTC analgesics suggested by pharmacy professionals.

86.2% of pharmacy professionals advised the maximum daily dosage, 19.6% advised taking OTC non-steroidal analgesics after meals with plenty of water, 52.9% advised not to take them with other medications (for example: ACE inhibitors, cyclosporine ore diuretics, because their use may increase the risk for nephrotoxicity). 26.4% of pharmacy professionals advised the preservation and 16.6% of them advised otherwise (figure 2).

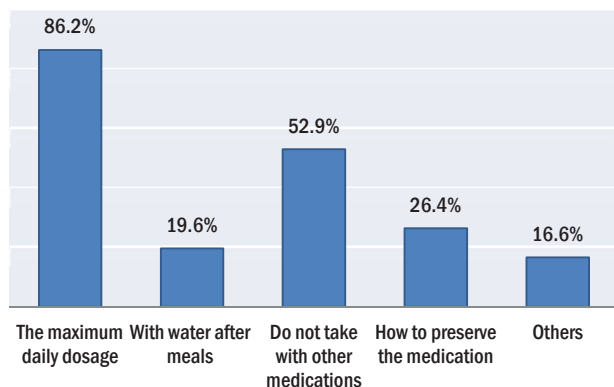


Figure 2. Advices in prescribing OTC non-steroidal analgesics.

About 80% of participants (pharmacy professionals) reported to have knowledge about the side effects, 12% did not, whereas 8% of them didn't have any knowledge (figure 3). 67% of respondents indicated that they had experienced at least one side effect from a NSAID whereas 33% of them had no such reports in their pharmacies (figure 4).

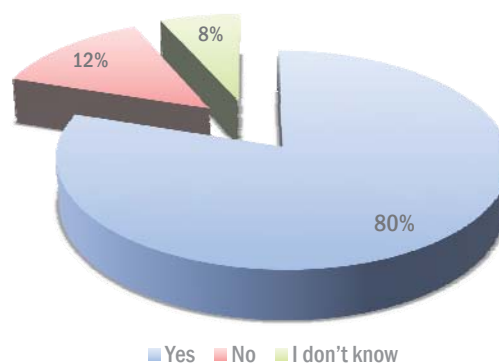


Figure 3. The knowledge about side effects.

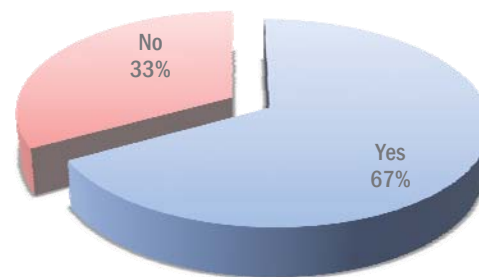


Figure 4. Percentage of respondents having/ not having experiences in their pharmacy.

Most of the respondents revealed having mild ADR in their pharmacies (75%), followed by moderate ADR (18%) and severe ADR (7%) (figure 5).

Most participants said having NSAIDs in different types of dosage forms: the tablets were mostly (96%), ointments (73.5%), injections (44.1%), pills (28.4%), pessaries (11.7%), as well as other pharmaceutical forms (28.4%) (figure 6).

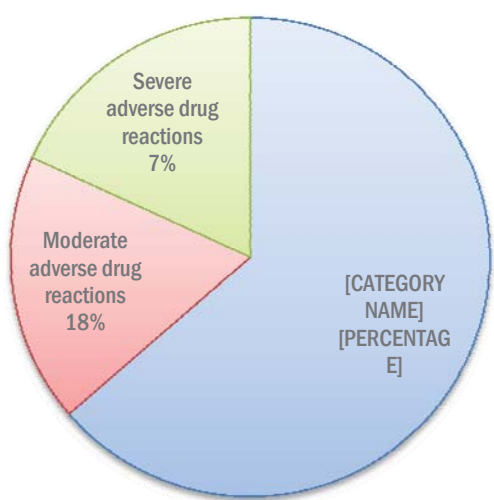


Figure 5. Type of adverse drug reactions forms of NSAIDs

Injection dosage forms were on the top of the list having adverse drug reactions (65.6%) , then tablets (43.1%), ointments (16.6%), pessaries (10.7%), pills (7.8%) and other pharmaceutical forms, non mentioned above, had less ADR (5.8%) (figure 7).

Most of the adverse drug reactions were related to gastrointestinal tract (GIT) 85.2%, to the cardiovascular system (CVS) 50%, to the urinary system (US) 36.2%, and to the other systems only 6.8% (figure 8).

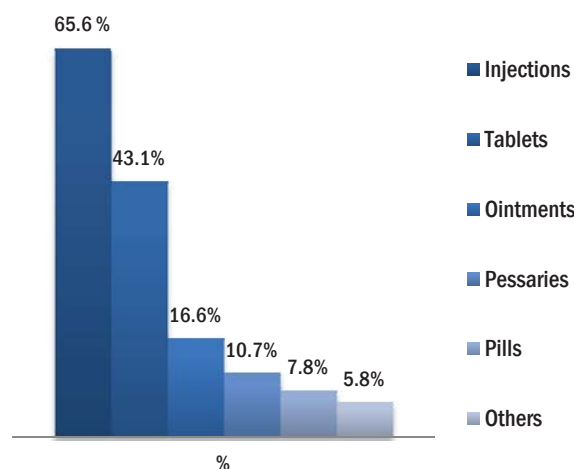


Figure 7. Pharmaceutical dosage forms and their ADR.

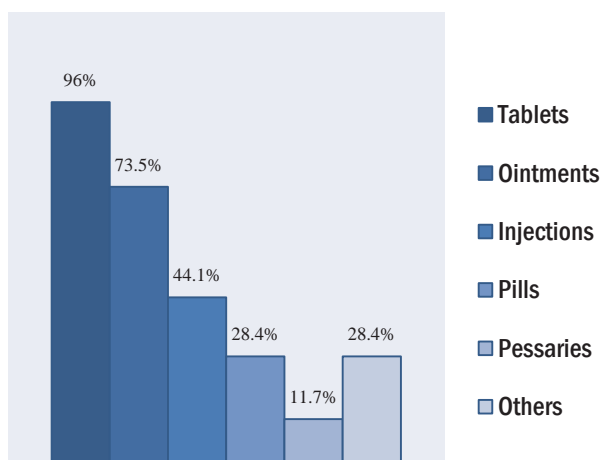


Figure 6. Pharmaceutical dosage.

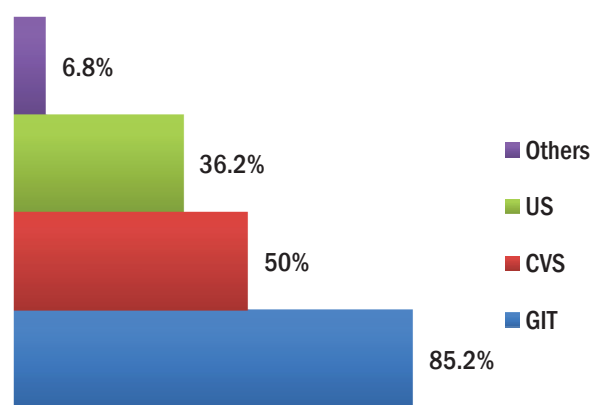


Figure 8. Evaluation of adverse drug reactions to different body systems.



NSAIDs were prescribed more in females, 75%, whereas in males, 25% (figure 9). NSAIDs were prescribed more in the age group between 30 and 40 years old, and none of those was prescribed in the age group 0-10 years old (figure 10).

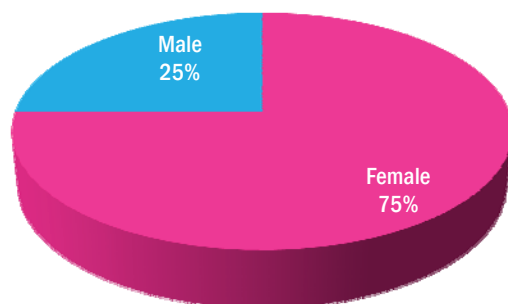


Figure 9. NSAIDs prescription in females and males.

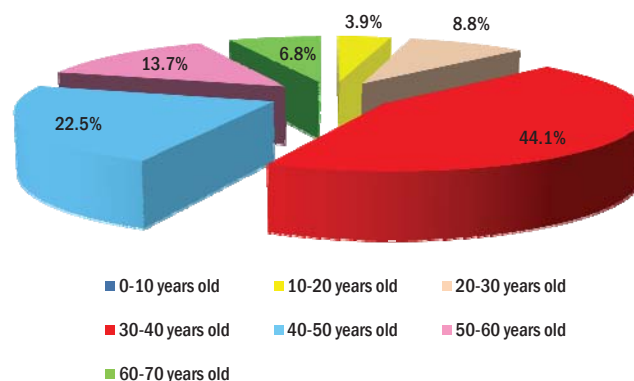


Figure 10. NSAIDs prescription according to the age groups.

## Discussions

Non steroidal anti-inflammatory drugs (NSAIDs) are primarily used for their analgesic, anti-inflammatory, and antipyretic effects, but low-dose aspirin may also be used for cardiac prophylaxy (Hillis 2002). Pain relief is a prevalent and a growing need. While there are many conditions associated with pain necessitating treatment, including migraine and dysmenorrhea, musculoskeletal pain continues to be one of the most common. In 2011 alone, it is estimated that there were 116.5 million low-back and neck acute pain cases combined in the United States, and this number is projected to grow by 10% to 128.5 million by 2021 (Buurma. et al. 2012). The recent studies have accounted NSAIDs for more than 70 million prescriptions and 30 billion nonprescription purchases annually (Wehling 2014). Available nonprescription NSAIDs include aspirin, ibuprofen, and naproxen. Ketoprofen was previously available as a nonprescription agent; however, due to decreased demand all current formulations are only by

prescription (<http://clinicalpharmacology-ip.com.proxy.campbell.edu/2008>) ([www.fda.gov/cder/ob/default.htm](http://www.fda.gov/cder/ob/default.htm).2008). This study has clearly demonstrated that OTC analgesics are consumed enormously nowadays, as it was reported the consumption of a large number of OTC analgesics by Albanian patients. It was found that Ibuprofen and Ketoprofen were consumed mostly, both as prescription and non prescription analgesics: the information from print/electronic media and relatives/friends as well as cost-effectiveness may be the reasons, as they have low cost with reasonable efficacy.

While purchasing over the counter OTC drugs, a high percentage of pharmacists, about 86.2% of them advised the maximum daily dosage, this is important to prevent side effects when over passing the daily dose. Usually elder people suffer with several diseases at one time; hence administering 5 or 6 medicines at a time. If such people use ibuprofen (NSAIDs) for pain

relief, it can be harmful for them because their body undergoes some pathological changes, so in this way they are unaware of the severe adverse effects related to NSAIDs. Such patients can suffer from hemorrhage if they are taking corticosteroids, anticoagulants and SSRIs (selective serotonin reuptake inhibitors). Albanian pharmacists give their contribution in the awareness of the patients about the risk of drug interaction, as 52.9% of them advised not to take OTC non steroidal drugs with other medication.

The study revealed that almost 80% of pharmacy professionals had knowledge about the side effects of NSAIDs because most of them had experienced this in their pharmacies. Patients seem to be careful in reporting their side effect cases to the professionals, owing to the possibility of taking advice on continuation of the treatment.

About three quarters of ADR were mild and only 7% of them were severe, this indicates that patients are cautious in taking medicines and are always interested to receive information about their medications.

Several frustrations about the GIT events of NSAIDs (about 85.2% of them) were likely produced among Albanian patients; this due to the fact that patients were not advised to take their medication after meals with plenty of water, as well as they were not asked whether they suffered from any gastrointestinal diseases. Similar studies reported that between 1998 and 2001, the FDA's Adverse Event Reporting System identified 279 cases of gastrointestinal bleeding associated with the use of nonprescription NSAIDs. Of these cases, 197 were attributed to ibuprofen, ketoprofen, or naproxen use, and 82 were attributed to aspirin use. The following risk factors for gastrointestinal bleeding with NSAID use, either prescription or nonprescription, have been identified, as: use of concomitant medications, age >60

years, high dosage, previous history of gastrointestinal bleeding, concomitant use of alcohol and/or tobacco [www.fda.gov/bbs/topics/news/2008]. Current literature suggests that NSAIDs do not increase the risk of first-occurrence heart failure, but do substantially increase the risk of relapse of pre-existing heart failure, particularly in patients using concomitant diuretic therapy (Hillis 2002] (Rodriguez et al.2003). Approximately 1% to 5% of NSAID users may experience renal effects, though it is uncommon for nonprescription NSAIDs to cause acute renal failure (Hulisz et al. 2008). However, caution should be taken in individuals with decreased effective circulating volume, such as those with CHF, hepatic cirrhosis, chronic renal disease, or dehydration (Peterson 2005). In studies, the risk of serious GI bleeding, CV, and renal adverse events increases in a dose-dependent manner (Castellsague J. et al. 2012: McGettigan et al. 2011: Huerta C. et al. 2005). Investigators found a 2- to 3-fold reduction in serious GI adverse events like bleeding, perforation, and ulceration with use of low rather than high NSAID doses (Lewis. et al. 2002).

NSAIDs circulated in different dosage forms in Albanian community pharmacies, the tablets were mostly prescribed, thus due to the best compliance and the large marketing alternatives. Injections dosage forms of NSAIDs had greater adverse drug reactions because of their greater bioavailability compared to the other forms.

This study found that NSAIDs analgesics were the mainstay for pain relief in Albanian females, due to their awareness of health care needs. NSAID prescription revealed to be 44.1% in the group age between 30 to 40 years old, which is the average age of the Albanian population of higher work efficiency.

## Conclusions

The questionnaire was attached for several months but only 41.2% of pharmacists were participants (participants were less than half of those who had visited it). Although pharmacists are usually the custodian of drugs and are charged with the responsibilities of delivering safe and efficacious medicines to the public, their interest to offer information about NSAIDs prescription was low. There are different non steroidal anti-inflammatory dosage forms circulating in Albanian pharmaceutical market, such as: tablets, injections, syrup, pills etc, being useful as prescription or non prescription analgesics. There is a need that patients should take advice, so that they obtain information regarding the possible reactions of drugs with food and other drugs, side effects on health and the risk factors. It should be strongly noted that the pharmacists' role is vital in patient-medication education issue, as many complained of the insufficient counseling, especially

regarding the SEs, unclear handwriting and inadequate labeling.

Further studies evaluating knowledge of non steroidal anti inflammatory analgesics among Albanian patients should be conducted to further correlate the relationship between analgesics awareness and health care service provided by pharmacists.

### Limitation

The limitation of this survey- based study was its small sample size. However, such a study can be carried out involving a larger sample size.

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