

DOI: 10.5455/msm.2017.29.138-142

Received: 23 February 2017; Accepted: 20 May 2017

© 2017 Dajana Roshi, Ervin Toçi, Genc Burazeri, Peter Schröder-Bäck, Helmut Brand

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ORIGINAL PAPER

Mater Sociomed. 2017 Jun; 29(2): 138-142

Users' Knowledge About Adverse Effects of Non-steroidal Anti-inflammatory Drugs in Tirana, Albania

Dajana Roshi^{1,2}, Ervin Toçi³, Genc Burazeri^{1,3}, Peter Schröder-Bäck¹, Ledjan Malaj⁴, Helmut Brand¹

¹Department of International Health, School CAPHRI, Care and Public Health Research Institute, Maastricht University Maastricht, The Netherlands

²National Centre for Drugs and Medical Devices, Tirana, Albania

³Department of Public Health, Faculty of Medicine, Tirana Medical University, Tirana, Albania.

⁴ Department of Pharmacy, Faculty of Medicine, Tirana Medical University, Tirana, Albania

Corresponding author: Dajana Roshi, MSc. National Centre for Drugs and Medical Devices, Dibra Street No. 359/1, Tirana, Albania. Telephone: 0035569565614; E-mail: dajana.roshi@yahoo.com

ABSTRACT

Aim: To assess the level of knowledge of the adult users of non-steroidal anti-inflammatory drugs (NSAIDs) regarding their side effects and the socio-demographic factors associated with the use of these drugs in the adult population of Albania.

Methods: This was a cross-sectional study including a representative sample of 199 individuals aged ≥ 18 years (77% women; overall mean age: 30.3 ± 10.0 years; overall response rate: 90%) who were users of NSAIDs recruited in ten different pharmacies in Tirana municipality during April-May 2015. A self-administered questionnaire contained basic socio-demographic information and questions about NSAIDs use, their types, participants' knowledge about NSAIDs side effects and their interaction with other drugs. **Results:** In 56% of the cases, NSAIDs were taken by participants' own decisions, whereas in about 29% of the cases these drugs were prescribed by physicians. Acetaminophen, ketoprofen and ibuprofen were the most frequently used NSAIDs. Overall, 51% of participants thought NSAIDs could cause allergic reactions, whereas one third or fewer were aware of each of the following side effects: upper and lower gastrointestinal bleeding, hypertension, gastritis, kidney failure, myopathy, osteoporosis. About one third of participants were aware of NSAIDs-other drug interactions, whereas some of them were already taking contraindicated drugs. No significant differences were noticed regarding sex, age, educational level, employment status and marital status, with very few exceptions. **Conclusion:** Our findings indicate limited knowledge about NSAIDs side effects and their interaction with other drugs among the Albania adult population, which is a cause of concern.

Keywords: adverse health effects, Albania, knowledge, NSAIDs, prevalence.

1. INTRODUCTION

The most commonly used drugs, non-steroidal anti-inflammatory drugs (NSAIDs), despite their proven effectivity, could exhibit a wide range of adverse health effects to its users, with upper gastrointestinal bleeding and perforation being the most common ones (1-3). For example, a study reported a 5.5 fold higher incidence rate of upper gastrointestinal bleeding among persons exposed to NSAIDs compared to those non-exposed to them (1). Other studies suggest that use of NSAIDs could also increase the risk of lower gastrointestinal bleeding and perforation in a similar way to upper gastrointestinal bleeding, with advanced age, previous history of peptic ulcer and prolonged use being the major risk factors (2). Other adverse health effects of NSAIDs use include hypertension, renal dysfunction (acute kidney injury, reduced glomerular filtration rate, heart failure and increased risk of death, adverse cardiovascular events including myocardial infarction and stroke (4). Prolonged use of NSAIDs may also alter and/or impair muscle growth and development (5).

In addition, the use of NSAIDs is a major factor for hospital admission, mainly due to their side effects. A large study involving approximately twenty thousand hospitalized patients reported that 6.5% of all admissions were due to some adverse drug reactions and the most common drugs involved in adverse drug reactions' hospitalization were due to NSAIDs (6).

NSAIDs could be taken via medical prescription but they are available over-the-counter as well (7). Because NSAIDs are easily approachable, the issue of users' knowledge about their adverse health effects and potential risks becomes very relevant. This topic has been of scientific interest

and has been studied in different settings and populations. In Albania, as in other countries, patients or health clients have access to NSAIDs according to their needs. However, there is no information whether health system users in Albania have any knowledge about adverse health effects of NSAIDs in general and/or knowledge about their particular side effects.

In this context, the aim of this study was to assess the proportion of NSAIDs users in Albania that are aware of the general and particular side effects of these drugs and the basic socio-demographic factors associated with NSAIDs use.

2. METHODS

This was a cross-sectional study conducted in Tirana during April-May 2015.

Study population

Based on a priori calculations, a sample size of 194 individuals was required to assess the association of the level of knowledge about adverse effects of NSAIDs with selected socio-demographic characteristics of study participants. We decided to recruit 220 individuals in order to increase the study power.

Hence, 220 consecutive users of NSAIDs were invited to participate in ten pharmacies of Tirana which were selected at random. A client was eligible to participate whether he/she was aged ≥ 18 years and admitted to use NSAIDs, regardless of taking them with a medical prescription or over-the-counter.

Of 220 consecutive NSAIDs users who were invited in the survey, 199 individuals agreed to participate in the study (response rate: $199/220=90.4\%$).

Data collection

Data were collected via a self-administered questionnaire. The first part of the questionnaire contained basic socio-demographic information about study participants (sex, age, place of residence, educational level, employment status and marital status).

The second part of the questionnaire asked the participants to list the particular NSAIDs they knew, the reasons for using them, and whether they were aware of a list of particular side effects of NSAIDs. Another question inquired about the concomitant use of other medications (in order to indirectly understand whether the users had information about drug interactions). Finally, we asked the participants to reveal who oriented them to take these particular drugs (doctors, pharmacists, or other health professionals).

Statistical analysis

The data collected from 199 questionnaires were entered in Excel and subsequently exported to Statistical Package for Social Sciences (SPSS) software, version 17.0. All data analysis was carried out using SPSS 17.0.

We reported absolute numbers and respective percentages. The proportion of study subjects reporting to have knowledge about NSAIDs adverse health effects was calculated and reported. For the comparison of categorical variables we used the chi-square test.

3. RESULTS

The basic socio-demographic characteristics of study participants are displayed in Table 1. Mean age of study participants was 30.3 years, ranging from 20 years to 56 years. Regarding the gender, 76.9% of participants were females.

More than three-quarters of participants (82.4%) had university education. Furthermore, 44.7% of individuals were employed at the time of the survey and 74.4% were single (Table 1).

Variable	Number of subjects	Percentage
Total	199	100.0
Age (mean \pm SD)	30.3 \pm 10.0	
Gender		
Male	46	23.1
Female	153	76.9
Education level		
High school	35	17.6
University	164	82.4
Employment status		
Employed	89	44.7
Unemployed	13	6.5
Student	96	48.2
Retired	1	0.5
Marital status		
Single/widowed	148	74.4
Married	51	25.6

Table 1. Baseline socio-demographic characteristics of study participants

In 10.1% of the cases, the use of NSAIDs was suggested by the family members, in 14.6% of the cases by the pharmacist, in 14.1% by family doctor, in 3% and 2% of the cases by marketing and other health professionals, respectively, whereas in 56.3% of the cases NSAIDs were based on partici-

Type of NSAIDs*	Number of subjects	Percentage
Advil	11	5.7
Advil gel	2	1.0
Analgin	1	0.5
Aspirin	9	4.6
Aulin	1	0.5
Brufen	3	1.5
Caffetin	1	0.5
Caffetin menstrual	1	0.5
Daleron	6	3.1
Depon	9	4.6
Depon efervescent	1	0.5
Eudorlin	3	1.5
Fervex	1	0.5
Gripostad	2	1.0
Ibuprofen	13	6.7
Ipren	1	0.5
Catalgin	1	0.5
Oki	30	15.5
Paracetamol	70	36.1
Ponstan	2	1.0
Postan	2	1.0
Rapidol s	3	1.5
Rhinostop	4	2.1
Sulidamore	1	0.5
Tachifludec	2	1.0
Tachipirin	1	0.5
Tylol hot	11	5.7
None	2	1.0

Table 2. Distribution of study subjects by type of NSAIDs used. * Information was missing for five individuals.

pants' own decisions. The most common reasons for taking NSAIDs included flu (21.6%), headache (18.1%) and various types of pain (15.6%); however, in 37.2% of the cases NSAIDs were taken even in the absence of specific health complaints (data not shown in the tables).

Table 2 shows the types of NSAIDs used by the respondents. The most commonly used NSAID was paracetamol with 36.1% of respondents reporting it, followed by Oki (15.5%), ibuprofen (6.7%), Advil and Tylool hot (5.7% of cases, each).

Table 3 displays information about participants' knowledge regarding NSAIDs side effects. Slightly more than half of participants (51.3%) were aware that NSAIDs can cause at least one type of adverse health effects, whereas the remaining 48.7% were not aware of such attributes of using NSAIDs. About half of participants (51.3%) knew that NSAIDs can cause allergy, whereas much lower proportions of individuals were aware of other, quite common, adverse effects of NSAIDs including gastrointestinal ulcer (Table 3).

There were no significant differences in the proportion of subjects being aware of specific side effects of NSAIDs by age, sex, education, employment status and marital status (with the exception that significantly higher proportions of single persons compared to married ones were aware of myopathy, allergy, and cardiotoxicity side effects of NSAIDs).

Variable	Number of subjects	Percentage
NSAIDs can cause gastrointestinal ulcer		
Yes	60	30.2
NSAIDs can cause duodenal ulcer		
Yes	30	15.1
NSAIDs can cause myopathy		
Yes	25	12.6
NSAIDs can cause kidney failure		
Yes	54	27.1
NSAIDs can cause osteoporosis		
Yes	9	4.5
NSAIDs can cause allergy		
Yes	102	51.3
NSAIDs can cause cardiotoxicity		
Yes	36	18.1
NSAIDs can cause gastritis		
Yes	66	33.2
NSAIDs can cause hypertension		
Yes	63	31.7

Table 3. Percentage of individuals who were aware about selected NSAIDs side effects

Table 4 displays information about participants' knowl-

Variable	Number of subjects	Percentage
NSAIDs-anticoagulants interaction		
Yes	63	31.2
NSAIDs-diuretics interaction		
Yes	34	17.1
NSAIDs-NSAIDs interaction		
Yes	67	33.7
NSAIDs-anti-ulcer drugs interaction		
Yes	46	23.1
NSAIDs-antiviral drugs interaction		
Yes	53	26.6

Table 4. Percentage of individuals who were aware of selected NSAIDs drug interactions

edge regarding the interaction of NSAIDs with other drugs taken concomitantly. About 31% of participants knew that NSAIDs may interact with anticoagulant drugs; 17% knew about interactions with diuretics; about one third knew about NSAIDs-NSAIDs interaction; and about one quarter were aware that NSAIDs may interact with anti-ulcer and antiviral drugs (Table 4). In general, there were no significant differences in the proportion of subjects being aware of NSAIDs-other drugs interactions by age, sex, education, employment status and marital status.

Lastly, 10% of participants declared that they were taking other drugs while taking NSAIDs. Some of these drugs are contraindicated to be taken together with NSAIDs, such as antihypertensive drugs (enap and other antihypertensive drugs) and salospir (aspirin).

4. DISCUSSION

The current study provided interesting data about clients' knowledge of adverse health effects accompanying the use of NSAIDs in a sample of adults in Tirana municipality, Albania, during the year 2015. To the best of our knowledge, this is the first study assessing the level of knowledge about adverse health effects of NSAIDs in this transitional country of Southeastern Europe.

Our findings suggest that the most used NSAID types are those containing the following active ingredients: acetaminophen, ketoprofen, and ibuprofen. In general, low proportions of the Albanian adult population are aware of specific adverse health effects of NSAIDs. The most well-known side effect was allergic reaction, for which more than half of participants were aware of. On the other hand, one third or less of study participants were aware that taking NSAIDs could increase the risk of upper and lower gastrointestinal bleeding, gastritis and hypertension, and very low proportions were aware that NSAIDs may cause kidney failure, cardiotoxicity, myopathy, or osteoporosis. There was evidence of a similar situation regarding users' knowledge about NSAIDs and other drugs' interactions, with about one third or fewer individuals being aware that the combination of NSAIDs with other anticoagulants, diuretic drugs, other NSAIDs, anti-ulcer drugs and antiviral drugs might be contraindicated. We also found that in some cases patients were taking NSAIDs together with other drugs contraindicated to be used with NSAIDs, such as anti-hypertensive drugs and generic forms of aspirin. In the first instance, the combination NSAIDs-antihypertensive drugs could lower the hypotensive effective of the later, whereas the combination NSAIDs-aspirin could boost adverse health effects of NSAIDs. Interestingly, more than half of individuals using NSAIDs were taking them on their own, and only in about 28% of the cases NSAIDs were recommended by a doctor and/or a pharmacist.

The topic of patients' knowledge about adverse health effects of NSAIDs has also been studied by the international scientific community. A study among 120 patients attending the rheumatology clinic in a hospital in Malaysia and using NSAIDs for at least three months, reported that more than half of the participants were aware of various side effects of NSAIDs, with significantly more females than males being aware of such adverse effects (8). Also, low socioeconomic status and educational level were associated with lower pro-

portions of patients aware of side effects of NSAIDs (8). Such results are very similar to our findings, except for the significant association with sex and educational level.

A study among 1445 pharmacy users (mean age: 42.9 years) in Mexico reported that 412 individuals (or, 28.5% of them) purchased analgesic drugs. Among those who purchased analgesics, only 11.2% were aware that these drugs could cause an adverse health effect (9). Moreover, urban residence and taking medicines for chronic conditions were significantly associated with higher proportions of individuals being aware of potential side effects of drugs (9). In our study, the proportion of users being aware of specific side effects of NSAIDs was also low (30% or less), which makes our results comparable to those reported in the international literature. The only exception regards allergy as a side effect of NSAIDs, for which more than half of participants in our study were aware of. However, this could be attributed to the fact that the population in general is aware that all drugs could cause some forms of allergy or this could be a misconception of the Albanian population since the World Allergy Organization states that "drug allergy is relatively uncommon" (10). However, a recent literature review suggested that NSAIDs are the most common drugs involved in drug hyper-sensitivity reactions during childhood and adolescence (11), and probably these early experiences may translate into knowledge about allergic reactions of drugs later in life.

There is a general opinion that NSAIDs are safe to use. A cross-sectional study in Thailand including 474 individuals visiting outpatient orthopedic clinics during the study period and being prescribed NSAIDs for at least one month, reported that the overall perceived risk of using NSAIDs was low (12). Another study exploring the perceived risk regarding the use of different classes of drugs among emergency department patients revealed that NSAIDs (including aspirin) were the most commonly prescribed drugs and they were regarded as the safest drugs, together with proton pump inhibitors, whereas corticosteroid drugs were regarded as the most toxic ones (13). Interestingly, patients' opinion was just contrary to the opinion of medical professionals who regarded NSAIDs as the most toxic drugs (13), compared to warfarin and corticosteroids, even though the perceived risk difference was fairly small. The widespread opinion among patients, users, or community members that the use of NSAIDs is accompanied with low toxicity or it is relatively safe (compared to other types of drugs) could boost their use as well as the lack of being interested to know about their potential adverse health effects. As the international literature suggests, patients often have inaccurate knowledge about drug adverse health effects and patients' or users' knowledge and misconception about drugs may play a considerable role in the way the drugs are used, effectivity of their use, success of treatment and making informed treatment decisions (14).

Scientific research shows that providing patients or users with information about drugs and their side effects, or finding ways to increase their knowledge about these topics could be an effective way to use drugs in a more appropriate and safe manner, such as avoiding simultaneous use of contraindicated drugs, detecting promptly adverse effects, knowing when to contact medical services, and the like (15). A case-control study involving patients suffering from acute gastrointesti-

nal bleeding while taking a NSAID and matched controls, suggested that patients uninformed of NSAIDs side effects were significantly less likely to stop using them even when bleeding starts, because they were unaware that bleeding is a side effect of NSAIDs, thus increasing their risk of acute gastrointestinal bleeding (16). The authors concluded that, if these patients would have stopped the use of NSAIDs as soon as the bleeding occurred, then they could have lowered their risk of acute gastrointestinal bleeding (16).

5. CONCLUSION

The present survey, involving a representative sample of pharmacy users in Albania taking NSAIDs, suggested that most of the individuals were not aware of side effects of NSAIDs, or their interactions with other classes of drugs. However, study subjects could correctly mention a considerable number of specific drugs pertaining to this class. However, more than half of participants declared that they took NSAIDs based on their opinion and only in about 30% of cases a physician and/or a pharmacist was involved, implying that the role of medical professionals in prescribing NSAIDs and their use in community is rather limited. The most commonly used NSAIDs were those containing the following active ingredients: acetaminophen, ketoprofen and ibuprofen.

In conclusion, there is limited knowledge about NSAIDs side effects and their interaction with other drugs among the Albania general population. There is an urgent need to educate the general public in Albania about NSAIDs in general, their appropriate use and the respective adverse effects.

• **Conflicts of interest:** None declared.

REFERENCES

- Hallas J, Lauritsen J, Villadsen HD, Gram LF. Nonsteroidal anti-inflammatory drugs and upper gastrointestinal bleeding, identifying high-risk groups by excess risk estimates. *Scand J Gastroenterol.* 1995; 30: 438-44.
- Sostres C, Gargallo CJ, Lanas A. Nonsteroidal anti-inflammatory drugs and upper and lower gastrointestinal mucosal damage. *Arthritis Res Ther.* 2013; 15 Suppl 3: S3.
- Mellemkjaer L, Blot WJ, Sørensen HT, Thomassen L, McLaughlin JK, Nielsen GL, Olsen JH. Upper gastrointestinal bleeding among users of NSAIDs: a population-based cohort study in Denmark. *Br J Clin Pharmacol.* 2002; 53: 173-81.
- Park KE, Qin Y, Bavry AA. Nonsteroidal anti-inflammatory drugs and their effects in the elderly. *Aging Health.* 2012; 8: 167-77.
- Schoenfeld BJ. The use of nonsteroidal anti-inflammatory drugs for exercise-induced muscle damage: implications for skeletal muscle development. *Sports Med.* 2012; 42: 1017-28.
- Pirmohamed M, James S, Meakin S, Green C, Scott AK, Walley TJ, Farrar K, Park BK, Breckenridge AM. Adverse drug reactions as cause of admission to hospital: prospective analysis of 18 820 patients. *BMJ.* 2004; 329: 15-9.
- Thomas J, Straus WL, Bloom BS. Over-the-counter nonsteroidal anti-inflammatory drugs and risk of gastrointestinal symptoms. *Am J Gastroenterol.* 2002; 97: 2215-9.
- Sulaiman W, Seung OP, Ismail R. Patient's Knowledge and Perception Towards the use of Non-steroidal Anti-Inflammatory Drugs in Rheumatology Clinic Northern Malaysia. *Oman Med*

- J. 2012; 27: 505-8.
9. Wirtz VJ, Taxis K, Dreser A. Pharmacy customers' knowledge of side effects of purchased medicines in Mexico. *Trop Med Int Health*. 2009; 14: 93-100.
 10. Thong B, Vervloet D. Drug allergies. Updated 2014. Available at: http://www.worldallergy.org/professional/allergic_diseases_center/drugallergy/. Last accessed: 27 April 2017.
 11. Blanca-López N, Cornejo-García JA, Pérez-Alzate D, Pérez-Sánchez N, Plaza-Serón MC, Doña I, Torres MJ, Canto G, Kidon M, Perkins JR, Blanca M. Hypersensitivity Reactions to Nonsteroidal Anti-inflammatory Drugs in Children and Adolescents: Selective Reactions. *J Investig Allergol Clin Immunol*. 2015; 25: 385-95.
 12. Phueanpinit P, Pongwecharak J, Krska J, Jarernsiripornkul N. Knowledge and perceptions of the risks of non-steroidal anti-inflammatory drugs among orthopaedic patients in Thailand. *Int J Clin Pharm*. 2016; 38: 1269-76.
 13. Cullen G, Kelly E, Murray FE. Patients' knowledge of adverse reactions to current medications. *Br J Clin Pharmacol*. 2006; 62: 232-6.
 14. Jose J, Jimmy B, Al-Mamari MN, Al-Hadrami TS, Al-Zadjali HM. Knowledge, Beliefs and Behaviours Regarding the Adverse Effects of Medicines in an Omani Population: Cross-sectional survey. *Sultan Qaboos Univ Med J*. 2015; 15: e250-6.
 15. Brounéus F, Macleod G, Maclelland K, Parkin L, Paul C. Drug safety awareness in New Zealand: Public knowledge and preferred sources for information. *J Prim Health Care*. 2012; 4: 288-93.
 16. Wynne HA, Long A. Patient awareness of the adverse effects of non-steroidal anti-inflammatory drugs (NSAIDs). *Br J Clin Pharmacol*. 1996; 42: 253-6.