

# Basic Knowledge of Non-steroidal Anti-inflammatory Drugs among Saudi Community

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## ABSTRACT

**Objectives:** The use of non-steroidal anti-inflammatory drugs (NSAIDs) is a rising problem in the modern medical world. NSAIDs are easily available over the counter and accessible to the public. As such, we have seen a need to assess the knowledge and perception of public use of NSAIDs. In this study, we aimed to explore the knowledge of public use of NSAIDs among the participants from major metropolitan areas in the Kingdom of Saudi Arabia. **Methodology:** This is a cross-sectional study conducted for a period of 6 months using a questionnaire, which was developed to evaluate the use of NSAIDs in several major metropolitan areas among the Kingdom of Saudi Arabia. This questionnaire was randomly distributed digitally using the Survey Monkey system to individuals in the Kingdom of Saudi Arabia via social networking sites. The survey collected demographic data, age, education, socioeconomic status. The patient knowledge about the administration of NSAIDs status with meals, side effects, expiry date, resource information and related knowledge issues. The data were tabulated and analyzed by using SPSS version 13. **Results:** In this study, a total of 3000 patients received the questionnaire and of them, 500 responded, which means the response rate was 16.6%. The highest percentage of responders were in the age group of 40 years and above (52.63% n=263). Majority of the responders were those who had a university degree (66.20% (n=329)). According to our results, 63.31% (n=316) of the participants they knew how to take NSAIDs, i.e. with or without food is essential. Approximately 45% (n=224) of the participants knew about the possible side effects of NSAIDs. Half of the study population thought that expiry date is the time by which drugs become ineffective, whereas 33.81% (n=169) of the participants thought that drugs become toxic after this time. Around 61.87% (n=309) of the participants obtained information about NSAIDs from the package insert, whereas 32.45% (n=162) of the participants obtained information from the internet. **Conclusion:** The primary knowledge regarding NSAIDs is inadequate in the Kingdom of Saudi Arabia. Patient education about NSAIDs is highly recommended at healthcare institutions to prevent drug-related mistake, reduce economic burden on the healthcare system in Saudi Arabia.

**Key words:** Knowledge, Non-steroidal Anti-inflammatory drugs, Patient, Saudi Arabia.

## INTRODUCTION

The General Administration of Pharmaceutical Care started to function after its implementation in Saudi Arabia in 2002. It released the pharmacy strategic plan with recommendations of pharmaceutical care implementation at Ministry of Health (MOH) institutions. The primary tool of pharmaceutical care concept was monitoring and prevention of NSAIDs. The estimated average cost of drug-related problems in the Kingdom of Saudi Arabia was approximately 122 billion USD with 23% hospital admissions and 12% critical care admissions and 24% drug-related deaths.<sup>1,2</sup> Some of the medications may contribute to various drug-related problems, such as antibiotics and painkillers. Painkillers are responsible for harmful drug-drug interactions, medication without indication, drug noncompliance and adverse drug reactions.<sup>2</sup> Less knowledge regarding the use of NSAIDs might cause drug-related problems. Wilcox *et al.* (2005) studied the use and public perception of the Over the Counter (OTC) pain relievers with a focus on NSAIDs. According to their results, 30% of the participants believed that there was less risk with OTC analgesics and 44% of the participants consumed more than the recommended dosage on the label.<sup>3</sup> In the US, two surveys were conducted with

a total of 9062 respondents: the Roper surveys, conducted in 1997 and the National Consumers League (NCL) survey, conducted in December 2002. These surveys were established primarily for assessing people's attitudes toward NSAIDs and OTC analgesics. According to these surveys, ibuprofen-based drugs were the most frequently used OTC (57% Roper, 33% NCL). In the Roper survey, 17% of the participants used NSAIDs, with 38% using both prescription and OTC drugs. Forty-six percent of the exclusive OTC users believed that OTC was safer, whereas 56% of the exclusive users of prescription NSAIDs thought that NSAIDs are safe and 60% and 29% of the exclusive OTC users were neither aware nor believed that they were at risk of side effects from NSAIDs, respectively.

Twenty-six percent of the participants used more than the recommended dosage on the label, whereas 22% of the participants believed that warning symptoms would precede any NSAID-induced complications. In the NCL survey, 83% of the participants had used an OTC drug in the previous year, with 15% reporting daily use and 49% were not concerned about the potential side effects of OTC drugs.<sup>3</sup> Abahussain and Taha (2007) studied the knowledge and attitude

of female school students on the use of medications in Eastern province, Saudi Arabia. Their results showed that 11.5% of the students used medications under medical supervision. Moreover, 43% of them used paracetamol as the painkiller during menstruation and 43.5% of them had used antibiotics during the previous year. Their results also showed that age of the user and their knowledge regarding the medication's side effects were the main variables that were found to be significantly associated with the use of antibiotics and OTC medications. It was also reported that self-administration of medication was widespread among adolescent girls. The authors recommend to educate the population to improve the knowledge and medicines used in their schools.<sup>4</sup> In Mexico, Balbuena et al. (2009) studied the use of self-medication in older urban Mexicans. A total of 245 elderly participants in the age group of more than 65 years participated in their study. According to their results, older adults ( $n=131$ ) were consuming medications without prescription during the last 30 days. They were consumed more frequently by the older adults or those with a low level of education. The NSAIDs were 36.2% and antihistamines were 12.6%.<sup>5</sup> In this study, we aimed to explore the knowledge regarding the public use of NSAIDs among participants from major metropolitan areas in Saudi Arabia.

## METHODS

This is a cross-sectional study conducted for a period of 6 months. A questionnaire was developed to evaluate the use of NSAIDs in several major metropolitan areas of the Kingdom of Saudi Arabia. The questionnaire was tested on 32 patients and was redesigned. This questionnaire was randomly distributed digitally using the Survey Monkey system to individuals via social networking sites. The questionnaire consisted of 24 questions. The sample size was calculated using Raosoft method assuming a population of 20,000 individuals, with a margin of 5% error. A response rate of 50% and 95% confidence interval was assumed.<sup>6</sup> A sample size of 377 individuals was determined. Participants' in the age group of 18–65 years were included in this study. Children and older persons who were above 65 years were excluded from this study. The survey consisted of demographic data, age, education and socioeconomic status, patient knowledge about administration status of NSAIDs i.e before or after the intake of food, side effects, expiry date, resources information and related issues. The survey was developed using the Survey Monkey system and a web link was distributed via social media to a convenient sample of participants from July to November 2016. Data were tabulated and analyzed by using SPSS version 13 software.

## RESULTS

In this study, the survey was distributed to 3000 patients and a total of 500 participants responded to the questionnaire, making the response rate as 16.6%. Of the total responders, participants in the age group of above 40 years represented the highest percentage (52.63%,  $n=263$ ) and the participants in the age group of 26–40 years represented the second highest percentage (42.11%,  $n=210$ ). Most of the responders had a university degree (66.20%,  $n=329$ ), followed by high school and diploma holders with a percentage of 21.73% ( $n=108$ ) and intermediate degree with a percentage of 1.41% ( $n=7$ ). The least percentage of participants were not educated (0.40%,  $n=2$ ). Around 62% of the participants were employed and the rest were not. Approximately 44% ( $n=221$ ) of the participants earned a monthly income of above 15,000 Saudi Riyals (SRs) per month; followed by those who earned between 7000 and 15,000 SRs (33.60%,  $n=165$ ). Participants who earned a salary ranging from 2000 to 7000 SR and less than 2000 SRs were approximately 17% ( $n=85$ ) and 5.87% ( $n=29$ ), respectively (Table 1).

According to our results, 63.31% ( $n=316$ ) of the participants knew how to take their NSAID medication, i.e. before or after the intake of food,

whereas 6.90% ( $n=34$ ) did not know about this information. Around 25.15% ( $n=149$ ) of the participants knew that some medicines have to be taken with food only. The results showed that around 45% ( $n=224$ ) of the participants knew about the side effects of the medication and, whereas 38.83% ( $n=194$ ) knew some information and 14.89% ( $n=74$ ) did not know, moreover 1.41% ( $n=7$ ) of the participants did not even care about this information. Half of the study population thought that expiry date is the time in which drugs become ineffective; whereas 33.81% ( $n=169$ ) of the participants thought that drugs become toxic at this time. According to our results 61.87% ( $n=309$ ) of the participants obtained information about their medications from package insert, whereas 32.45% obtained from internet (Table 2). The analysis of relationship between the knowledge of side effects of NSAIDs and education level of the participants, we found that participants with intermediate level of education were less likely to know about the side effects of NSAIDs they were using. However, the participants with college level of education were more likely to know about the side effects of their medication. Moreover, half of the participants in postgraduate level of education knows the side effects of their medication. After analyzing the data statistically, we found a significant correlation between the level of education and knowledge regarding the side effects of NSAIDs ( $p$ -value $<0.035$ ). However, the conditions to use the chi-square test were not met as more than 20% of the cells had expected values less than 0.05. By studying the level of education and the methods to obtain information regarding NSAIDs showed that most of the individuals in all the three groups (intermediate level, college level and postgraduate level of education) obtained their information from the package insert with a significant difference ( $p$ -value $<0.000$ ).

## DISCUSSION

The primary aim of this study was to evaluate the knowledge of NSAIDs in several major metropolitan areas in the Kingdom of Saudi Arabia. Our

**Table 1: Sociodemographic characteristic of the respondents.**

Age (years)	<i>n</i> (%)
15-25	27 (5.26%)
26-40	210 (42.11%)
>40	263 (52.63%)
The education level in the Participants	
Education level	<i>n</i> (%)
University	329 (66.20%)
High school education	108 (21.73%)
Intermediate	7(1.41%)
Without	2 (0.40%)
Employment status of participants	
Employment	<i>n</i> (%)
Yes	61.82%
No	38.18%
Monthly income distribution among participants	
Monthly Income (SR)	<i>n</i> (%)
<2000	29 (5.87%)
2000-7000	85 (17%)
7000-15000	165 (33.6%)
>15000	221 (43.52%)

**Table 2: The knowledge of non-steroidal anti-inflammatory drugs.**

Items	Number	Percentages
The information about how to take your medication with or without food		
Yes	316	63.20%
No	34	6.80%
I know some information	149	29.80%
I do not have the interest to know any information	1	0.20%
Answered questions	500	
Skipped questions	0	
The information about medication side effects and what it can cause from diseases		
Yes	244	48.80%
No	74	14.80%
I know some information	175	35.00%
I do not have the interest to know any information	7	1.40%
Answered questions	500	
Skipped questions	0	
Knowledge about the meaning of expiry date of medications		
It is the time that the medication becomes toxic	168	33.60%
It is the time that the medication became ineffective	255	51.00%
It is the time that there will be a change in the smell, color and or taste of the medication	33	6.60%
I don't know what is the meaning of medication expiry date	44	8.80%
Answered questions	500	
Skipped questions	0	
The reference where individuals can get any medication Information needed		
The newspapers and medical magazines	9	1.80%
The internet	162	32.40%
The package insert	309	61.80%
I don't know how to find medication information	11	2.20%
I don't want to know about medication information	9	1.80%
Answered questions	500	
Skipped questions	0	

results showed that most of knowledge elements of NSAIDs were inadequate. The elements of the studied knowledge started from basic information about the medications used for responders taking the NSAIDs with or without food. The present of this information may lead to prevent the side effects related to the gastrointestinal tract, which may lead healthcare provider's assessment, with treatment properly and prevent high economic healthcare burden. Moreover, half of the responders did not possess knowledge regarding the adverse effects of NSAIDs. This result is expected owing to the patient counseling services at hospitals. This similar to a previous study.<sup>7</sup> The patient counseling services are es-

sential in the pharmacy practice which is required from several pharmacy societies and healthcare accreditation institutions. In addition, the new system of hotline (937) calling services may help to overcome this problem. Therefore, we recommend further study to create awareness of public regarding NSAIDs. Furthermore, a campaign with the help of healthcare authority, healthcare provider, as well as by the drug industry to further evaluate this issue; and begin the process of solving this matter through restricting and recording the NSAIDs dispensed post marketing surveillances.

With the absence of patient's education services at healthcare institutions, the patient may obtain their information from other resources, for instance, the package insert or the internet. Sulaiman *et al.*<sup>7</sup> found that medical staff including doctors and nurses were the primary source of information for patients regarding NSAIDs. Nevertheless, other sources such as drug information leaflets, the internet, colleagues and pharmacists were equally crucial in providing details of the prescribed medications. While in this study, most of the participants obtained information from package insert followed by the internet. Our results also showed that package insert was the first way used by groups belonging to different educational levels for instance, intermediate level, college level and postgraduate level.

Our results showed that there is a significant correlation between the age group and knowledge regarding NSAIDs. In addition, there is a strong relationship between the educational level and the knowledge regarding the right use of painkillers such as NSAIDs in acute pain. Abahussain and Taha (2007) reported similar significant findings when they studied the relationship between the age and medication knowledge. They found that the younger the age of the respondents, the more knowledge they had about proper medication use. In general, all previous studies in the literature discussed the abuse, side effects and safety standards to follow without specification about respondents' background. However, this study showed a significant association between educational level and proper use of NSAIDs.

## CONCLUSION

The basic knowledge regarding NSAIDs in the Kingdom of Saudi Arabia is inadequate. Targeting to implement patient counseling services at all healthcare institutions in highly recommended. Periodical survey about all type of medications is required to improve patient awareness and to prevent drug-related problems and economic burden on the healthcare system in Saudi Arabia.

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None.

## CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

## ABBREVIATIONS

SPSS: Statistical Packages for Social Sciences; WHO: World health Organization.

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