

# Knowledge of patients on safe medication use in relation to nonsteroidal anti-inflammatory drugs

## ABSTRACT

**Introduction:** Nonsteroidal anti-inflammatory drugs (NSAIDs) are widely prescribed and used medications that are used as analgesic, antipyretic, or anti-inflammatory agents, but have a high risk of adverse effects.

**Objective:** The main purpose of this study is to evaluate the knowledge of patients toward the risks and safe usage of NSAIDs.

**Methods:** A descriptive cross-sectional study was conducted among patients who attended orthopedic clinics at King Khalid University Hospital in Riyadh, Saudi Arabia, during December 2017 to February 2018. A self-administered questionnaire comprising three sections [sociodemographic information, patients' knowledge of NSAIDs, and the attitude toward receiving information about NSAIDs' adverse drug reactions (ADRs)] was used. The attitude was measured with a 5-point Likert scale.

**Results:** The mean duration of NSAIDs usage was  $7.3 \pm 6.9$  years. Only 45% of the respondents used NSAIDs daily, while 38% said they only used NSAIDs as needed. Nearly one-quarter of patients (25.5%) were counseled by a healthcare provider on the risks of NSAIDs. Almost 94% and 90.5% of the study subjects agreed that physicians and pharmacists, respectively, should play an essential role in providing information regarding ADRs to their patients. More than half of the respondents claimed that information about ADRs might lead them to discontinue their medicines. More than one-third of respondents stated that their healthcare setting provided them with insufficient knowledge of ADRs.

**Conclusion:** Counseling of patients may diminish potentially inappropriate use and increase risk awareness. Healthcare providers can improve their role in identifying and counseling patients on NSAIDs.

**Key words:** Adverse drug reactions; attitude; counseling; knowledge; nonsteroidal anti-inflammatory drugs; Saudi Arabia

## Introduction

Nonsteroidal anti-inflammatory drugs (NSAIDs) are widely prescribed medications that are used as analgesic, antipyretic, or anti-inflammatory agents.<sup>[1]</sup> Most patients commonly use NSAIDs for reducing various pains such as arthritis, low back pain, and muscular pain.<sup>[2,3]</sup> The consumption of NSAIDs has increased over time, while its

utilization differs by age and gender. Adults (>40 years old) and elderly (>60 years old) are more prone to using NSAIDs.<sup>[4,5]</sup> In addition, patients with chronic disease states such as cardiovascular disease, cancer, and peptic ulcers are more likely to be regular users of NSAIDs.<sup>[4,6-8]</sup> Being an over-the-counter (OTC) medication that is readily available, the use of NSAIDs has increased for common pain

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symptoms particularly in patients with musculoskeletal injuries.<sup>[9-11]</sup>

A National Health Interview Survey was carried out in 2010 among residents of the United States, and the results showed that around 29 million adults were regular users of NSAIDs.<sup>[12]</sup> Studies also showed that the high incidence of the use of NSAIDs is associated with risk of renal failure, gastrointestinal problems such as ulcers, liver diseases, hemorrhagic stroke, and allergic reactions.<sup>[10-18]</sup> When NSAID users were questioned about the side effects, only a few study subjects were aware of side effects such as upper and lower gastrointestinal bleeding, hypertension, gastritis, myopathy, and osteoporosis.<sup>[18]</sup>

The high incidence of adverse effects, lack of safety usage, and limited knowledge of the adverse effects of NSAIDs and their drug interactions have been reported among patients or pharmacy clients.<sup>[13,19,20]</sup> In addition, the easy access of most NSAIDs as OTC medications makes its consumers more vulnerable to the associated adverse effects.<sup>[19,20]</sup> In Saudi Arabia, both nonprescribed and prescribed NSAIDs can be bought from the pharmacy without a prescription or healthcare instructions in most cases. This issue raises the concern of whether patients in Saudi Arabia have any basic knowledge about the safe usage and side effects of NSAIDs. The objective of this study is to evaluate the knowledge of patients toward the risks and safe usage of NSAIDs.

## Methods

A descriptive cross-sectional study was conducted among patients who attended orthopedic clinics at King Khalid University Hospital in Riyadh, Saudi Arabia, during December 2017 to February 2018. All patients who attended the orthopedic clinics during the study period were invited to participate in the study by completing a questionnaire. Patients who were older than 18 years and were prescribed NSAIDs for at least 1 month were included in the study. Patients were excluded if they were unable to complete the questionnaire.

A self-administered questionnaire comprising three sections was used. The first part involved sociodemographic information such as age, gender, education levels, income, and job status. The second part included seven questions assessing patients' knowledge of NSAIDs, while the third part consisted of 18 questions with a 5-point Likert scale (strongly agree, agree, not sure, disagree, and strongly disagree) to measure the attitude toward receiving information about NSAIDs' adverse drug reactions (ADRs). This questionnaire was adapted and modified based on previous studies.<sup>[21]</sup> Since

the items of original questionnaire were available in English, an expert professional translator was used to translate the document to Arabic. The translated questionnaire was also used for face validity among 10 patients to ensure the appropriateness of language. Furthermore, five experts in the field performed content validity and determined Cronbach's alpha coefficient to be 0.78.

## Statistical analysis

Statistical Package for Social Science version 25.0 (SPSS Inc., Chicago, IL, USA) was used for data analysis. Descriptive statistics including frequency and percentages were calculated for each question.

## Results

A total of 200 participants were interviewed: about half of respondents were females (54%), while 46% of the study subjects were males. Furthermore, 34% of the respondents were between 34 and 51 years of age, and 48.5% of the subjects had a university education. Table 1 describes the detailed demographic data of respondents.

**Table 1: Demographic characteristics of respondents**

Characteristics	Number	Percentage
Gender		
Male	92	46
Female	108	54
Education degree		
Illiterate	12	6
Primary school	22	11
High school	69	34.5
University	97	48.5
Job status		
Employee in governmental/military sectors	31	15.5
Employee in private sector	22	11.0
Nonemployee	31	15.5
Students	26	13
Retired	32	16
Housewife	58	29.0
Income		
<5000	54	27
5000-10,000	69	34.5
11,000-15,000	58	29
>15,000	19	9.5
Insurance status*		
Non	90	45
Governmental	84	42
Private	18	9
Comorbidities		
Hypertension	18	9.0
Diabetes mellitus	17	8.5
Hyperlipidemia	12	6.0

\*Numbers and percentage do not add up to total (100%) due to missing data

### Information regarding NSAIDs' use

In this study, the mean duration of NSAIDs usage was  $7.3 \pm 6.9$  years. Only 45% of the respondents used NSAIDs daily, while 38% said they only used NSAIDs as needed. Of all the participants questioned, 36.5% and 34.5% of patients took NSAIDs once daily or twice daily, respectively. Only 21% of patients were taking NSAIDs before meal. The pattern of NSAIDs administration as reported by respondents is shown in Table 2.

### Counseling of NSAIDs by healthcare providers

Table 3 shows counseling by healthcare provider on NSAIDs' utilization. Most of the patients did not receive counseling from healthcare providers regarding the safety of NSAIDs in

terms of possible ADRs and its monitoring, management of side effects, avoidance of drug and food interactions, and so on. In this study, nearly one-quarter of patients (25.5%) were counseled by a healthcare provider on the risks of NSAIDs [Table 4].

### Attitude of participants toward receiving information about safe use of NSAIDs

In this study, nearly all patients agreed that they needed information regarding ADRs of NSAIDs. Almost 94% and 90.5% of the study subjects agreed that physicians and pharmacists, respectively, should play an essential role in providing information regarding ADRs to their patients. More than half of the respondents claimed that information about ADRs might lead them to discontinue their medicines. More than one-third of respondents stated that their healthcare setting provided them with insufficient knowledge of ADRs.

**Table 2: Information about NSAIDs' use (n=200\*)**

Variables	Number	Percentage
When did you start using this drug?		
Mean±SD (in years)	7.3±6.9	
Mean±SD (in months)	3.1±1.5	
How often you are taking this drug?		
Every day	90	45
When have symptom	76	38
Never take this drug	12	6
Other	2	1.0
Administration of NSAID (frequency)		
1 time/day	73	36.5
2 times/day	69	34.5
3 times/day	31	15.5
Other	10	5
Administration of NSAID (time/with or without food)		
Before meal	42	21
After meal	87	43.5
Anytime	20	10
Do you know what NSAID is used for?		
Yes	139	70.5
No	49	24.5

NSAID: Nonsteroidal anti-inflammatory drug; SD: Standard deviation. \*Numbers and percentage do not add up to total (100%) due to missing data

Nearly all respondents were in agreement on "Provision of information from health professionals and receiving information from leaflets can improve their knowledge about medicines." Only 40% of respondents reported that receiving information from leaflets might result in a decrease in their adherence. In addition, 41% of respondents reported that they had difficulty in understanding the information mentioned in leaflets. Nearly all respondents suggested that they needed to receive information from leaflets that was very specific for each patient [Table 5].

Table 6 shows additional sources of information about NSAIDs use. Most of the respondents had received information about NSAIDs use from Internet (47%), followed by advertising or instructional pamphlet (41%) and television or radio advertises (12%).

**Table 3: Healthcare providers' counseling of NSAIDs' utilization (n=200\*)**

Items	Have you received any information about this drug before? And who provided to you?			
	Physician n (%)	Pharmacist n (%)	Nurse n (%)	Have not received n (%)
Name of medicine	102 (51)	82 (41)	2 (1)	14 (7)
Indication of medicine	86 (43)	70 (35)	-	44 (22)
Mechanism of action	75 (37.5)	48 (24)	5 (2.5)	72 (36)
Administration	68 (34)	80 (40)	-	52 (26)
What to do if missing a dose	51 (25.5)	43 (21.5)	-	105 (52.5)
Important consideration to be aware of	36 (18)	37 (18.5)	-	127 (63.5)
Adverse drug reactions	30 (15)	38 (19)	-	132 (66)
Monitoring ADRs of medicine	26 (13)	40 (20)	-	134 (67)
Management of side effects	26 (13)	32 (16)	-	142 (71)
Drug interactions	30 (15)	33 (16.5)	-	135 (67.5)
Foods and herbs to be careful of	34 (17)	31 (15.5)	-	135 (67.5)

NSAID: Nonsteroidal anti-inflammatory drug; ADR: Adverse drug reaction. \*Numbers and percentage do not add up to total (100%) due to missing data

## Discussion

NSAIDs are widely prescribed and used as analgesics for persistent pain due to osteoarthritis and other musculoskeletal disorders in older adults.<sup>[20,22,23]</sup> It was estimated that about 40% of individuals who were 65 years or older filled one or more prescriptions for a NSAID each year, while about 45% of respondents used NSAIDs daily.<sup>[22,24]</sup> These results are consistent with our findings that 45% of participants used NSAIDs daily. Similar results have been reported among different ethnic groups in different societies. A study carried out in Nigeria showed that 42.6% of people had been using NSAIDs for more than a month.<sup>[25]</sup> Another study conducted among Thai population revealed that most of their respondents (69.6%) used NSAIDs continuously or often. In addition, 45% of

respondents were taking their NSAIDs before meals.<sup>[26]</sup> In our study, only 21% of participants used NSAIDs before meals. Appropriate counseling of NSAIDs' administration and the coadministration of cytoprotective agents is necessary to decline the incidence of adverse effects, particularly the incidence of gastrointestinal risks.<sup>[27]</sup>

It is known that patient counseling and education help in promoting the appropriate use of medicines, which may lead to successful therapeutic outcomes and medication adherence.<sup>[28]</sup> In our study, a majority of patients received counseling about the name of medicine, its indication, and mechanism of action. Although most of our participants have been using NSAIDs for a long time, only few respondents received physician or pharmacists counseling on risks of NSAIDs. Healthcare providers including pharmacists and physicians indicated that they rarely to sometimes counseled on risk of NSAIDs because they did not want to intimidate their patients who would likely benefit from therapy. However, lack of counseling on ADR monitoring of NSAIDs and management of side effect may leave patients with a misunderstanding of the risks of their NSAIDs' therapy. Although patients' counseling by healthcare professionals, particularly physicians, can play an essential role in promoting NSAIDs' risk awareness, a study carried out in the United States reported that a minority of patients on NSAIDs have received counseling on heart attack risk from both physicians and pharmacists.<sup>[29,30]</sup> Furthermore, Oluwafisayo *et al.* stated

**Table 4: Healthcare providers' counseling of NSAIDs' risks**

Information about adverse drug reactions you have received from a healthcare professional	
No (no. of participants; %)	149 (74.5)
Yes (no. of participants; %)	51 (25.5)
Effects on gastrointestinal system*	28 (14.5)
Effects on cardiovascular system*	8 (4)
Effects on renal system*	18 (9)
Effects on skin system*	12 (6)
Other effects	6 (3)

NSAID: Nonsteroidal anti-inflammatory drug. \*Participants may receive counseling for more than one risk

**Table 5: Attitude toward receiving information about adverse drug reactions of NSAIDs (n=200\*)**

Items	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
You need to know about ADRs of medications	111 (66.5)	77 (38.5)	12 (6)		
Being informed about ADRs may increase your anxiety	62 (31)	38 (19)	46 (23)	28 (14)	20 (10)
Physicians should have a role to inform you about ADRs	92 (46)	96 (48)	8 (4)	-	-
Receiving ADR information from healthcare professional may be a waste of time	16 (8)	12 (6)	24 (12)	94 (47)	54 (27)
Pharmacists should play a direct role in providing ADR information	72 (36)	109 (54.5)	11 (5.5)	-	8 (4)
Information about ADRs may help you to tell physicians about any abnormal symptoms which occur	66 (33)	108 (54)	26 (13)	-	-
Information about ADRs may cause you to discontinue medicines	78 (39)	30 (15)	51 (25.5)	32 (16)	9 (4.5)
Healthcare setting provide you insufficient knowledge of ADRs	63 (31.5)	106 (53)	31 (15.5)	-	-
Provision of information from health professionals and receiving information leaflets can improve your knowledge about medicines	78 (39)	108 (54)	4 (2)	6 (3)	4 (2)
Receiving information leaflets may encourage you to decrease your adherence	31 (15.5)	49 (24.5)	6 (3)	83 (41.5)	31 (15.5)
Information leaflets are an information source which can help you to monitor ADRs and tell health professionals about ADRs	52 (26)	132 (66)	8 (4)	8 (4)	-
Information leaflets cannot improve your confidence about safety when using medicines	24 (12)	31 (15.5)	32 (16)	72 (36)	41 (20.5)
Receiving an information leaflet the first time of using a medicine is a necessity	50 (25)	116 (58)	16 (8)	12 (6)	6 (3)
You don't need information leaflets for all medicines	35 (17.5)	63 (31.5)	24 (12)	50 (25)	28 (14)
Information leaflets that you have read were difficult to understand	20 (10)	63 (31.5)	30 (15)	71 (35.5)	14 (7)
Information leaflets are not reliable information sources for providing medicines' information for you	37 (18.5)	63 (31.5)	28 (14)	28 (14)	44 (22)
You need to receive information leaflets which are specifically for patients	65 (32.5)	119 (59.5)	8 (4)	6 (3)	2 (1)
If you receive a patient information leaflet, you are confident you will thoroughly read that leaflet	89 (44.5)	103 (51.5)	8 (4)		

NSAID: Nonsteroidal anti-inflammatory drug; ADR: Adverse drug reaction. \*Numbers and percentage do not add up to total (100%) due to missing data

**Table 6: Information resource on NSAIDs' use**

Items	Number	Percentage
Internet	132	66
Television/radio	24	12
Advertising or instructional pamphlet	82	41
Leaflets	10	5
Magazine/journal of medicine	12	6
Other	8	4

that physicians do not provide enough information on ADRs without any satisfying justifications.<sup>[25]</sup> Yilmaz *et al.* found that only half of the patients with osteoarthritis received counseling on the side effects of NSAIDs by their healthcare providers, particularly physicians, and pharmacists.<sup>[20]</sup> Further research is required to offer guidance on how healthcare professionals can balance between stimulating patients' rights for gaining information to make informed decisions and, at the same time, diminishing unnecessary patients' concerns that may delay or prevent treatment.<sup>[20]</sup>

While only few participants received information about NSAIDs from healthcare providers, others used the Internet (66%), advertising or instructional pamphlet (41%), and television or radio (12%) to gain information about NSAIDs' usage. Internet (18.6%) and package inserts (5.4%) were also the most common resources for drug information among public in a study conducted in Saudi Arabia to assess public awareness about ADRs.<sup>[31]</sup> In another study conducted in Malaysia, 15% of respondents were reported to obtain drug information from Internet and 9.2% from media.<sup>[32]</sup> Oluwafisayo *et al.* reported that most of the respondents obtained information from reading drug literature inserted in the packs, followed by television (15.2%) and radio (7.4%).<sup>[25]</sup> Regardless of additional resources for drug information that may deliver inaccurate information, our study assessed the attitude of orthopedic patients toward receiving information about the safe use of NSAIDs, and almost 94% and 90.5% of the study subjects agreed that physicians and pharmacists, respectively, should play an essential role in providing ADR information to their patients.

Knowing the risks of adverse effects plays a key role in a patient's decision to take the drug or not.<sup>[33]</sup> The adverse effects informed by both physicians and pharmacists would be more accurate and specific to a prescribed medication for particular indications for each patient. Their counseling would cover symptoms that the patient should recognize for which the patient can either discontinue a drug to prevent additional harm or manage and monitor resulting symptoms or signs.<sup>[34]</sup>

A result showed that 41% of patients reported that information in leaflets were difficult to understand, and 56.5% of patients reported that information in leaflets cannot improve their confidence about the safety of the medication. A study was conducted in Saudi Arabia to assess the availability of key information on 60 medication package inserts provided with prescribed and OTC medications. It also measured whether information on package inserts is offered in a way that helps improve patient understanding. The findings revealed that package inserts were unclear regarding dosage information. Furthermore, they reported that the package inserts lacked information on measures to be taken when an administrative error was made, inappropriate performance of side effects, and measures to be taken if an ADR occurred.<sup>[35]</sup> A similar study conducted in Palestine showed that only 42.3% of the customers found the information in the leaflets to be useful and sufficient.<sup>[36]</sup> In addition, participants from a study conducted in Germany found that package inserts were difficult to understand or did not include important information.<sup>[37]</sup> Similar findings were reported from Italy that Italian patients often read the package inserts but they neither understood the instructions easily nor could obtain the desired information readily.<sup>[38]</sup> To reduce difficulty with understanding among our study population in Saudi Arabia, package inserts should contain more Arabic, a language that is easily readable, and must also be organized into an easy-to-understand form.<sup>[39]</sup>

## Conclusion

The majority of patients do not receive any information about the appropriate use or risks of NSAIDs. Counseling of patients may diminish potentially inappropriate use and increase risk awareness. Healthcare providers can improve their role in identifying and counseling patients on NSAIDs.

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## Conflicts of interest

There are no conflicts of interest.

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