



# **Knowledge Attitude and Perception (KAP) of Patients towards Analgesics Use: A Cross-Sectional Study in Outpatient Pharmacy Settings**

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. Authors NNIMR and PAPP conceptualized and wrote original draft preparation and revision. Authors RPSAPJ and NZ did the acquisition of data. Author NNIMR did the supervision. Authors NAPS, PAPP and AABTAJ did the data analysis, reviewing and editing. All authors read and approved the final manuscript.*

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## **ABSTRACT**

**Aims:** This study aimed to explore and determine patients' knowledge, attitudes, and perceptions about the use of analgesics.

**Study Design:** Cross-sectional study by using structured, researcher-assisted survey questionnaire with a representative sample of patients in Hospital Selama.

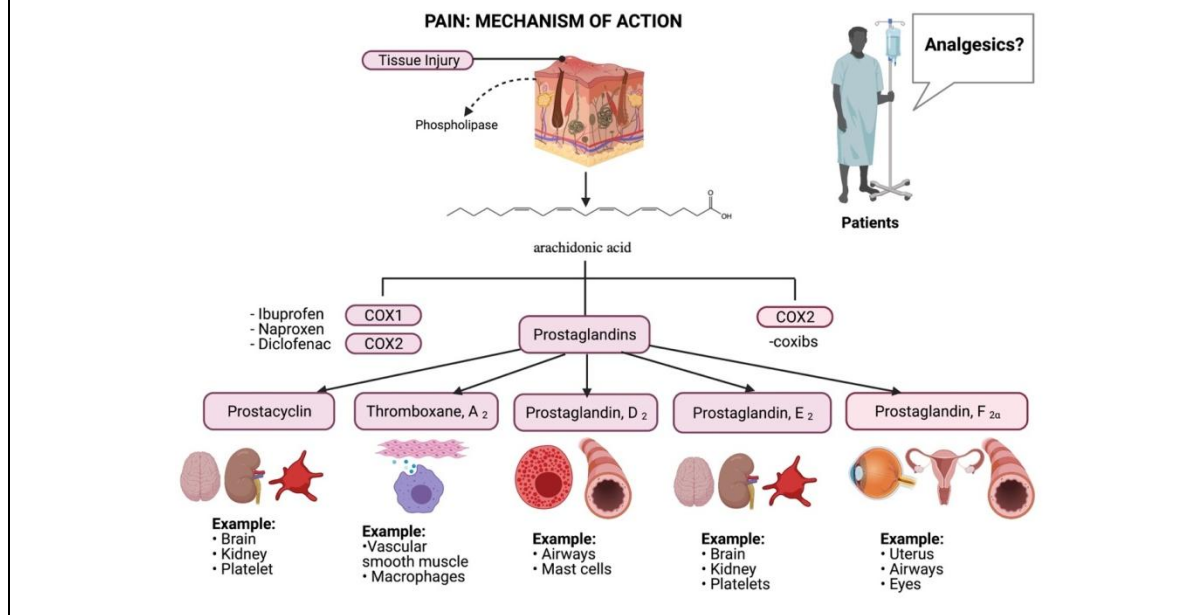
**Place and Duration of Study:** Regardless of their clinical conditions, 272 patients who visited the outpatient pharmacy in Hospital, Selama, Perak Malaysia, and obtained NSAIDs were interviewed. The patients' knowledge, attitude, and perceptions of NSAID side effects were recorded.

**Methodology:** To perform this study, structured self-administered questionnaires will be constructed after a comprehensive literature review. A panel of experts comprising of research academicians will discuss, review, and verify the content of the questionnaire, and it will be

subjected to revision based on their recommendations. The questionnaire will be written in Malay and English and will be translated into both languages. Pilot research on 20 patients will be done prior to the study to assess the reliability of the validated questionnaire. The results of the pilot research will be used to make final adjustments. Cronbach's alpha test will be used to assess internal consistency, with  $\alpha=0.40$  established as the lowest acceptable value for validity.

**Results:** There was no correlation between patient knowledge, attitudes, or perceptions about the use of analgesics. As a consequence, at Hospital Selama's outpatient pharmacy department, patients' knowledge, attitude, and perceptions about analgesic use were not substantially associated. A more in-depth investigation of the key reason why the majority of patients have commonly prescribed analgesics and often seek extra explanations despite being given adequate information is required.

### Graphical Abstract:



**Keywords:** NSAIDs; knowledge; attitude; perceptions; outpatients settings; analgesic.

## 1. INTRODUCTION

Any type of pain can impair an individual's quality of life. Pain is a major health problem on a global scale and can be classified as acute, chronic, or intermittent, or a combination of the three [1,2]. Individuals experiencing severe pain frequently face difficult choices regarding pain relief therapy, as the majority of treatment options for pain management involve the use of analgesics and adjuvant medications, which may have adverse side effects, are generally unavailable or prohibitively expensive or elicit fears of addiction [3]. Pain is an ill-defined and disabling symptom associated with a wide variety of medical conditions. Analgesics are medications that significantly reduce pain by acting on the central nervous system or peripheral pain receptors without impairing consciousness. It is classified into two categories: narcotic/opioid analgesics

and non-narcotic/non-steroidal anti-inflammatory drugs (NSAIDs).

NSAIDs are the most frequently prescribed medications for pain management. They work by interfering with the cyclooxygenase (COX) pathway, which is critical for the conversion of arachidonic acid to prostaglandins by the enzyme COX [4,5]. COX is found in two isoforms: COX-1 and COX-2. The COX-1 enzyme regulates physiological functions such as stomach mucus production, kidney water excretion, and platelet formation. COX-2, on the other hand, is involved in the production of prostaglandins that are involved in the inflammatory response. While conventional NSAIDs are widely used as analgesics, antipyretics, and anti-inflammatory agents, gastrointestinal toxicity is a significant clinical concern. This adverse effect is due to their ability

to inhibit COX-1 in the GI tract (GIT). Subsequently, selective COX-2 inhibitors emerged as potentially gastro-friendly NSAIDs, and it was hypothesized that selective COX-2 inhibition provides sufficient therapeutic benefits [6]. COX-2 inhibitors may appear to be a potential solution to the GI complication associated with NSAIDs. Post-marketing experience, on the other hand, revealed a variety of adverse cardiovascular effects. Recent evidence of adverse cardiovascular events associated with the use of COX-2 selective inhibitors has sowed fear among prescribers and consumers alike [7].

Opioid analgesics have a wide variety of adverse effects, including respiratory depression, nausea, vomiting, dizziness, mental fogginess, dysphonia, pruritus, constipation, increased biliary tract pressure, urinary retention, and hypotension. Tramadol is a synthetic codeine analog that acts as a weak agonist of the opioid receptors. A portion of its analgesic effect is due to its inhibition of norepinephrine and serotonin uptake. Tramadol is as effective as morphine or meperidine in the treatment of mild to moderate pain [8]. The use of analgesics has also increased dramatically in developed and developing countries over the last three decades. Improper or irrational use of analgesics increases morbidity and mortality, degrades the quality of life, wastes health resources, and increases healthcare costs [9]. Additionally, a lack of knowledge about the proper use of analgesics may increase the risk of developing toxicity and potentially dangerous adverse effects if they administer the medication incorrectly or fail to recognize how the medicine is administered. The Mayday Fund Survey examined the attitudes of 1,004 adults in the United States of America's communities toward pain and analgesics in general. The findings of this study indicated that Americans frequently tolerate pain and prefer to be stoic or suffer through it rather than taking analgesics [10].

Another cross-sectional study conducted by Karami et al. revealed that the majority of people use analgesics for a variety of reasons, including headaches, fever, and toothache. Paracetamol was the most frequently prescribed OTC analgesic in Saudi Arabia [11]. Young people used analgesics at a higher rate than other age groups. The majority of people had a wealth of information regarding the proper dose of analgesics and used them appropriately. Sarganas et al. (2015) reported that ibuprofen is

the most frequently prescribed analgesic, followed by aspirin and paracetamol. Women and smokers use more OTC analgesics, but older adults aged 65–79 years and adults who exercise more than 2 hours per week use fewer analgesics [12]. Women, the elderly, smokers, and obese adults with a medium or high socioeconomic status are more likely to use prescribed analgesics. Another study reported that education level was the most significant predictor of non-prescription analgesic use ( $P = 0.001$ ) [13].

However, few studies have been conducted or studied in Malaysia on this subject, particularly in outpatient settings. Thus, the current study's objective is to ascertain and explore patient knowledge, attitudes, and perceptions regarding analgesic use in Hospital Selama, Perak. This study will provide significant data and statistical information on analgesic consumption and drug use patterns from the patient's perspective.

## 2. EXPERIMENTAL DETAILS AND METHODOLOGY

Patients who visited the outpatient pharmacy settings at Hospital Selama in Perak, Malaysia, were included in this descriptive cross-sectional study. This study enrolled patients over the age of 18 who were prescribed analgesics, regardless of their underlying condition. Additional demographic information was collected, including gender, ethnic origin, educational attainment, occupation, and the frequency with which analgesics were purchased outside of the context of a government hospital. The investigation was conducted by interviewing patients using a pre-prepared questionnaire. Prior to data collection. Researchers assisted each patient in verbally discussing the study's objective in Malay or English, and the questionnaire was administered following the acquisition of written consent.

According to the calculations (Raosoft), the sample size was 267 patients, with a 90% confidence interval and a 10% margin of error. 272 samples were obtained within eight weeks of the investigation to qualify the sample for subgroup analysis. Percentages, means, standard deviations, frequencies, and cross-tabulations were used to obtain descriptive statistics. Pilot study with 20 outpatients was conducted to ensure readability and ease of use before proceeding to data collection

## 2.1 Statistical Analysis

All the obtained data in the questionnaires were analyzed using IBM SPSS for Windows (Version 19.0) and presented by mean  $\pm$  SD. For section A which consists of the patient socio-demographic data, a descriptive analysis will be implemented whereas for section B until D, multi choices questions will be given instead. In this study, patient's knowledge, attitude, and perceptions (KAP) level will be defined as 'good' or 'poor' by using a 50% cut off point based on the original Bloom's cut off point, 80.0%-100%, 60.00-79.00% and below 59.0%. To investigate relationships for categorical and continuous data, the Chi-square test and independent t-test were utilized. A regression model was created using all the independent variables for which there was an association. Factors influencing patients' analgesic use were studied using multiple linear regression. The correlation between each knowledge, attitude, and perceptions will also be evaluated in this study.

## 3. RESULTS

272 patients responded to the questionnaire and gave full commitments upon interview. From Table 1 (Supplemental Table), the respondents consist of 41.2% male and 58.8% female. Out of 272 respondents, 87.1% are Malay, 3.3% respondents are Chinese and 9.6% are Indian. In terms of age, most of the respondents are 28-37, 38-47, 48-57 years old, indicating 24.3%, 24.6%, and 22.8% respectively. Meanwhile, 15.1% of the respondents are 18-27 years old and 13.2% are above 58 years old. There are 1.1% respondents with no formal education, 5.5% with the primary school education, 61.0% with secondary school background, 30.1% have college/university background followed by 2.2 respondents with postgraduate education level. Based on occupation, 2.9% are students, 25.0% are government servants, 18.8% of the respondents are in the private sector, 21.7% are self-employed, 8.5% are a pensioner and 23.2 of the respondents are not working. Out of 272 respondents, 81.3% have purchased analgesics while the rest 18.8% have not purchased analgesics. From the total 221 respondents who had purchased analgesics, 0.4% of them purchase once a week, 18.4% purchase 2-3 times a month and 65.1% of them purchase 2-4 times a year.

Table 2 represents descriptive statistics of patient's knowledge about analgesics. For

statements "Some painkiller relieves fever", the majority, 68.4% of the patients did not know or were not sure. 88.6% of the patients know that painkillers can be taken every hour when in pain. Next, 60.7% did not know or unsure that high doses of painkillers can cause damage to the liver and kidney. 98.2% know all painkillers are safe to be used during pregnancy. 57.7% not sure or did not know that frequent intake of alcoholic drinks along with high doses of painkillers will cause liver damage. Besides that, 79.0% of the patients know all painkillers relieve inflammation. 62.5% did not know or unsure that some painkillers can be taken before and after food whereas some can only be taken after food. 56.3% did not know or were not sure patients can have an allergy towards painkillers whereas another 59.2% of patients did not know or not sure all painkillers have side effects. Finally, 76.5% of patients know painkillers relieve all types of pain.

On the other hand, from Table 3, 37.5% strongly disagree with the statement "I will take multiple analgesics at the same time to relieve the pain much faster". 38.2% of patients disagree that they will consume a high dose of analgesics to resolve the pain immediately. 29.0% of patients agree that all analgesics can be taken before or after food. Next, 46.3% agree that they refused to take analgesics when the pain is still tolerable. 39.7% agree that they will reference information about analgesics for self-medication. Eventually, 31.6% of the patients answered 'neutral' for the statement "All over-the-counter analgesics can be taken with prescribed medications".

Table 4 shows descriptive statistics for patients' perception towards analgesics use. Almost 48.5% of patients agree that all analgesics given by doctors/pharmacists are certainly safe to be taken and only a few patients opposed the said question. Next, 34.2% of patients disagree that analgesics will not cause any allergy. Finally, 29.8% of patients answered "Neutral" for the statement "Taking analgesics frequently would not cause any serious side effects".

**Association/correlation between patient's knowledge and attitude towards analgesic use:** The association between patient's knowledge and attitude towards analgesic use was shown in Table 5. The association between these variables was not significant,  $X^2(1) = 3.434$ ,  $p = .064$ , indicate that patients with poor knowledge in analgesic use were equally likely with those who had good knowledge to be able to have a good attitude towards analgesic use.

**Table 2. Evaluation of patient's knowledge about analgesics****Section B**

No.	Statements	n (%)	
		Yes	No/Not sure
1.	Some painkiller relieves fever.	86 (31.6)	186 (68.4)
2.	Painkillers can be taken every hourly when in pain.	241 (88.6)	31 (11.4)
3.	High doses of painkillers can cause damage to the liver and kidney.	107 (39.3)	165 (60.7)
4.	All painkillers are safe to be used during pregnancy.	267 (98.2)	5 (1.8)
5.	Frequent intake of alcoholic drinks along with high doses of painkillers will cause liver damage.	115 (42.3)	157 (57.7)
6.	All painkillers relieve inflammation.	215 (79.0)	57 (21.0)
7.	Some painkillers can be taken before and after food whereas some can only be taken after food.	102 (37.5)	170 (62.5)
8.	Patient can have an allergy towards painkillers.	119 (43.8)	153 (56.3)
9.	All painkillers have side effects.	111 (40.8)	161 (59.2)
10.	Painkillers relieves all types of pain.	208 (76.5)	64 (23.5)

**Table 3. Patient's attitude towards analgesic use****Section C**

No.	Statements	n (%)				
		1	2	3	4	5
1.	I will take multiple analgesics at the same time to relieve the pain much faster.	102 (37.5)	75 (27.6)	32 (11.8)	49 (18.0)	14 (5.1)
2.	I will consume high doses of analgesics to resolve the pain immediately.	87 (32.0)	104 (38.2)	36 (13.2)	36 (13.2)	9 (3.3)
3.	All analgesics can be taken before or after food.	31 (11.4)	78 (28.7)	71 (26.1)	79 (29.0)	13 (4.8)
4.	I refused taking analgesics when the pain is still tolerable.	16 (5.9)	26 (9.6)	32 (11.8)	126 (46.3)	72 (26.5)
5.	I will reference information about analgesics for self-medication.	23 (8.5)	45 (16.5)	56 (20.6)	108 (39.7)	40 (14.7)
6.	All over-the-counter analgesics can be taken with prescribed medications.	27 (9.9)	70 (25.7)	86 (31.6)	75 (27.6)	14 (5.1)

**Table 4. Evaluation of patient's perception towards analgesic use****Section D**

No.	Statements	n (%)				
		1	2	3	4	5
1.	All analgesics given by Doctors/Pharmacist are certainly safe to be taken.	15 (5.5)	14 (5.1)	47 (17.3)	132 (48.5)	64 (23.5)
2.	Analgesics will not cause any allergy.	25 (9.2)	93 (34.2)	79 (29.0)	63 (23.2)	12 (4.4)
3.	Taking analgesics frequently would not cause any serious side effects.	30 (11.0)	77 (28.3)	81 (29.8)	67 (24.6)	17 (6.3)

**Association/correlation between patient's knowledge and perceptions towards analgesic use:** A Chi-square test of independence was used to explore the

relationship between patient knowledge and perceptions of analgesic usage. Based on the findings,  $X^2(1) = .489$ ,  $p = .484$ , the correlation between these variables was not significant. Such that, patients with a low understanding of analgesic use were just as likely as those with strong knowledge to have favorable attitudes toward analgesic usage.

**Association/correlation between patient's attitude and perceptions towards analgesic**

**use:** To investigate the relationship between patient attitudes and perceptions of analgesic usage, as shown in Table 3. The relationship between these factors was not significant, with an  $X^2(1) = 1.808$  and a p-value of .179. This means that patients with a negative attitude toward analgesic usage were just as likely as those with a positive attitude to have positive attitudes toward analgesic usage.

**Table 5. Chi-square test result for patient's knowledge\*attitude**

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.434 <sup>a</sup>	1	.064		
Continuity Correction <sup>b</sup>	2.901	1	.089		
Likelihood Ratio	3.469	1	.063		
Fisher's Exact Test				.073	.044
Linear-by-Linear Association	3.422	1	.064		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 27.18.  
 b. Computed only for a 2x2 table

**Table 6. Chi-square test result for patient's knowledge\*perceptions**

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.489 <sup>a</sup>	1	.484		
Continuity Correction <sup>b</sup>	.296	1	.586		
Likelihood Ratio	.489	1	.484		
Fisher's Exact Test				.536	.293
Linear-by-Linear Association	.487	1	.485		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 24.75.  
 b. Computed only for a 2x2 table

**Table 7. Chi-square test result for patient's attitude\*perceptions**

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.808 <sup>a</sup>	1	.179		
Continuity Correction <sup>b</sup>	1.328	1	.249		
Likelihood Ratio	1.712	1	.191		
Fisher's Exact Test				.183	.126
Linear-by-Linear Association	1.802	1	.180		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.50.  
 b. Computed only for a 2x2 table

#### 4. DISCUSSION

Despite the study's small sample size, it nonetheless gives valuable information about patients' understanding of medicine such as NSAIDs and other therapy options. Low socioeconomic and educational or literacy status, as well as self-consciousness, were identified as the key determinants affecting drug knowledge. The previous study had shown that those who had received side effect information had stronger perceptions and knowledge concerning NSAIDs risk compared to those who did not receive such information [14]. Low communication between physicians, pharmacists and patients appears to be the cause of this lack of understanding. In terms of awareness, previous medical staff was found to be the primary source of drug information obtained by patients [15-17]. Other sources, such as the internet and other healthcare staffs, were also useful in providing information on prescription medications [18,19]. In contrast to the previous findings, from the results in Table 1, Table 2, and Table 3, it can conclude that there was no association between patient's knowledge, attitude and perceptions towards analgesic use. Meaning that the knowledge, attitude, and perception of patients towards analgesic use at the outpatient pharmacy department in Hospital Selama were not significantly related. Nevertheless, patients are still reluctant in taking NSAIDs when the pain is manageable and will search for additional information whenever they self-medicate themselves. Analgesics can be misused through both intended and unintended methods of administration. According to available statistics, the most common method of abuse is through ingestion followed by inhalation and injection. All patients in this study received oral analgesics in tablet and capsule form, which frequently results in poor compliance or abuse due to the requirement to self-administer the analgesics. This could have serious and detrimental effects on health treatment. Therapeutic non-compliance occurs when an individual's health-seeking or maintenance behavior deviates from the advice of a healthcare practitioner.

The recommendations and use of analgesics differ according to patients and practice [19,20]. Despite these variations, overall, the patient's attitude and perception towards analgesic use are satisfactory but it definitely has room for improvement. 31.6% of patients are neutral that all over-the-counter analgesics can be taken with prescribed medication. This shows a mild

misconception in patient's attitudes towards analgesic use. Most older NSAIDs (ibuprofen, naproxen, diclofenac sodium, meloxicam) as well as newer COX-2 inhibitors (celecoxib, etoricoxib) are widely available and prescribed in our current clinical settings although geriatric patients had supported the use of over-the-counter medicines since they believed that there is increased of its effectiveness if combine with prescription medicines [21]. The observed attitude can be reversed by educating patients on the consequences of some drug-drug interactions, e.g. NSAIDs and Warfarin.

As for patient's perception towards analgesic use, almost one-third of the study population (29.8%) of patients have an opinion that taking analgesics frequently would not cause any serious side effects. This perception may be corrected by physicians and pharmacists by educating patients on the effects of long-term use of analgesics and the complications that may arise. Based on these outcomes, there is a need for raising awareness on rational use of analgesic prescribing in order to obtain optimum therapies and improve the quality of patient care. Patients in outpatient settings were typically prescribed analgesics for 3 to 5 days for burns, cuts, fractures, and small laceration wounds. Depending on the underlying condition, some analgesics can be prescribed exceedingly more than 3 months such as chronic pain which persists despite the fact that the injury has healed; nevertheless, patients frequently took more than the specified time and were always seeking stronger analgesics, even though their pain score was lower (1-3). Hence, there is a need for patient education and counseling in order to prevent analgesic overuse and avoid any unexpected adverse effects in the future.

In terms of intervention, pharmacists can play a role in Pain Medication Therapy Management (MTM) Services and must follow pharmacy service standards as well as the Joint International Pharmaceutical Federation (FIP) and World Health Organization (WHO) Good Pharmacy Practice recommendations to establish a pharmaceutical care plan to address identified pharmaceutical care issues (PCI) and other concerns. Pharmacists can emphasize the non-pharmacological alternatives available in managing pain and drug-related disorders based on the elements that cause pain exacerbation and relief. For a better knowledge of the patients, additional recommendations and advice regarding the drug's side effects can be provided

## 5. CONCLUSION

Patients' knowledge, attitude, and perceptions of analgesic use at Hospital Selama's outpatient pharmacy department were not significantly correlated, according to the current data. There was no relation between patient knowledge, attitudes, or perceptions about the use of analgesics. A more in-depth investigation of the key reason why the majority of patients have commonly prescribed analgesics and often seek extra explanations despite being given adequate information is required.

## SUPPLEMENTAL MATERIAL

Supplement material are available in this link:<https://www.journaljpri.com/index.php/JPRI/libraryFiles/downloadPublic/19>

## CONSENT

Informed consent was obtained from all patients who participated in this study.

## ETHICAL APPROVAL

All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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