

Public Knowledge, Attitudes, and Practices Regarding the Use of Over-The-Counter (OTC) Analgesics in Indonesia: A Cross-Sectional Study

Rano Kurnia Sinuraya¹⁻³, Chalisma Wulandari², Riezki Amalia^{2,3}, Irma M Puspitasari^{2,3}

¹Unit of Global Health, Department of Health Sciences, University Medical Center Groningen, University of Groningen, Groningen, the Netherlands;

²Department of Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, Universitas Padjadjaran, Bandung, West Java, Indonesia; ³Center of Excellence for Pharmaceutical Care Innovation, Universitas Padjadjaran, Sumedang, West Java, Indonesia

Correspondence: Rano Kurnia Sinuraya, Email r.k.sinuraya@unpad.ac.id; r.k.sinuraya@rug.nl

Background: Over-the-counter analgesics like paracetamol and nonsteroidal antiinflammatory drugs (NSAIDs) are widely accessible to the general population. However, ensuring their safe and effective usage is crucial by considering individuals' knowledge, attitudes, and practices toward these medications.

Objective: This study aimed to assess the general population's knowledge, attitudes, and practices regarding the use of over-the-counter analgesics.

Methods: This cross-sectional study took place in Indonesia from December 2019 to June 2020. A validated questionnaire was used to survey a total of 582 respondents. A comparative analysis examined the variations in mean scores for respondents' characteristics concerning their knowledge, attitude, and practice. A regression analysis was also employed to explore the factors associated with adopting good analgesia practices.

Results: The findings of the study revealed significant differences in average knowledge scores related to gender, educational attainment, and employment status for the use of both paracetamol and NSAIDs. Regarding knowledge, the respondents demonstrated a higher average score for analgesics (4.56 ± 1.84) than NSAIDs (2.881 ± 2.40), out of a maximum score of 6 points. The results indicate that the respondents obtained a low score for attitude (6.80 ± 3.74) out of 16 points and a positive score for practice (2.71 ± 0.48) out of 3 points regarding using analgesics. Moreover, the regression analysis revealed that gender, residing near primary health care facilities, and having sound knowledge of NSAID use were significant predictors of good analgesic practice ($p < 0.05$).

Conclusion: The respondents demonstrated a greater understanding of analgesics compared with NSAIDs. However, despite this higher knowledge level, they had relatively low attitude scores but positive practice scores, indicating a discrepancy between attitudes and actual behavior in using analgesics.

Keywords: knowledge, attitudes, behavior, analgesic, nonsteroidal antiinflammatory drugs, NSAID

Introduction

Analgesics, commonly known as pain relievers, are crucial role in alleviating pain and discomfort worldwide.¹ Optimizing pain management is essential for improving patients' quality of life and overall wellbeing.² Analgesics, including nonsteroidal antiinflammatory drugs (NSAIDs), opioids, and acetaminophen, offer relief for various acute and chronic pain conditions.^{1,3} However, individuals' understanding of proper analgesic use can vary considerably, resulting in different attitudes and practices toward their consumption.^{4,5}

A comprehensive understanding of the general population's knowledge about analgesics is crucial for identifying knowledge gaps and specific areas requiring targeted educational interventions.⁶ Evaluating knowledge regarding potential adverse effects, appropriate dosages, contraindications, and potential drug interactions associated with analgesic use is of utmost importance.^{7,8} The use of analgesics is also influenced by attitudes toward pain management and the tendency toward self-medication as an alternative to seeking medical advice.^{4,6-8}

Pain reporting tends to be more common among women, older individuals, and those with lower socioeconomic status. The prevalence of chronic pain among adults in Asian countries varies widely, ranging from 7.1% to 90.8%, depending on the measurement methods used.^{9,10} However, despite the growing importance of understanding pain in Indonesia, there is a lack of comprehensive large-scale studies addressing the prevalence and quality of pain across all types. Moreover, Indonesia lacks practical parameters to evaluate pain, assess patient comfort levels, and measure the impact of pain on the overall quality of life of its population.¹¹

The use of analgesics spans a broad spectrum of practices, ranging from responsible and ethical use to the potential risks of misuse or excessive use.^{12,13} Various determinants, including cultural values, individual encounters, and economic circumstances, can influence an individual's perspectives and actions concerning analgesic medications.^{6,7,13} By gaining a deeper understanding of these influences, healthcare professionals can implement tailored approaches that address the unique needs and circumstances of individuals, fostering optimal pain relief while minimizing the risks associated with inappropriate analgesic use.

This study aims to analyze the knowledge, attitudes, and behaviors of the general public toward using over-the-counter (OTC) analgesic medications comprehensively. The study's findings will contribute to the existing literature on pain management and provide valuable insights to healthcare professionals, policymakers, and educators, guiding potential interventions and improvement strategies.

Materials and Methods

Study Design and Setting

This cross-sectional study aimed to assess the level of knowledge, attitudes, and practice regarding the use of over-the-counter analgesics in Indonesia. The study was conducted from December 2019 to June 2020. Initially, paper questionnaires were distributed directly to respondents. However, due to the implementation of large-scale social restrictions caused by COVID-19, the questionnaires were later administered online through email and WhatsApp, using our community engagement group.

Sample Size and Respondents

The study used a consecutive sampling technique, with a standard type 1 error rate of 5% based on the conventional normal variation. The expected percentage of individuals participating in the study was 50%, with a margin of error of 5%. The sample size calculation indicated that a minimum of 384 respondents were needed. However, we managed to recruit up to 582 respondents. Eligible respondents for this study were aged 18 years or older who were not employed in the healthcare sector, had access to electronic communication devices and the Internet, and provided voluntary consent to participate in the research.

Data Collection

Data collection for the study was performed by five research assistants. Initially, respondents were recruited in public areas using the paper form. During the recruitment process, respondents were provided with comprehensive information about the study and were required to sign an informed consent form. However, due to the implementation of large-scale social restrictions, questionnaire administration shifted to online platforms, such as email or WhatsApp. Questionnaire responses were securely stored in an online database, which was exclusively accessible and downloadable by the authors.

Study Instruments

The questionnaire used in this research was adapted from a study conducted by Saengcharoen et al,¹⁴ and was professionally translated into Bahasa Indonesia. The adapted questionnaire comprised four sections: respondent background information, a knowledge assessment that included eight items on paracetamol and eight items on NSAIDs, an attitude assessment comprising four items, and a practice assessment consisting of three items. Responses to knowledge and practice questions were scored as 1 for correct responses and 0 for incorrect ones. In contrast, those about attitude were assessed using a five-point Likert scale encompassing the following choices: strongly disagree (scored 4), disagree

(scored 3), undecided (scored 0), agree (scored 2), and strongly agree (scored 1). Cronbach's alpha coefficients for knowledge about paracetamol, knowledge about NSAIDs, attitude, and practice were 0.73, 0.75, 0.76, and 0.71, respectively.

Statistical Analysis

The socioeconomic backgrounds of the respondents were presented using descriptive statistics. We used a *t*-test to explore differences in knowledge, attitudes, and practices related to all predictors except for educational attainment, which was analyzed using ANOVA. A linear multiple regression analysis was conducted to identify variables influencing successful practice attainment. The Durbin-Watson coefficient of 1.925 confirmed the lack of autocorrelation. The multicollinearity was evaluated by examining the tolerance levels and variation inflation factor (VIF) thresholds, set at 0.50–0.99 and 1.01–1.96, respectively. A regression analysis was conducted, and the resulting statistical significance level, as indicated by the *p*-value, was 0.002. The residual standard deviation mean was determined to be zero, and the range was less than three, suggesting the lack of any outliers. All statistical analyses were conducted using SPSS 27 software (SPSS Inc., Chicago, IL, United States).

Results

Table 1 presents the data collected from the questionnaire, indicating that 582 respondents completed it. The gender distribution shows that approximately 68.2% of the respondents were male, while 31.8% were female. Further analysis

Table 1 Characteristics of Respondents (N = 582)

Variables	N (%)	Mean	SD	Min	Max
Age (years)		25.27	9.08	16	67
≤22	369 (63.4)				
>22	213 (36.6)				
Gender					
Male	397 (68.2)				
Female	185 (31.8)				
Education attained					
High school	193 (33.2)				
Vocational school	47 (8.1)				
Undergraduate	326 (56.0)				
Graduate school	16 (2.7)				
Employment status					
Unemployed	386 (66.3)				
Employed	196 (33.7)				
Have chronic disease					
No	550 (94.5)				
Yes	32 (5.5)				
Using herbal medicine					
No	558 (95.9)				
Yes	24 (4.1)				
Available PHC near house					
No	121 (20.8)				
Yes	461 (79.2)				
Knowledge about paracetamol		4.56	1.84	0	8
Knowledge about NSAIDs		2.88	2.40	0	8
Attitudes		6.80	3.74	0	16
Practice		2.71	0.48	0	3

Abbreviations: PHC, primary health care; NSAIDs, nonsteroidal antiinflammatory drugs; SD, standard deviation; min, minimum; max, maximum.

revealed that among males, 67.0% were below 22 years old, while 33.0% were above 22 years old. Among females, the percentages were 55.7% and 44.3% for below and above 22 years old, respectively. Most respondents were undergraduate students, accounting for 56.0% of the total. Many respondents had no chronic diseases (94.5%) and were not using herbal medicine (95.9%) at the time of the survey. Approximately 79% of the respondents resided near primary healthcare facilities.

Regarding knowledge scores, the mean score for paracetamol was 4.56 ± 1.84 , while for NSAIDs, it was 2.88 ± 2.40 . In addition, the mean scores for attitude and practice using analgesics were 6.80 ± 3.74 and 2.71 ± 0.448 , respectively.

The majority of respondents were aware that paracetamol effectively reduces fever (94.5%) and can be taken up to three times a day (81.3%). However, up to 74% of the respondents were unaware that the maximum daily dosage of paracetamol should not exceed 4 grams or 8 tablets. In contrast, nearly 27% of respondents knew that paracetamol could be taken with or without food, and 70% believed it would not cause any allergies (Table 2).

Concerning the use of NSAIDs, approximately 50% of respondents knew that these medications are used to treat inflammation. However, a significant number of respondents (72.0%) mistakenly thought that NSAIDs could be taken every three hours, and a majority (63.1%) believed they could be consumed without meals. Nearly half of the respondents were unaware that NSAIDs could irritate the stomach and cause ulcers. Furthermore, most respondents had limited knowledge about the potential harm of using multiple NSAIDs (87.5%) and the risk of allergies (79.4%).

Table 3 provides an overview of the respondents' attitudes toward analgesic usage. Approximately 25% of the respondents believe that taking certain types of analgesics can quickly alleviate pain, while 30% think that using high-dose analgesics can provide immediate pain relief. Only 30.3% of respondents agree that analgesics prescribed by a doctor are unlikely to cause allergies. In comparison, 35.5% believe that analgesics are entirely safe without additional warnings from healthcare professionals, such as doctors or pharmacists.

Most respondents (97.4%) reported using analgesics less than five times per month. However, it is concerning that approximately 1% of respondents tended to exceed the recommended dosage of analgesics daily. In addition, approximately 70% of respondents acquire analgesics from community pharmacies (Table 4).

Table 2 Participants' Responses to Questions About Analgesic Knowledge

Questions	N (%)	
	Correct Response	Incorrect Response
Knowledge about paracetamol		
Paracetamol alleviates fever	552 (94.8)	30 (5.2)
One tablet of paracetamol contains a dosage of 500 mg	361 (62.0)	221 (38.0)
Paracetamol can be taken 2–3 times a day if experiencing body pain or discomfort	473 (81.3)	109 (18.7)
The maximum dosage of paracetamol is 8 tablets per day	150 (25.8)	432 (74.2)
Paracetamol does not cause irritation to the digestive tract, so it can be taken before meals	155 (26.6)	427 (73.4)
High doses of paracetamol can lead to liver toxicity	426 (73.2)	156 (26.8)
Paracetamol is a safe medication that does not cause allergies	133 (22.9)	449 (77.1)
Excessive use of paracetamol increases the risk of liver damage in individuals who frequently consume alcohol	406 (69.8)	176 (30.2)
Knowledge about NSAIDs		
NSAIDs reduce bone and joint swelling/inflammation	306 (52.6)	276 (47.4)
Use NSAIDs every 2 to 3 hours for pain relief	163 (28.0)	419 (72.0)
Take NSAIDs with or without meals	215 (36.9)	367 (63.1)
NSAIDs can irritate the stomach and cause ulcers	269 (46.2)	313 (53.8)
Excessive use of NSAIDs can harm the kidneys	328 (56.4)	254 (43.6)
Using multiple or single types of NSAIDs carries the risk of adverse drug reactions	73 (12.5)	509 (87.5)
No previous NSAID allergy means no allergy with subsequent use	202 (34.7)	380 (65.3)
Each NSAID type can trigger a drug allergy	120 (20.6)	462 (79.4)

Abbreviation: NSAIDs, nonsteroidal antiinflammatory drugs.

Table 3 Participants' Responses to Questions About Attitudes Regarding Analgesic Use

Questions	N (%)				
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Consuming certain types of analgesics can alleviate pain or ache or fever more quickly	76 (13.1)	173 (29.7)	182 (31.3)	81 (13.9)	70 (12.0)
Consuming high-dose analgesics will provide immediate relief from pain or ache or fever	53 (9.1)	136 (23.4)	158 (27.1)	121 (20.8)	114 (19.6)
Analgesic medications prescribed by a doctor will not cause allergies	55 (9.5)	161 (27.7)	190 (32.6)	125 (21.5)	51 (8.8)
Analgesic medications provided by a doctor or pharmacist without any warnings or precautions are definitely safe	62 (10.7)	121 (20.8)	192 (33.0)	105 (18.0)	102 (17.5)

Table 4 Participants' Responses to Questions About Practices Regarding Analgesic Usage

Questions	N (%)	
	Yes	No
Using analgesics frequently (>5 times a month)	15 (2.6)	567 (97.4)
Taking more than 8 tablets of paracetamol per day	5 (0.9)	577 (99.1)
Obtaining analgesic from a community pharmacy	434 (74.6)	148 (25.4)

Table 5 illustrates the analysis of knowledge, attitude, and practice among respondents across various characteristics. The findings revealed notable disparities in knowledge regarding paracetamol and NSAIDs based on respondents' gender, educational level, and employment status. However, concerning the attitude toward analgesic usage, only the level of education exhibited a significant difference ($p < 0.001$). Similarly, regarding using analgesics, only gender showed a significant difference ($p = 0.023$).

The correlation analysis revealed a significant association ($p < 0.05$) between the knowledge, attitude, and practice of using analgesics. Furthermore, Table 6 presents a moderate positive correlation between knowledge regarding using paracetamol and NSAIDs ($r = 0.681$), and attitude and practice in using analgesics ($r = 0.578$).

This study employed linear multiple regression analysis to determine the variables correlated with good practices in using analgesics. Ten variables, including age, gender, education, employment status, chronic disease, herbal medicine consumption, availability of primary health care (PHC), knowledge of paracetamol and NSAIDs, and attitude, were examined. The findings, presented in Table 7, revealed that gender ($p = 0.021$, $\beta = -0.104$), availability of PHC near residency ($p = 0.041$, $\beta = 0.100$), and knowledge about NSAIDs ($p = 0.009$, $\beta = 0.030$) were factors associated with good practices using analgesics. These factors collectively accounted for 3.3% of the variance in outcomes ($F = 2.670$, p -value < 0.05).

Discussion

The current study examined the understanding of paracetamol and NSAIDs separately. The data regarding paracetamol revealed a score of 4.56 (76.0%), whereas the mean score for knowledge about NSAIDs was 2.88 (48%). The findings of our investigation indicate that a significant proportion of the subjects exhibit a satisfactory comprehension level related to paracetamol as opposed to NSAIDs ($p < 0.001$). Paracetamol is a nonprescription medication that is commonly accessible in many countries. The fact that it can be obtained without a prescription from pharmacies, grocery stores, and convenience stores enhances its accessibility to individuals. The accessibility and convenience of paracetamol usage enhance the level of public familiarity and comprehension of this medication compared to NSAIDs, which may have limited accessibility. Paracetamol is a frequently used medication to reduce fever and alleviate mild-to-moderate pain, both of which are prevalent afflictions encountered by individuals.¹⁵ A significant number of individuals possess personal

Table 5 Comparison of Participants' Characteristics and Mean Scores of Knowledge, Attitude, and Practice

Variables	Knowledge About Paracetamol			Knowledge About NSAIDs			Attitude			Practice		
	Mean	SD	p-value	Mean	SD	p-value	Mean	SD	p-value	Mean	SD	p-value
Age (years)												
≤22	4.67	1.89	0.055	2.88	2.50	0.959	6.97	3.70	0.141	2.68	0.49	0.023*
>22	4.37	1.73		2.87	2.23		6.49	3.80		2.77	0.45	
Gender												
Male	4.66	1.89	0.038*	3.09	2.49	<0.001*	6.94	3.77	0.163	2.73	0.47	0.079
Female	4.34	1.69		2.42	2.14		6.48	3.66		2.65	0.48	
Education attained												
High school	3.84	1.55	<0.001*	1.98	2.18	<0.001*	5.75	3.41	<0.001*	2.74	0.45	0.346
Vocational school	4.14	1.58		2.49	2.17		6.17	3.76		2.76	0.47	
Undergraduate	5.05	1.88		3.45	2.38		7.45	3.76		2.68	0.50	
Graduate school	4.37	1.70		3.15	2.80		8.00	4.28		2.81	0.40	
Employment status												
Unemployed	4.74	1.92	<0.001*	3.14	2.50	<0.001*	7.15	3.65	0.002*	2.69	0.50	
Employed	4.19	1.60		2.35	2.12		6.10	3.84		2.75	0.44	0.153
Have chronic disease												
No	4.60	1.83	0.050	2.90	2.39	0.321	6.74	3.75	0.133	2.70	0.47	
Yes	3.93	1.79		2.43	2.56		7.75	3.58		2.78	0.61	0.504
Using herbal medicine												
No	4.57	1.84	0.292	2.90	2.41	0.165	6.79	3.76	0.726	2.71	0.48	
Yes	4.20	1.64		2.25	2.19		7.04	3.38		2.58	0.50	0.241
Available PHC near house												
No	4.63	1.97		2.97	2.37		7.51	3.84		2.62	0.54	
Yes	4.54	1.80	0.644	2.85	2.42	0.621	6.61	3.70	0.022*	2.73	0.46	0.055

Note: *Significant $p < 0.05$.

Abbreviations: PHC, primary health care; SD, standard deviation.

Table 6 Correlation Between Knowledge, Attitude, and Practice of Using Analgesics

Variable	Coefficients	p-value	95% CI
Knowledge (Paracetamol vs NSAIDs)	0.681	<0.001	0.633–0.723
Knowledge (paracetamol) vs attitude of using analgesics	0.115	0.005	0.032–0.197
Knowledge (paracetamol) vs practice of using analgesics	0.238	<0.001	0.157–0.315
Knowledge (NSAIDs) vs attitude of using analgesics	0.136	0.001	0.052–0.217
Knowledge (NSAIDs) vs practice of using analgesics	0.208	<0.001	0.127–0.287
Attitude vs practice of using analgesics	0.578	<0.001	0.519–0.631

familiarity with or have observed the administration of paracetamol in such circumstances, either for their benefit or that of their family members.

While a significant number of respondents in the study exhibited familiarity with the indications of paracetamol, the overall population lacked an understanding of the proper administration of paracetamol and NSAIDs. Paracetamol may be consumed with or without food, whereas NSAIDs should not be consumed on an empty stomach as it may lead to gastric irritation and ulceration.¹⁶ The data suggest that the respondents demonstrated a high level of awareness regarding the potential consequences of the overconsumption of paracetamol and NSAIDs. According to a systematic review conducted by Roberts et al,¹⁷ the risk of hospitalizations for upper gastrointestinal adverse events (AEs) significantly increased when higher doses of analgesics were used, or paracetamol and NSAIDs were combined. Therefore, ensuring

Table 7 Factors Associated with Good Practices Using Analgesics

Variables	β	SE	t	p-value	95% CI
Constant	2.742	0.081	33.767	<0.001	2.565–2.882
Age (Ref: ≤ 22)	0.068	0.044	1.538	0.125	–0.019–0.155
Gender (Ref: Male)	–0.104	0.045	–2.309	0.021*	–0.192–(–0.016)
Educational attained (Ref: High school)					
Vocational school	–0.043	0.082	–0.513	0.596	–0.204–0.117
Undergraduate	–0.083	0.047	–1.747	0.081	–0.176–0.010
Graduate school	0.009	0.129	0.073	0.942	–0.243–0.262
Employment status (Ref: Unemployed)					
Employed	0.072	0.048	1.489	0.137	–0.023–0.166
Have chronic disease (Ref: No)					
Yes	0.084	0.088	0.950	0.342	–0.089–0.256
Using herbal medicine (Ref: No)					
Yes	–0.118	0.100	–1.187	0.236	–0.314–0.077
Available PHC near house (Ref: No)					
Yes	0.100	0.049	2.048	0.041*	0.004–0.197
Knowledge about paracetamol	–0.015	0.015	–1.027	0.305	–0.045–0.014
Knowledge about NSAIDs	0.030	0.011	2.605	0.009*	0.007–0.052
Attitude	–0.011	0.006	–1.922	0.055	–0.022–0.000

Notes: R = 0.231, Adjusted R² = 0.033, F = 2.670, *significant $p < 0.05$.

the appropriate dosage is imperative to prevent possible liver damage associated with excessive paracetamol consumption and gastrointestinal complications correlated with excessive NSAID usage.

The data reveal an essential concern about improper analgesic use among respondents concerning their attitude. It is alarming that a notable portion of respondents admitted to using different analgesics simultaneously or exceeding recommended dosages. This behavior raises concerns about their understanding of the proper administration of analgesic medications and suggests a potential disregard for recommended dosing guidelines. Moreover, the respondents lacked awareness of the potential risks of developing allergies to these medications and experiencing adverse drug reactions. Therefore, individuals need to know about potential interactions to minimize adverse effects and maximize the overall effectiveness of their treatment plans.

Moreover, the small proportion of respondents who believe that physician-recommended analgesics are unlikely to trigger allergies suggests that insufficient knowledge regarding the plausible allergic responses is linked with these drugs. The discovery that 33% of respondents perceive analgesics as entirely safe without supplementary cautionary advice from healthcare practitioners underscores a reasonable misapprehension among the respondents. This perception may result in improper analgesic use without adequate guidance, thereby elevating the likelihood of unfavorable outcomes or medication interferences.^{18,19}

The results of this study underscore the significance of enhancing patient education regarding the use of analgesics. Healthcare practitioners must assume an active role in providing patients with clarity and encompassing details regarding the correct dosage, potential adverse reactions, and the significance of adhering to the prescribed directives. Furthermore, it is imperative to address misunderstandings and encourage careful use of analgesics, specifically concerning the concomitant use of medications and exceeding prescribed dosages. Improving patient education and comprehension can help healthcare professionals to mitigate the risks associated with improper analgesic use and facilitate the implementation of safer and more efficacious pain management strategies.

The data present intriguing trends in the use of analgesics among the subjects. It can be determined from the responses provided by the respondents that the use of analgesics is not a common practice, as most respondents reported a frequency of fewer than five times per month. The findings indicate that most respondents demonstrated a responsible approach toward using analgesics, as infrequent use corresponds to using medication only when necessary. Nonetheless, it is alarming that a minor proportion of subjects (around 1%) tended to exceed the prescribed analgesic dosage daily. The

forementioned conduct implies an apparent mishandling or misinterpretation of appropriate dosage protocols, thereby increasing the likelihood of unfavorable outcomes or health hazards.

Consistent with the finding that nearly 80% of the respondents reside near primary healthcare facilities, this study reveals that approximately 70% of respondents obtain analgesics from community pharmacies, emphasizing the convenience and accessibility of these medications. Community pharmacies are pivotal in delivering over-the-counter analgesics, as they offer a convenient avenue for individuals seeking pain relief.⁸ The data highlights the significant contribution of community pharmacies in providing patient education and counseling on the proper use of analgesics. Previous study by Murphy et al,²⁰ stated that pharmacists must engage and guide patients actively, offering essential information on appropriate dosages, potential side effects, and necessary precautions when obtaining analgesics. This active involvement of pharmacists is essential in ensuring safe and informed analgesic medication use.

Hence, considering the aforementioned findings, ongoing educational programs and awareness campaigns specifically focusing on promoting responsible analgesic use and mainly emphasizing adherence to prescribed dosages are needed. Addressing the subset of individuals exceeding recommended dosages is crucial by providing accessible and accurate information through community pharmacies, and this ensures safe and appropriate analgesic use.

The investigation revealed that gender, resided close to PHC, and knowledge on NSAIDs were significant predictors of the respondents' good practice in using analgesics appropriately. The findings regarding gender as a predictor are consistent with previous studies,^{21,22} which have consistently shown that females demonstrate a higher level of understanding regarding analgesic medications. This phenomenon can be because women are more likely to rely on analgesics regularly to manage menstrual discomfort and related symptoms.

The heightened awareness and knowledge exhibited by females in understanding analgesics can be attributed to their personal experiences and the necessity of finding effective pain relief options for menstrual pain. It is plausible that the repeated use of analgesics during menstrual cycles has contributed to their comprehensive understanding of these medications, including their proper usage, potential side effects, and appropriate dosages. The implications of this finding underscore the importance of recognizing the unique needs and experiences of females regarding analgesic use.

Research has consistently demonstrated that individuals with easy access to healthcare facilities are more inclined to seek appropriate medical advice and comply with prescribed treatment regimens. Previous studies revealed that individuals residing in regions with enhanced healthcare accessibility exhibited increased levels of medication adherence for chronic ailments.^{23,24} The present study contributes to the existing literature by emphasizing the correlation between proximity to primary healthcare facilities and responsible analgesic use.

Furthermore, our research highlights the significance of knowledge in shaping appropriate analgesic use, specifically regarding NSAIDs. The aforementioned discovery is corroborated by prior scholarly investigations that have illustrated the influence of health literacy and patient education on medication adherence and medical condition self-management. Green et al²⁵ conducted a study that found that individuals with greater knowledge of NSAIDs were more inclined to comply with recommended dosages and precautions. This finding highlights the significance of furnishing patients with comprehensive, easily accessible information to supplement their understanding of analgesic use.

Notably, although our research provides insight into these variables, their collective explanatory capacity is relatively limited, accounting for only 3.3% of the variance. This implies that supplementary variables that may not be accounted for in our analysis that could potentially influence effective analgesic use. Subsequent investigations should delve into the aforementioned variables, namely socioeconomic status, cultural beliefs, and healthcare provider-patient communication, to attain a more all-encompassing understanding of medication adherence and judicious analgesic use.

While the current study offers significant insights into the factors related to proper analgesic usage, it is crucial to recognize the inherent limitations of this research. The data were collected through self-reported questionnaires, prone to recall and reporting biases. In addition, the research was conducted among a specific demographic, primarily undergraduate students, which may limit the generalizability of the findings to other contexts or populations. Future investigations should validate these findings in larger and more diverse cohorts, employing objective measures of medication adherence and exploring additional factors that could influence appropriate analgesic use.

Conclusion

The population demonstrates a better understanding of paracetamol and exhibits good practices in analgesic use. However, their understanding of NSAIDs and attitudes toward these medications is low. These findings emphasize the importance of implementing tailored interventions and educational initiatives targeting the identified population to enhance their understanding and promote the safe usage of analgesics.

Data Sharing Statement

Data were available from the corresponding author upon reasonable request.

Ethics Approval And Consent To Participate

The study obtained ethical clearance from the Health Research Ethics Committee of Universitas Padjadjaran, Indonesia (registration number: 1380/UN.6.KEP/EC/2019). It was conducted in compliance with the principles stated in the Declaration of Helsinki in 1964. Before participating, all respondents provided written informed consent for their involvement in the study and the possible publication of the research findings. Data were gathered and documented anonymously to comply with the principle of confidentiality.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare that they have no competing interest in this work.

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