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Research Article

The Relationship Between Knowledge Level and Attitude Toward the Use of Analgesic Drugs in the Community in East Medan

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ABSTRACT
Background: Pain, a common medical complaint, prompts many individuals to seek relief. Among the most frequently purchased drugs for self-medication are those from the analgesic-antipyretic group. The American Pain Society even designates pain as the 'fifth vital sign' due to its significance. Unfortunately, inadequate education provided by health professionals and a substantial number of untreated pain cases contribute to this situation. When used irrationally, analgesics can lead to various side effects, including stomach and intestinal disorders, hypersensitivity reactions, and damage to the kidneys and liver. Research from the Rational Use of Medicines in the ASEAN Region 2017 reveals that irrational drug use persists across all levels of health facilities in Indonesia. **Objective:** To investigate the relationship between analgesic knowledge and the utilization of analgesics in East Medan. **Methods:** This research constitutes an observational analytic study with a cross-sectional design. Respondents completed a questionnaire regarding their knowledge and usage of analgesics. Data were collected through consecutive sampling until 100 residents of East Medan were included. Subsequently, all the data were analyzed using Chi-Square analysis. **Results:** There was a relationship between analgesic knowledge and the utilization of analgesics (p=0.004). **Conclusion:** There exists a relationship between analgesic knowledge and the utilization of analgesics.

Keywords: analgesics, knowledge, pain, utilization

1. Introduction

Pain is an unpleasant sensory and emotional experience associated with, or resembling that associated with tissue damage or the possibility of tissue damage [1]. Research conducted in three pharmacies in the Medan Sunggal District revealed that the most common complaint reported by respondents was pain (40.3%). Analgesics play a central role in pain management. Correspondingly, the analgesic-antipyretic group emerged as the most frequently purchased type of drug for self-medication (36.6%) [2]. The American Pain Society designates pain as a 'fifth vital sign', emphasizing its critical importance. This designation arises from the inadequate education provided by health professionals and the substantial number of untreated pain cases [3]. The utilization of non-opioid drugs to relieve pain warrants caution, as excessive doses can lead to stomach and intestinal disorders, hypersensitivity reactions, kidney damage, and liver damage [4].

A total of 67.35% of the population in Sumatra Province, who reported health complaints during the last month, opted for self-medication [5]. The majority of individuals engaged in self-medication based on personal or family experience [6]. Furthermore, 75.5% of consumers visited pharmacies in Medan City with the

intention of purchasing medicine without a prescription [7]. However, self-medication can have serious consequences if not grounded in sound knowledge of medicines. These consequences include increased costs due to adverse drug effects, suboptimal treatment outcomes, and a loss of trust in health care providers resulting from treatment failures. Irrational drug use persists across all levels of health facilities in Indonesia [8]. Research conducted on the rationality of drug use in three pharmacies in Panyabungan City in 2017 revealed that 40.6% of respondents used drugs irrationally due to dose inaccuracies (34.5%) and inappropriate drug selection (18.7%) [6].

A study assessing the knowledge score of Indonesian individuals in medicine usage found that it ranged from 3.5 to 6.3 on a scale of 0 to 10 [9]. This data indicates that the level of knowledge among Indonesian people regarding medicine usage remains categorized as low to moderate [10]. Notably, Medan City, one of Indonesia's largest cities, exhibits a high morbidity rate of 8.58% [11], emphasizing the significant demand for medicine.

East Medan has a population of 113,045 people. It is one of the urban areas where there are 4 markets, 13 shops, 33 supermarkets, 5 hospitals, 2 community health centers, 16 clinics, 79 integrated health posts, 76 doctors' offices, and 7 midwives' offices [12]. These figures demonstrate that the available health facilities are quite sufficient, enabling people to easily engage in self-medication with analgesic drugs. Surprisingly, no research has been conducted on the community in this area to provide an overview of the level of knowledge and attitudes toward the use of analgesic drugs. Therefore, this study aims to determine the relationship between the level of knowledge and attitudes regarding the utilization of analgesic drugs within the East Medan community.

2. Methods

This study follows an observational analytic design with a cross-sectional research approach. In cross-sectional studies, both independent and dependent variables are measured and collected from respondents simultaneously. Data collection took place in East Medan between July 2021 and December 2021. Sampling was conducted using the consecutive sampling method, wherein all subjects meeting the inclusion criteria were included in the study until the required number of subjects was achieved. The inclusion criteria encompassed individuals residing in the East Medan area, aged 18 to 64 years, willing to participate in the study, having used analgesic drugs to manage pain, and possessing the ability to use Google Forms. Exclusion criteria applied to individuals working as health professionals, those who did not complete the questionnaire, and those diagnosed by doctors with severe mental disorders. The total number of respondents in this study was 100 people. Data collection occurred through an online questionnaire, specifically a Google Form, designed to explore the relationship between knowledge levels and attitudes toward the utilization of analgesic drugs in pain management. The research data underwent processing and testing using the Statistical Product and Service Solution (SPSS) version 25.0 program. Additionally, the research data were analyzed using the Chi-Square test with a significance level of $\alpha = 0.05$ and a 95% confidence interval.

3. Results and Discussion

Based on responses from 100 questionnaires that met the inclusion and exclusion criteria, we obtained demographic information about the respondents. This data serves as a reference for understanding the characteristics of the research sample.

Table 1. Distribution of respondents by gender.

Gender	Number (*N*)	Percentage (*%*)
Male	41	41,0
Female	59	59,0
Total	100	100,0

The findings in Table 1 indicate that 59 out of 100 respondents (59%) were female. This is in accordance with the data of the female population in East Medan Sub-district, which slightly exceeds the male population (50.6% female vs. 49.4% male) [12]. The predominance of female respondents aligns with broader patterns observed in health-related studies, where women are often more engaged in health care decisions and more likely to visit pharmacies or seek treatment. This could be attributed to their higher involvement in family health care responsibilities or greater health awareness, as supported by previous research in community pharmacy settings. Furthermore, gender-based differences in health-seeking behavior may influence drug use patterns, including self-medication [13].

Table 2. Distribution of respondents by age.

Knowledge level	Number (*N*)	Percentage (*%*)
Young adult (18-40 y.o.)	69	69,0
Adult (41-60 y.o.)	28	28,0
Elderly (>60 y.o.)	3	3,0
Total	100	100,0

In Medan Timur Sub-district, individuals aged 20-24 years dominate the population [12]. Based on Table 2, regarding age, the majority of the respondents for this study fell within the 18-40 years old category (69%), while 28% were aged 41-60 years, and the remaining 3% were >60 years old. Young adults, especially those between 18 and 40 years old, tend to be more autonomous in health-related decisions and more exposed to informal sources of health information—such as the internet, peers, or social media. This age group's higher tendency toward self-medication may stem from a desire for convenience, time-saving, and confidence in managing minor health issues. These behaviors have been widely reported in previous studies across Southeast Asia, highlighting the shift from professional consultation to self-directed treatment, particularly among digitally literate populations [14].

Table 3. Distribution of respondents by occupation.

Occupation	Number (*N*)	Percentage (*%*)
College student	35	35,0
Civil servants/private employee	22	22,0
Housewife	18	18,0
Self-employed	11	11,0
Housemaid	8	8,0
Other	6	6,0
Total	100	100,0

In terms of occupation, the distribution of the respondents (Table 3) was as follows: 35% were college students, 22% were civil servants or private employees, 18% were housewives, 11% were self-employed, 8% were housemaids, and 6% fell into other categories. Meanwhile, Medan Sunggal Sub-district revealed that the predominant occupational category was housewives (34.6%) [2].

Table 4. Distribution of respondents by education level.

Education level	Number (*N*)	Percentage (*%*)
Primary school	31	31,0
Junior/high school	31	31,0
Diploma degree/higher	38	38,0
Total	100	100,0

Furthermore, according to Table 4, the majority of respondents had completed their education at the junior high school/high school level (53%). Approximately 43% held a diploma degree or higher, while 4% had completed only primary school. This is in accordance with the data in Medan, namely 63.39% of Medan residents had attained a medium or higher education level (high school/above) [11].

Regarding occupation and education, students were the largest group of self-medicators in this study. This aligns with findings from studies in both urban Indonesia and international contexts, where students commonly use over-the-counter medications due to perceived mildness of symptoms, lack of time to consult professionals, and ease of access to medicines. Although more than half of the respondents had at least a secondary education, a high level of formal education does not always translate into high health literacy. In fact, other Indonesian studies have consistently shown that knowledge regarding proper drug use remains in the low to moderate range. This gap between educational attainment and pharmacological understanding suggests that specific knowledge about safe medication use may not be adequately emphasized within general education systems [15].

Table 5. Characteristics of knowledge level regarding analgesic drugs.

Knowledge level	Number (*N*)	Percentage (*%*)
Inadequate	31	31,0
Adequate	31	31,0
Advanced	38	38,0
Total	100	100,0

Based on Table 5, the results indicate that 38 respondents (38%) possess an advanced knowledge of analgesic drugs. However, other studies indicate that the knowledge level among Indonesian individuals regarding drug usage remains categorized as low to moderate [10]. Similarly, research in Sukoharjo Regency found that respondents' knowledge about drug self-medication predominantly fell into the moderate category (48%) [16].

Table 6. Utilization of analgesic drugs.

Drug utilization	Number (*N*)	Percentage (*%*)
Irrational	82	82,0
Rational	18	18,0
Total	100	100,0

According to Table 6, it was found that 82 respondents (82%) used drugs irrationally. In Demak District, a significant proportion of respondents also engaged in irrational use of analgesic drugs (54%) [17]. Conversely, in Panyabungan City and Medan Sunggal Sub-district, the majority of respondents demonstrated rational drug use, at 59.4% and 73.7% respectively [2, 6]. These variations in findings may be attributed to differences in respondent selection criteria. Notably, the studies conducted in Panyabungan City and Medan Sunggal did not exclude health professionals from participating, which could have positively influenced the level of rational drug use reported. This suggests a potential selection bias, representing a limitation of the study when comparing results across regions. However, the inclusion of respondents with medical knowledge in Panyabungan and Medan Sunggal could also be considered a strength, as it provides insight into how health literacy influences rational drug use.

Table 7. Distribution of assessment status for each rationality criterion.

		Assessment status				Total	
		Inappropriate		Appropriate			
		N	*%*	*N*	*%*	*N*	*%*
Rationality criterion	Appropriate diagnosis	14	14,0	86	86,0	100	100,0
	Appropriate medical indication	6	6,0	94	94,0	100	100,0
	Appropriate drug selection	38	38,0	62	62,0	100	100,0
	Appropriate dosage	2	2,0	98	98,0	100	100,0
	Appropriate way of drug administration	20	20,0	80	80,0	100	100,0
	Appropriate interval of drug administration	9	9,0	91	91,0	100	100,0
	Appropriate duration of drug administration	29	29,0	71	71,0	100	100,0
	Mindful of side effects	28	28,0	72	72,0	100	100,0
	Appropriate evaluation of the patient's condition	29	29,0	71	71,0	100	100,0
	Effective, safe, quality assured, affordable, available at all times	11	11,0	89	89,0	100	100,0
	Appropriate information	20	20,0	80	80,0	100	100,0
	Appropriate follow-up	13	13,0	87	87,0	100	100,0
	Appropriate dispensing	25	25,0	75	75,0	100	100,0
	Adhere to treatment	9	9,0	91	91,0	100	100,0

According to Table 7, it was observed that the majority of irrational drug use resulted from inappropriate

drug selection, involving 38 people (38%). Conversely, a significant proportion of respondents correctly administered the appropriate drug dosage, with 98 people (98%) adhering to the recommended doses. The study conducted in Medan Marelan District found that the irrational use of medication was largely due to improper dosage administration [18].

Common irrational behaviors include incorrect dosing, inappropriate indication, and continued use despite adverse effects or lack of efficacy. Mechanistically, this could be related to a lack of understanding of how analgesics—especially NSAIDs and paracetamol—work. For instance, NSAIDs inhibit cyclooxygenase enzymes, reducing prostaglandin synthesis, which can ease inflammation and pain. However, misuse can lead to gastrointestinal irritation, kidney damage, or masking of serious conditions. Without proper guidance, patients may underestimate these risks and continue using such drugs without consulting healthcare providers [19].

Table 8. Distribution of respondents based on the source of information regarding analgesic drugs.

Source of information	Number (*N*)	Percentage (%)
Printed media	11	11,0
Electronic media	25	25,0
Health care worker	29	29,0
Acquaintance/friend/family	34	34,0
Journal/book	1	1,0
Total	100	100,0

According to Table 8, it was discovered that the majority of respondents obtained information about analgesic drugs through acquaintances, friends, or family, totaling 34 people (34%). Another study also corroborated that this remains the predominant source of information (38,9%) [17]. The fact that friends, family, or acquaintances remain the most common sources of drug-related information highlights a critical weakness in the information dissemination chain. While community-based networks can be helpful in spreading health messages, they can also perpetuate misinformation and non-evidence-based practices. This is particularly risky when it involves medications like analgesics, which are widely used but not without adverse effects if misused. A study found that only about 43% of treatment recommendations on websites are accurate, and many sites provide incomplete or misleading information, including inappropriate recommendations for the use of paracetamol and opioids [20]. Another study also indicates that patient information leaflets (PIL), doctors, and pharmacists are considered the most reliable sources. In contrast, television, print media, and the internet are seen as less trustworthy, especially by older age groups [21].

Table 9. Relationship between knowledge level and attitude toward analgesic drug use.

		Knowledge level						Total		P value
		Inadequate		Adequate		Advanced				
		N	%	*N*	%	*N*	%	*N*	%	
Drug utilization	Irrational	29	35,4	28	34,1	25	30,5	82	100,0	0,004
	Rational	2	11,1	3	16,7	13	72,2	18	100,0	
Total		31	31,0	31	31,0	38	38,0	100	100,0	

Based on statistical analysis using the Chi-square method (Table 9), the study results indicate a relationship between the level of knowledge and attitudes toward the use of analgesic medication, with a p-value of 0.004 ($p<0.05$). These findings are consistent with previous research, which also found a significant association between knowledge level and attitudes toward analgesic drug use (p-value = 0.000) [16, 17].

4. Conclusion

Based on the analysis, there is a statistically significant relationship between patients' level of knowledge and their attitudes toward the use of analgesic drugs ($p = 0.004$; $p < 0.05$). This indicates that better knowledge is associated with more positive or appropriate attitudes regarding analgesic use. These findings highlight the importance of targeted health education, particularly focusing on the safe and rational use of analgesics. Future efforts should go beyond simply increasing knowledge and aim to enhance critical health literacy—the ability to evaluate and apply health information effectively.

Pharmacists and primary care providers must take a more active role in patient counseling, especially in

community pharmacy settings, where most self-medication decisions are made. Importantly, any intervention should be tailored to address sociocultural influences, accessibility issues, and regional health behaviors in order to promote long-term improvements in rational drug use.

5. Data Availability Statement

The original contributions presented in the study are included in the article/supplementary material; further inquiries can be directed to the corresponding author.

6. Ethical Statement

Ethical approval for this study was obtained from the Research Ethics Committee of Universitas Sumatera Utara (Approval Number: 827/KEP/USU/2021).

7. Author Contributions

All authors contributed to the design and implementation of the research, data analysis, and finalizing the manuscript.

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10. Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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