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# The Relationship Between Knowledge Level and Self-Medication Behavior for Stomach Ulcers in Non-Health High School Students in Kendari City

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**Abstrak**

Gangguan lambung atau maag merupakan masalah kesehatan yang sering dialami remaja, khususnya pelajar SMA, dan kerap ditangani melalui swamedikasi tanpa pengawasan tenaga kesehatan. Praktik ini berpotensi menimbulkan risiko apabila tidak didukung oleh pengetahuan yang memadai mengenai penggunaan obat yang rasional. Penelitian ini bertujuan menganalisis tingkat pengetahuan dan perilaku swamedikasi maag pada pelajar SMA non-kesehatan serta mengkaji hubungan antara kedua variabel tersebut. Penelitian menggunakan desain observasional dengan pendekatan *cross-sectional* bersifat deskriptif-analitik. Subjek penelitian adalah pelajar SMA Negeri non-kesehatan di Kota Kendari yang dipilih menggunakan teknik *purposive sampling* yang berjumlah 106 siswa yang berasal dari SMA Satria, SMA PGRI dan SMA Hasrati. Pengumpulan data dilakukan melalui kuesioner terstruktur yang mengukur tingkat pengetahuan dan perilaku swamedikasi maag. Data dianalisis secara deskriptif dan inferensial menggunakan uji statistik yang sesuai untuk data ordinal. Hasil penelitian menunjukkan bahwa sebagian besar responden memiliki tingkat pengetahuan pada kategori cukup hingga baik dan perilaku swamedikasi yang cenderung positif, meskipun masih ditemukan proporsi perilaku yang kurang rasional. Analisis hubungan menunjukkan adanya hubungan positif dan signifikan antara tingkat pengetahuan dengan perilaku swamedikasi maag dengan *p*-value 0,032, di mana peningkatan pengetahuan diikuti oleh perilaku penggunaan obat yang lebih tepat. Kesimpulan penelitian ini menegaskan bahwa pengetahuan merupakan faktor penting dalam membentuk perilaku swamedikasi yang aman dan rasional pada pelajar SMA non-kesehatan. Oleh karena itu, diperlukan intervensi edukatif yang terstruktur di lingkungan sekolah untuk meningkatkan literasi obat dan mendorong praktik swamedikasi yang bertanggung jawab di kalangan remaja.

**Kata kunci:** Pengetahuan, Swamedikasi, Maag, Pelajar SMA, Penggunaan Obat Rasional**Abstract**

*Stomach disorders or ulcers are a common health problem experienced by adolescents, especially high school students, and are often treated through self-medication without the supervision of a health professional. This practice has the potential to pose risks if not supported by adequate knowledge regarding rational drug use. This study aims to analyze the level of knowledge and behavior of self-medication for ulcers among non-health high school students and examine the relationship between the two variables. The study used an observational design with a cross-sectional descriptive-analytical approach. The study subjects were non-health high school students in Kendari City who were selected using a purposive sampling technique. A sample size of 106 students from Satria High School, PGRI High School, and Hasrati High School was selected. Data were collected through a structured questionnaire that measured the level of knowledge and behavior of self-medication for ulcers. Data were analyzed descriptively and inferentially using statistical tests appropriate for ordinal data. The results showed that most respondents had a level of knowledge in the sufficient to good category and self-medication behavior tended to be positive, although a proportion of less rational behavior was still found. The correlation analysis showed a positive and significant relationship between the level of knowledge and self-medication behavior for ulcers with a *p*-value of 0.032, where increased knowledge was followed by more appropriate drug use behavior. The conclusion of this study confirms that knowledge is an important factor in shaping safe and rational self-medication behavior in non-health high school students. Therefore, structured educational interventions are needed in the school environment to improve drug literacy and encourage responsible self-medication practices among adolescents.*

**Key words:** Knowledge, Self-medication, Ulcers, High School Students, Rational Use of Drugs

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## INTRODUCTION

Gastric disorders, clinically known as gastritis or dyspepsia, are one of the most common digestive health problems worldwide. According to data from *the World Health Organization (WHO)*, more than 50% of the global population has experienced symptoms of gastritis in their lifetime, with a high prevalence in adolescents and young adults. In Southeast Asia, the incidence of gastritis reaches approximately 580,000 cases per year, mostly triggered by irregular eating patterns, academic stress, and the consumption of nonsteroidal anti-inflammatory drugs (NSAIDs) without medical supervision (Antoni, 2025; Amriatunnisa, 2025). In Indonesia, gastritis is popularly known as "maag disease," which is often experienced by students due to the habit of skipping breakfast, exam stress, and a lack of awareness of maintaining a healthy diet (Rahmadanila, 2025).

The phenomenon of self-medication has become an integral part of people's efforts to independently manage stomach ulcers. Adolescents, including high school students, are increasingly using over-the-counter medications such as antacids, cimetidine, and omeprazole without a doctor's prescription (Mekonnen & Zelalem, 2018). Easy access to over-the-counter medications and drug promotions through digital media reinforce this trend (Nasution & Dianingati, 2022). While self-medication has positive potential in increasing health independence, practices that are not based on sufficient knowledge can increase the risk of dosage errors, drug interactions, and delayed diagnosis of more serious illnesses (Carrillo, 2017).

Health knowledge is a key factor in developing safe and rational self-medication behavior. According to *the Health Belief Model (HBM)*, an individual's perception of the vulnerabilities and benefits of a health intervention significantly influences the decision to self-medicate or seek medical help (Siraj et al., 2022). Research in various countries shows that non-health students have lower levels of pharmacological knowledge than health students,

placing them at greater risk of self-medication errors (Mitra et al., 2018; Amrainum et al., 2021).

A similar situation occurs among non-health high school students, who generally lack formal education about medicine and health. They are prone to making mistakes in selecting the type, dosage, and frequency of antacids without understanding the long-term side effects, such as *rebound acidity* or complications from overuse of acid-suppressing medications (Zehroh, 2022; Elsaigh, 2024). In the Indonesian context, this practice is exacerbated by the absence of health education in schools and the lack of over-the-counter (OTC) medication sales in pharmacies and online stores (Puspitasari, 2023).

Previous research reinforces the importance of knowledge in self-medication practices. Studies in Ethiopia and Sri Lanka found that a lack of understanding of drug side effects was a major reason for irrational self-medication (Thuvaragan & Mandakini, 2024; Mekonnen & Zelalem, 2018). At the national level, several studies have shown similar results: knowledge plays a significant role in rational behavior in the use of antacids among university students and the general public (Rahmadanila, 2025; Maharani et al., 2025). However, most of these studies focused on university students or the general public, without specifically addressing non-health high school students with different characteristics and maturity levels.

A *research gap* is evident in the limited empirical data available regarding the relationship between knowledge levels and self-medication behavior for ulcers among non-health high school students in Indonesia. This group is a transitional generation toward adulthood, beginning to make their own health decisions without the guidance of parents or medical professionals (Teh, 2020; Antoni, 2025). Therefore, this study is crucial to provide a deeper understanding of the extent to which non-health students' knowledge influences their decisions to self-medicate for ulcers.

This study is expected to enrich the literature on adolescent health behavior and strengthen theoretical understanding of the relationship between knowledge and safe self-

medication practices. It also serves as a basis for formulating adolescent health education programs by schools and health professionals. This study aims to analyze the relationship between knowledge levels and ulcer self-medication practices among non-health high school students in Kendari City and identify influencing factors.

**RESEARCH METHODS**

This study used an observational design with a descriptive-analytical *cross-sectional approach* to analyze the relationship between the level of knowledge and behavior of self-medication for ulcers in non-health high school students. Data collection was conducted in August 2025 at SMA Satria, SMA PGRI, and SMA Hasrati, Kendari City, using a structured questionnaire consisting of instruments for knowledge and behavior of self-medication for ulcers with an ordinal scale. The study population included all active students in the 2024/2025 academic year, with the sample determined using a *purposive sampling technique* based on inclusion and exclusion criteria. The number of samples was calculated using the Slovin formula and obtained 106 respondents after an additional 10% to anticipate data loss, each consisting of 35 students from SMA Satria, SMA PGRI, and 36 students from SMA Hasrati.

Data collection began with obtaining permission and a preliminary study, followed by distributing questionnaires to respondents who met the criteria. The data obtained then went through *editing , coding , entry , and cleaning stages* before being analyzed. The level of knowledge of ulcer self-medication was classified into good, sufficient, and poor categories based on the percentage score, while self-medication behavior was categorized as positive or negative based on the T-score value. Data analysis was conducted descriptively and inferentially using Microsoft Excel 2010 and SPSS version 26 to describe the characteristics of respondents and to examine the relationship between the level of knowledge and ulcer self-medication behavior.

**RESULTS AND DISCUSSION**

Table 1. Respondent Characteristics

Respondent Characteristics	Number of Respondents	Percentage (%)
<b>Gender</b>		
Woman	75	29.2
Man	31	70.8
<b>Age</b>		
14 years	12	11.3
15 years	25	23.6
16 years	31	29.2
17 years	37	34.9
18 years	1	0.9
<b>Information Source</b>		
Print media	-	-
Electronic Media	14	13.2
Statement from Health Worker	43	40.6
Family	40	37.7
Friend	9	8.5

Table 1 shows the characteristics of the study respondents, consisting of 106 non-health high school students. The majority of respondents were male (70.8%), while only 29.2% were female. The age distribution shows that the majority were in the 16–17 year range (64.1%), representing the mid-to-late adolescence phase. The most common sources of information regarding stomach ulcer medication were health workers (40.6%) and family (37.7%), while electronic media played a smaller role (13.2%), and print media was barely used.

The predominant proportion of male respondents (70.8%) indicates a tendency for male students to engage in self-medication more frequently than female students. This finding aligns with the research of Mekonnen and Zelalem (2018) , who found that male students were at greater risk of self-medication due to their high self-confidence in making treatment decisions without consultation. However, research by [Nasution and Dianingati \(2022\)](#) reported the opposite result, with females more frequently engaging in self-medication due to their sensitivity to mild symptoms such as stomach pain. Thus,

gender differences in self-medication may be influenced by socio-culturally specific risk perceptions and health behavior patterns.

The majority of respondents were aged 16–17 (64.1%), which is the age at which adolescents begin to develop independence in decision-making, including self-medication decisions. [Rahmadanila \(2025\)](#) reported that the older students are, the greater the tendency to self-medicate due to an increased sense of responsibility and self-confidence. [Teh \(2020\)](#) noted a similar sentiment in her study of Thai students in Malang, noting that greater age correlated with a greater desire to resolve health complaints without professional assistance. Adolescence is a critical transitional period as individuals begin to seek quick solutions to physical complaints without understanding the medical consequences ([Siraj et al., 2022](#)). Therefore, health education needs to be directed at improving drug literacy among adolescents so they can recognize the safe limits for using antacids.

Data shows that healthcare professionals (40.6%) and family (37.7%) are the primary sources of information regarding antacid medications. This suggests that students still rely on interpersonal sources deemed credible, rather than mass media. Research by [Mitra et al. \(2018\)](#) also found that non-healthcare students trusted recommendations from family or pharmacists more than media advertisements. Meanwhile, the contribution of electronic media (13.2%) indicates an increasing trend in the digitalization of health information, although it remains relatively low compared to other countries such as Sri Lanka and India, where online media is the primary source of self-medication information ([Thuvaragan & Mandakini, 2024](#)). This trend illustrates that digital health literacy among high school students still needs to be strengthened. Access to accurate online information can be an effective means of improving rational medication behavior.

Table 2. Distribution of respondents based on knowledge and behavior levels

Aspect		N	%
Knowledge	Good	41	38.7
	Enough	58	54.7
	Not enough	7	6.6
Behavior	Positive	60	56.6
	Negative	46	43.4

Based on Table 2, the distribution of respondents knowledge levels shows that the majority had sufficient knowledge (54.7%), followed by good knowledge (38.7%) and insufficient knowledge (6.6%). Meanwhile, the behavioral aspect shows that the majority of respondents had positive behavior (56.6%), while 43.4% exhibited negative behavior. These findings suggest a tendency for increased knowledge to be associated with better behavior, although this is not always linear.

These results are consistent with the *Knowledge–Attitude–Behavior (KAB) theory*, which states that increased knowledge tends to shape positive attitudes and healthy behaviors. However, several studies have shown a gap between knowledge and behavior.

For example, research by [Rimal \(2000\)](#) explains that self-efficacy, or self-belief, plays a crucial role as a mediator between knowledge and health behavior. This means that even if a person knows what is right, they may not always act on that knowledge without adequate confidence or social support.

Research by [Abdel Fattah & Dahleez \(2022\)](#) during the COVID-19 pandemic also found that high levels of public knowledge were significantly associated with good preventive behaviors, but attitude was the connecting variable between knowledge and actual action. This finding reinforces the point that knowledge alone is insufficient without positive attitudes and motivation.

Furthermore, a study by [Rincón Uribe et al. \(2021\)](#) showed that during health crisis situations such as pandemics, people with high levels of knowledge tend to be more compliant with health

behaviors, such as handwashing and social distancing, than those with low levels of knowledge.

Furthermore, Kenkel (1991) emphasized that formal education contributes significantly to health knowledge, which then influences behaviors such as diet and physical activity. However, this relationship is also influenced by socioeconomic factors and access to information.

Table 3. The Influence of Knowledge on Self-Medication Behavior in Non-Health State High School Students

Symmetrical Measurement					
		Asymptotic		Estimated	
	Mark	Standard	<sup>b</sup> Estimate	significanc	
		Error <sup>a</sup>		e value	
Ordinal with Ordinal	Gamma	0.365	0.161	2,141	0.032
N valid cases		106			

a. Does not assume the null hypothesis.

b. Using asymptotic standard error assuming the null hypothesis.

Based on Table 3, the *Gamma value = 0.365* with a significance of  $p = 0.032$  indicates a positive and significant relationship between knowledge and self-medication behavior in non-health public high school students. This means that the higher the level of student knowledge regarding medication use, the better the self-medication behavior they demonstrate—both in terms of dosage accuracy, drug type, and adherence to usage rules.

These results are consistent with previous research showing that knowledge significantly influences self-medication behavior among adolescents and college students. For example, research by Mitra et al. (2018) found that college students with a health education background had higher levels of knowledge and more rational self-medication behavior than non-health students. This confirms that pharmacological education and understanding can encourage more responsible behavior in medication use.

Additionally, a study by Lee et al. (2017) showed that low *medication literacy* among adolescents correlates with inappropriate self-

medication practices, such as using antibiotics without a prescription. Limited knowledge makes it difficult for students to understand drug indications, side effects, and the risk of resistance.

Another study by Maldonado & Meléndez (2007) showed that a long-term educational intervention in secondary schools increased students' awareness of proper medication use and reduced risky self-medication practices. These results support the findings in Table 3, which show that increased knowledge can improve self-medication behavior.

Meanwhile, AlBashtawy & Batiha (2015) also noted that around 60–70% of high school students self-medicate, especially for minor complaints such as headaches and flu, but most of them do not have sufficient knowledge regarding side effects or the correct dosage.

Thus, the results of this study strengthen empirical evidence that knowledge is a key factor in developing safe and responsible self-medication behavior. A practical recommendation from this analysis is the need for health education programs in non-healthcare public schools, particularly regarding the dangers of using non-prescription medications and the importance of reading labels and following medication instructions.

## CONCLUSION

This study shows that the majority of non-health high school students have a fair to good level of knowledge regarding self-medication for ulcers, with self-medication behavior tending to be positive. Respondents were predominantly students aged 16–17, and their primary sources of information about ulcer medications came from health workers and family, reflecting the continued strong role of interpersonal sources in self-medication decision-making. However, a significant proportion of negative self-medication behaviors were still found, indicating a gap between knowledge and its application in daily practice.

The statistical analysis results showed a positive and significant relationship between the level of knowledge and self-medication behavior for ulcers in non-health high school students. The

higher the level of knowledge, the better the self-medication behavior, especially in the aspects of drug selection, dosage, and adherence to usage rules. This finding confirms that knowledge is an important factor in shaping rational self-medication behavior, although its effectiveness is still influenced by other supporting factors such as attitude, self-confidence, and social environment. Therefore, systematic strengthening of health education and drug literacy in the school environment is needed to encourage safe, responsible, and sustainable self-medication practices among adolescents.

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