

Determinants of Safe Nonsteroidal Anti-inflammatory Drugs (NSAIDs) Self-Medication Among Middle-Aged Adults in San Pablo City

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Abstract. Over-the-counter (OTC) medications are commonly used to manage pain and minor health conditions through self-medication practices. The study utilized a quantitative, causal-correlational design to determine the factors influencing safe NSAID self-medication among middle-aged adults in San Pablo City. A total of 120 respondents were selected using quota and convenience sampling. Safe self-medication practices were measured using a structured questionnaire adapted and validated, with all questionnaire components meeting the reliability threshold of Cronbach's $\alpha \geq 0.70$. The study was guided by Betty Neuman's Systems Model and Health Belief Model, integrating perspectives from nursing pharmacology and public health education. Data were analyzed using descriptive statistics, non-parametric tests, and logistic regression at a significance level of $p < 0.05$. Most respondents were female, aged 45-49, and earned below ₱9,520. Although 41.67% reported no chronic disease, hypertension was the most prevalent. The majority of respondents used OTC NSAID occasionally, and self-medication behavior and psychosocial constructs were also very high, suggesting appropriate dosage use, label reading, and physician consultation. No significant differences in safe self-medication practices were found when grouped according to age, sex, income, and chronic disease. However, the frequency of NSAID use showed a significant difference, suggesting its influence on safe practices. Significant positive relationships were observed between safe self-medication behavior and psychosocial constructs; knowledge, perceived susceptibility, perceived severity, and cues to action. In contrast, perceived benefits, perceived barriers, and self-efficacy were not significantly related. Logistic regression showed that the model explained 16.1% of the variance; however, none of the psychosocial constructs emerged as significant predictors. These findings highlight the need for targeted interdisciplinary health education and evidence-based interventions promoting responsible NSAID self-medication practices.

Introduction

Self-medication using over-the-counter (OTC) drugs has become increasingly common worldwide, particularly in developing countries where accessibility and affordability influence healthcare decisions. OTC medications are widely used to manage minor conditions such as pain, fever, and inflammation, providing convenient and immediate relief. Among these, nonsteroidal anti-inflammatory drugs (NSAIDs) are frequently utilized due to their effectiveness in relieving symptoms and improving daily functioning (Sánchez et al., 2021).

NSAIDs, including ibuprofen, naproxen, mefenamic acid, and aspirin, play an important role in pain management and inflammation control. These medications work by inhibiting prostaglandin synthesis, making them effective for conditions

such as headaches, muscle pain, arthritis, and fever. However, improper and prolonged use of NSAIDs may lead to adverse effects such as gastrointestinal irritation, renal impairment, hypertension, and cardiovascular complications (Drożdżał et al., 2021). In the Philippines, self-medication with OTC drugs is a common practice, especially among individuals seeking immediate relief from symptoms that affect daily activities (Masa et al., 2022).

Previous studies have shown that self-medication practices are influenced by factors such as accessibility, socioeconomic status, and individual knowledge. In addition, psychosocial factors based on the Health Belief Model, such as perceived susceptibility, severity, benefits, barriers, cues to action, and self-efficacy, play a significant role in shaping health behaviors. These factors influence whether individuals engage in safe or unsafe medication practices (Akande-Sholabi, 2023). Similarly, a local study conducted among residents of San Pablo City reported gaps in knowledge, attitudes, and practices regarding antibiotic misuse, emphasizing that inappropriate medication use remains an important public health concern within the community (Cacao et al., 2024). However, there is limited research on the determinants of safe NSAID self-medication behavior, particularly among middle-aged adults in local community settings such as San Pablo City. While previous studies have primarily focused on prevalence and general usage patterns, few studies have examined how knowledge and psychosocial factors collectively influence safe medication practices. Addressing this issue is important in promoting safe and responsible medication use, reducing the risk of adverse health outcomes, and improving overall public health. Ensuring the proper use of medicines also supports global health initiatives by promoting well-being and preventing avoidable complications.

Therefore, this study aims to determine the safe self-medication behaviors related to OTC NSAIDs among middle-aged adults in San Pablo City. Specifically, it seeks to assess the respondents' profile, level of knowledge, and psychosocial constructs, and to examine their relationship with safe self-medication practices. Furthermore, the study aims to identify significant predictors of behavior and propose practical, clinic-level interventions.

Conceptual Framework

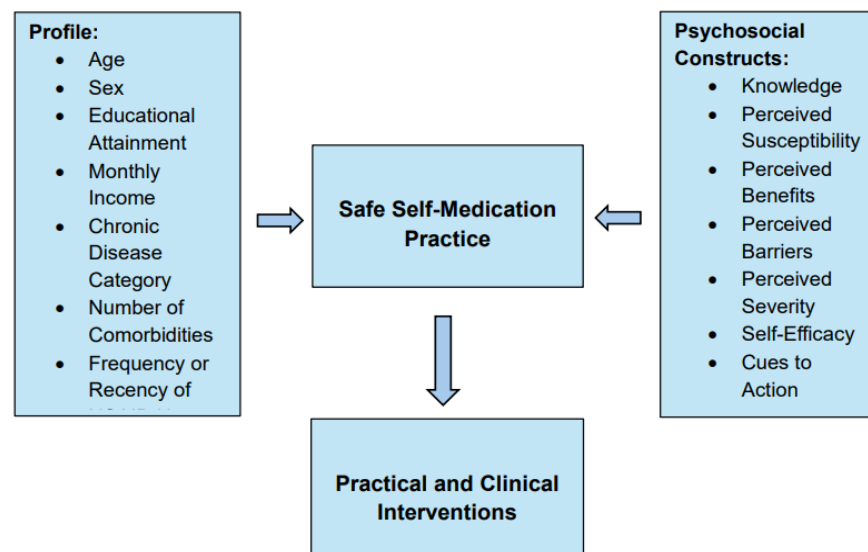


Figure 1. Conceptual Framework of the Proposed Relationships Among the Study Variables

The conceptual framework illustrates the causal-correlational, quantitative research design of the study by depicting the proposed relationship between the independent variables and the dependent variable without manipulating any study conditions. In this study, the independent variables consisted of respondents' profile characteristics, including age, sex, educational attainment, monthly income, chronic disease category, number of comorbidities, and frequency or recency of NSAID use, as well as Health Belief Model-derived psychosocial constructs, namely knowledge, perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-efficacy, and cues to action. Consistent with Betty Neuman's Systems Model, these factors represent internal and external influences that may affect an individual's ability to engage in safe health behaviors. The dependent variable was safe NSAID self-medication practice, referring to the appropriate and responsible use of NSAIDs based on correct dosage, proper indications, awareness of contraindications, and adherence to

safe medication practices. The framework guided the examination of differences and associations among variables and the identification of psychosocial factors that may predict safe self-medication practices, with findings serving as a basis for proposed practical and clinical interventions.

Methodology

This section of the study focused on presenting the research procedures and methods that were employed by the researchers to gather data and analyze information relevant to the study. It covered specifically the research design, respondents, sampling technique, research instrument, data gathering procedure, data analysis procedure, and ethical considerations.

Research Design

This study employed a causal-correlational, quantitative research design to examine the determinants of safe self-medication behavior using over-the-counter (OTC) nonsteroidal anti-inflammatory drugs (NSAIDs) among middle-aged adults in San Pablo City. A quantitative approach was used to generate measurable and objective data aligned with the research objectives. The causal-correlational design was appropriate as it allowed the researchers to determine relationships and predictive effects among variables without manipulating them. Specifically, it examined how knowledge and psychosocial constructs based on the Health Belief Model influenced safe NSAID self-medication practices.

Respondents and Sampling Technique

The respondents of the study consisted of middle-aged adults aged 40 to 65 years residing in San Pablo City who had prior experience using over-the-counter (OTC) nonsteroidal anti-inflammatory drugs (NSAIDs). Both male and female respondents were included. A combination of quota sampling and convenience sampling was employed to select respondents. Quota sampling ensured adequate representation across key characteristics such as age and sex, while convenience sampling facilitated efficient data collection based on the availability, consistent with the approach described by Creswell and Creswell (2018). Prior to inclusion, a screening tool was administered to ensure that all respondents met the eligibility criteria. Inclusion criteria included individuals who were: (1) aged 40 to 65 years, (2) residents of San Pablo City, and (3) with a history of OTC NSAID use. Exclusion criteria included individuals who did not meet these specified requirements. A power analysis for logistic regression ($k = 7$, power = 0.80, $\alpha = 0.05$, effect size = 0.15) indicated a minimum required sample size of 105 respondents. To ensure adequate statistical power and account for potential variability, a total of 120 respondents were included in the study.

Research Instrument

Data were collected using a modified structured questionnaire entitled "Safe OTC NSAIDs Self-Medication Behavior Questionnaire," which was adapted and refined from the study of Bekele et al. (2020) and James, J., and French, D., et al. (2008). The questionnaire consisted of three main sections: (1) respondent profile, which included age, sex, educational attainment, monthly income, chronic disease status, number of comorbidities, and frequency or recency of NSAID use; (2) Safe Self-Medication Practice Index; and (3) psychosocial constructs based on the Health Belief Model, including knowledge, perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-efficacy, and cues to action. A 4-point Likert scale was employed, with response options ranging from Always (4) to Never (1) for practice-related items and Strongly Agree (4) to Strongly Disagree (1) for psychosocial measures. Reverse coding was applied to selected items to ensure consistency in scoring and interpretation.

Data Gathering Procedure

Prior to data collection, permission was obtained from the research adviser and relevant authorities. The questionnaire was pilot-tested and revised based on feedback. Eligible respondents were identified using a screening tool. After obtaining informed consent, questionnaires were distributed using a paper-and-pencil method. Respondents were given sufficient time to complete the instrument. A referral protocol was implemented for respondents who showed signs of unsafe medication practices or health concerns, directing them to appropriate healthcare services.

Data Analysis Procedure

The data were analyzed using appropriate statistical methods. Frequency and percentage were utilized to describe the demographic profile of the respondents. Mean and standard deviation were computed to determine the level of self-medication practices and psychosocial constructs. The Mann-Whitney U test was applied to assess differences between two groups, while the Kruskal-Wallis's test was used to examine differences among multiple groups. Spearman's rho (ρ) was

employed to determine the relationships between variables. Logistic regression analysis was conducted to identify significant predictors of safe self-medication behavior. All statistical tests were performed at a 0.05 level of significance.

Ethical Considerations

Ethical standards were strictly followed throughout the study. Informed consent was obtained from all respondents, and participation was voluntary. Respondents were assured of confidentiality and anonymity, and no identifying information was collected. The study complied with the Data Privacy Act of 2012 (RA 10173). Data was securely stored and accessible only to the researchers. All information was used solely for academic purposes.

Results and Discussion

This section contains the analysis and discussion of the data gathered. It covered specifically the profile of the respondents, significant level, significant relationships, significant differences, and the regression model used in the study.

Profile Variable	Category	Frequency	Percentage
Age	40-44	16	13.33
	45-49	35	29.17
	50-54	33	27.50
	55-59	17	14.17
	60-65	19	15.83
Sex	Male	55	45.83
	Female	65	54.17
Educational Attainment	No Formal Education	0	0.00
	Elementary	14	11.67
	High School/Junior High School	47	39.17
	Vocational/Short Course	4	3.33
	College Undergraduate	17	14.17
	College Graduate	34	28.33
	Graduate Studies	4	3.33
Monthly Income	Below ₱9, 520	47	39.17
	₱9, 520- ₱21,194	33	27.50
	₱21, 194- ₱43, 828	33	27.50
	₱43, 828 - ₱76, 669	5	4.17
	₱76, 669 - ₱131, 484	1	0.83
	₱131, 484 - ₱219, 140	1	0.83
	₱219, 140 and up	0	0.00
Chronic Disease Category	Arthritis	12	10.00
	Diabetes	7	5.83
	Heart Disease	1	0.83
	Hypertension	33	27.50
	Arthritis/Gout	1	0.83
	Hypertension/Arthritis	6	5.00
	Hypertension/Diabetes	7	5.83
	Hypertension/Heart Disease	1	0.83
	Hypertension/Diabetes/Arthritis	2	1.67
	None	50	41.67
Number of Comorbidities	0	50	41.67
	1	53	44.17
	2	15	12.50
	3	2	1.67
Frequency of Recency of NSAID Use	Daily	7	5.83
	Weekly	12	10.00
	Monthly	7	5.83
	Every 3 months	2	1.67
	Occasionally	92	76.67
Total		120	100.00

Table 1. Profile of the Respondents

The respondents were predominantly middle-aged adults, with most belonging to the 45–54 age group, and a marginal female majority. Most were high school graduates, indicating a generally moderate level of educational attainment. These characteristics suggest a population with sufficient life experience and basic health knowledge, which may influence medication practices. In terms of socioeconomic status, most respondents belonged to the lowest income bracket, suggesting that financial constraints may influence healthcare-seeking behavior and increase reliance on over-the-counter medications as a more affordable alternative to professional consultation.

Regarding health status, a considerable proportion of respondents reported no chronic disease; however, hypertension was the most common condition, and many had at least one comorbidity. This indicates a mixed health profile of both relatively healthy individuals and those with existing chronic conditions, which may influence NSAID use patterns. In terms of medication behavior, most respondents reported occasional NSAID use, suggesting that these medications are primarily used for episodic symptom relief rather than long-term treatment or continuous medical supervision.

Overall, the findings indicate that self-medication behavior among the respondents is influenced by a combination of demographic, economic, and health-related factors, particularly low income and the presence of chronic conditions, which contribute to the accessibility-driven use of over-the-counter NSAIDs.

These findings are supported by some studies, who reported that individuals from lower-income groups are more likely to engage in self-medication due to financial barriers in accessing healthcare services. Similarly, Zhang et al. (2022) noted that OTC medication use is often driven by convenience and perceived effectiveness rather than medical consultation. Furthermore, Minhas et al. (2022) emphasized that individuals with hypertension should exercise caution in NSAID use due to potential cardiovascular and renal risks, highlighting the importance of proper medication guidance in this population.

From a nursing perspective, these results underscore the need for targeted health education on safe NSAID use, particularly among low-income and chronically ill individuals. Nurses play a key role in promoting appropriate medication practices through patient education on dosage, frequency, and adverse effects. From a public health standpoint, strengthened community-based interventions and awareness campaigns are essential to promote rational drug use and prevent complications associated with unsupervised NSAID consumption.

	Indicator/Category	Mean	SD	Verbal Interpretation
1.	I read the label and instructions before using OTC NSAIDs.	3.33	1.02	Very High
2.	I check the expiration date before taking an OTC NSAID.	3.53	0.84	Very High
3.	I consult a doctor or pharmacist before taking OTC NSAIDs, especially if I am also taking maintenance medication.	2.97	1.06	High
4.	I follow the recommended dosage of OTC NSAIDs and do not adjust it myself.	3.58	0.81	Very High
5.	I stop taking OTC NSAIDs if I experience side effects such as stomach upset.	3.43	0.87	Very High
6.	I store OTC NSAIDs in a cool, dry place out of reach of children.	3.69	0.63	Very High
	Composite Mean	3.42	0.87	Very High

Table 2. Level of Self-Medication per Indicator

Self-Medication Behavior obtained a composite mean of 3.42 (SD = 0.87) (see Table 2). The indicator “I store OTC NSAIDs in a cool, dry place out of reach of children” recorded the highest mean score of 3.69 (SD = 0.63), while “I consult a doctor or pharmacist before taking OTC NSAIDs, especially if I am also taking maintenance medication” obtained the lowest mean score of 2.97 (SD = 1.06).

The results show that most respondents demonstrated a very high and high level of safe self-medication behavior, indicating that middle-aged adults in San Pablo City generally practice responsible use of over-the-counter NSAIDs. Only a small proportion exhibited a low level of safe behavior, while none were classified as very low. This suggests that the majority of respondents are aware of basic medication safety practices such as proper dosage and responsible use of OTC drugs, which may be influenced by prior health information exposure and general awareness of medication risks.

The findings imply that safe self-medication behavior is relatively well-established among the respondents; however, the presence of a small group with lower safety levels indicates that gaps in medication awareness and practice still exist and should not be overlooked. These results are consistent with Ababneh et al. (2022), who reported that health education and labeling regulations significantly improve safe medication practices among community populations.

From a public health perspective, the findings highlight the importance of sustaining community-based health education programs and strengthening pharmacy counseling services to further enhance safe self-medication practices and reduce potential medication-related risks.

Psychosocial Constructs	Composite Mean	SD	Verbal Interpretation	% of Very High	% High	% Low	% of Very Low
Knowledge	3.62	0.61	Very High	79.17	18.33	2.50	0.00
Perceived Susceptibility	3.63	0.63	Very High	78.33	10.83	10.83	0.00
Perceived Severity	3.60	0.65	Very High	80.00	17.50	2.50	0.00
Perceived Benefits	3.48	0.73	Very High	63.33	25.00	10.00	1.67
Perceived Barriers	3.22	0.84	High	52.50	24.17	20.83	2.50
Self-Efficacy	3.36	0.82	Very High	61.67	19.17	17.50	1.67
Cues to Action	2.95	0.99	High	61.67	19.17	17.50	1.67

Table 3. Level of Psychosocial Constructs per Indicator

The psychosocial constructs influencing OTC NSAID self-medication among middle-aged adults revealed generally high levels of awareness and perception across most domains. Knowledge obtained a very high composite mean ($M = 3.62$, $SD = 0.61$), followed closely by perceived susceptibility ($M = 3.63$, $SD = 0.63$) and perceived severity ($M = 3.60$, $SD = 0.65$), all interpreted as very high. This indicates that respondents possess strong awareness of NSAID-related risks, including potential adverse effects and vulnerability to complications. In terms of distribution, most respondents were classified under very high levels, particularly in perceived severity (80.00%) and knowledge (79.17%), reflecting strong cognitive awareness of medication safety.

Similarly, perceived benefits ($M = 3.48$, $SD = 0.73$), self-efficacy ($M = 3.36$, $SD = 0.82$), and perceived barriers ($M = 3.22$, $SD = 0.84$) were generally rated high to very high. This suggests that respondents recognize both the advantages of NSAID use, such as pain relief and accessibility, as well as existing barriers such as cost and time constraints in accessing healthcare services. However, perceived barriers obtained comparatively lower ratings, indicating that while obstacles to professional consultation exist, they are not as dominant as perceived benefits and health awareness in influencing behavior. Notably, cues to action recorded the lowest composite mean ($M = 2.95$, $SD = 0.99$), interpreted as high but relatively weaker compared to other constructs, suggesting limited external prompting such as professional advice or structured reminders.

Overall, the results demonstrate that respondents exhibit strong cognitive and perceptual awareness regarding NSAID use, particularly in terms of risks (susceptibility and severity) and knowledge. However, despite high awareness levels, cues to action and perceived barriers indicate that external influences and access-related constraints still shape actual self-medication behavior. This pattern suggests that while respondents are informed, their medication decisions are still influenced by convenience, accessibility, and limited professional guidance.

These findings align with the Health Belief Model, which posits that health behavior is influenced by perceived susceptibility, severity, benefits, barriers, self-efficacy, and cues to action. Similar studies by AlRuthia et al. (2022) and García-Gil et al. (2024) reported that high perceived risk and knowledge do not always guarantee safe medication practices when cues to action are weak. Likewise, Easton-Carr and Alyafei (2024) emphasized that external triggers such as pharmacist counseling and healthcare advice are critical in translating awareness into safe behavior.

Profile Variable	Test Statistic	p-value	Decision	Conclusion
Age	H = 1.761	0.780	Failed to Reject Ho	Not Significant
Sex	U = 1887.50	0.593	Failed to Reject Ho	Not Significant
Monthly Income	H = 8.460	0.133	Failed to Reject Ho	Not Significant
Chronic Disease Category	H = 6.921	0.645	Failed to Reject Ho	Not Significant
Frequency or Recency of NSAID Use	H = 7.981	0.046	Reject Ho	Significant

The lack of significant differences suggests that safe medication behavior is not primarily determined by sociodemographic or health-related characteristics. This implies that respondents, regardless of age, sex, income level, or health status, may share similar patterns of exposure to health information and access to over-the-counter medications. Consequently, safe self-medication practices appear to be more influenced by shared environmental and informational factors than by individual demographic or clinical differences.

These findings are consistent with AlRuthia et al. (2022) and Bekele et al. (2020), who reported that demographic variables such as age and sex are not consistent predictors of self-medication behavior when access to medications and health information is widely available. Similarly, Akande-Sholabi (2023) and Montuori et al. (2024) emphasized that OTC medication practices are largely shaped by accessibility and perceptions of safety rather than demographic characteristics. Other studies further noted that behavioral and cognitive factors outweigh socioeconomic determinants in predicting medication safety practices, while Shrestha (2023) highlighted the dominant role of perceived risk and prior experience in shaping self-medication behavior.

In contrast, frequency or recency of NSAID use showed a statistically significant difference in the Safe-Practice Index ($H = 7.981, p = 0.046$), indicating that usage patterns significantly influence safe medication behavior. This finding suggests that individuals with different exposure frequencies develop varying levels of adherence to safe NSAID practices. Repeated exposure to medication use may enhance familiarity with dosage, precautions, and side effects, thereby reinforcing safer practices through experiential learning.

This result is supported by several studies who reported that frequent users of NSAIDs tend to demonstrate improved medication safety behaviors due to repeated exposure and accumulated experience. In contrast, infrequent users may lack consistent reinforcement of proper practices, increasing the likelihood of unsafe or inconsistent medication behavior.

The findings highlight the importance of strengthening universal health education strategies on safe NSAID use rather than focusing on demographic segmentation, as most profile variables did not show significant influence. However, targeted interventions should prioritize individuals based on frequency of NSAID use, as this factor demonstrated a significant association with safe practices. Nurses and healthcare providers play a critical role in reinforcing medication counseling, particularly for irregular users who may have less experience and weaker adherence to safety guidelines.

Psychosocial Constructs	R-value	Degree	p-value	Decision	Conclusion
Knowledge of NSAID Use	.396**	Weak Positive	<.001	Reject Ho	Significant
Perceived Susceptibility	.281**	Weak Positive	.002	Reject Ho	Significant
Perceived Severity	.429**	Moderate Positive	<.001	Reject Ho	Significant
Perceived Benefits	0.102	Very Weak Positive	0.268	Failed to Reject Ho	Not Significant
Perceived Barriers	-	Very Weak Negative	0.799	Failed to Reject Ho	Not Significant
Self-Efficacy	0.023				
	-	Very Weak Negative	0.869	Failed to Reject Ho	Not Significant
	0.015				
Cues to Action	.255	Weak Positive	.005	Reject Ho	Significant

Table 5. Significant Relationship between Safe Self-Medication and each of their Psychosocial Constructs

The results of the correlation analysis revealed varying degrees of association between psychosocial constructs and safe self-medication behavior. Among the significant variables, perceived severity showed the strongest positive correlation ($R = .429, p < .001$), indicating that individuals who perceive the consequences of improper NSAID use as serious are more likely to engage in safe self-medication practices. This suggests that risk perception plays a critical role in influencing behavioral compliance. The finding is consistent with Frenzel et al. (2023), who reported that higher perceived severity significantly improves medication safety behaviors, and is further supported by clinical evidence linking NSAID misuse to serious outcomes such as gastrointestinal bleeding and renal impairment.

Knowledge of NSAID use also demonstrated a weak but significant positive correlation ($R = .396, p < .001$), suggesting that increased understanding of proper NSAID use is associated with safer medication practices. However, the weak correlation indicates that knowledge alone is not sufficient to ensure safe behavior. This aligns with Wibowo et al. (2024), who noted that while individuals may be familiar with NSAIDs, gaps in knowledge regarding dosage, risks, and proper administration remain common, leading to continued misuse despite awareness.

Perceived susceptibility showed a weak positive and statistically significant relationship with safe self-medication behavior ($R = .281$, $p = .002$), indicating that individuals who feel more vulnerable to NSAID-related risks are more likely to adopt safer practices. This supports the Health Belief Model, which emphasizes perceived risk as a driver of preventive behavior. However, the weak correlation suggests that perceived vulnerability alone is not a strong determinant of behavior, as individuals may still prioritize convenience or previous experience over perceived risk.

Similarly, cues to action demonstrated a weak positive and significant relationship ($R = .255$, $p = .005$), suggesting that external triggers such as pharmacist advice, reminders, and health education influence safer medication practices. Some studies emphasized the effectiveness of health campaigns and professional counseling in promoting responsible medication use.

In contrast, perceived benefits ($R = .102$, $p = .268$), perceived barriers ($R = -.023$, $p = .799$), and self-efficacy ($R = -.015$, $p = .869$) showed very weak and non-significant relationships with safe self-medication behavior. This indicates that recognition of NSAID benefits, perceived obstacles, and confidence in self-management do not significantly influence safe practices among respondents. These findings suggest that benefits may already be universally recognized, barriers are minimal due to OTC availability, and self-confidence may not necessarily translate into correct medication behavior. This is consistent with Bakshi et al. (2022), who highlighted that behavioral and contextual factors often outweigh perceived control in medication practices.

Overall Model Test						
Model	Deviance	AIC	R^2_{McF}	χ^2	df	
1	69.1	85.1	0.161	13.2	7	
Predictor	Estimate	SE	Z	p	Decision	Conclusion
Intercept	0.4257	3.51	0.1213	0.903	Failed to Reject H_0	Not Significant
Knowledge of NSAID Use	-0.1725	0.799	-0.2158	0.829	Failed to Reject H_0	Not Significant
Perceived Susceptibility	-1.2369	0.701	-1.7647	0.078	Failed to Reject H_0	Not Significant
Perceived Severity	-0.3359	0.879	-0.3822	0.702	Failed to Reject H_0	Not Significant
Perceived Benefits	0.2027	0.642	0.3155	0.752	Failed to Reject H_0	Not Significant
Perceived Barriers	-0.3481	0.582	-0.5977	0.55	Failed to Reject H_0	Not Significant
Self-Efficacy	1.1476	0.699	1.643	0.1	Failed to Reject H_0	Not Significant
Cues to Action	-0.0292	0.604	-0.0484	0.961	Failed to Reject H_0	Not Significant

Table 6. Regression Model of Psychosocial Constructs as Predictors of Safe Self-Medication

The logistic regression analysis revealed that the overall model was not statistically significant ($\chi^2 = 13.2$, $p = 0.067$), indicating that the psychosocial constructs included in the model did not significantly predict safe NSAID self-medication practices. The McFadden's R^2 value of 0.161 suggests that the model explains approximately 16.1% of the variance in safe self-medication behavior, indicating modest explanatory power. This finding suggests that psychosocial constructs alone may not fully explain variations in safe medication practices among middle-aged adults.

Among the predictors, perceived susceptibility demonstrated a marginal association with safe medication practices ($B = -1.2369$, $p = 0.078$), suggesting that individuals who perceive greater vulnerability to the risks of NSAID misuse may slightly modify their medication behavior. Although the relationship did not reach statistical significance, the finding aligns with the Health Belief Model, which emphasizes perceived susceptibility as an important determinant of health behavior. Previous studies have similarly shown that increasing individuals' awareness of their vulnerability to medication-related harm can influence safer medication practices (Mohaved et al.).

Self-efficacy also showed a positive but non-significant relationship with safe self-medication behavior ($B = 1.1476$, $p = 0.100$). This suggests that individuals who feel more confident in their ability to manage their health may be somewhat more likely to engage in safe medication practices. The concept of self-efficacy, introduced by Bandura, highlights the role of confidence in performing health-related behaviors. García-Gil et al. (2024) similarly reported that individuals with higher self-efficacy are more likely to adhere to medication safety guidelines.

The remaining psychosocial constructs, knowledge of NSAID use, perceived severity, perceived benefits, perceived barriers, and cues to action did not demonstrate significant associations with safe self-medication behavior. These findings support previous research indicating that knowledge alone does not necessarily translate into safe medication practices. Studies by Bekele et al. (2020) and AlRuthia et al. (2022) have shown that individuals may possess general knowledge about OTC medications but still engage in unsafe self-medication behaviors due to factors such as convenience, prior experience, and accessibility of medications.

Conclusion and Implications

Conclusion

Based on the findings of the study, the following conclusions were drawn: (a) demographic and health-related characteristics, including age, sex, monthly income, and chronic disease category, did not show statistically significant differences in the Safe-Practice Index, indicating that safe NSAID self-medication practices are generally consistent across these groups; (b) the frequency of NSAID use showed a statistically significant association with the Safe-Practice Index, suggesting that more frequent NSAID use is associated with safer self-medication practices and may reflect greater familiarity with appropriate medication use; (c) selected psychosocial constructs, particularly knowledge, perceived susceptibility, perceived severity, and cues to action, demonstrated significant positive but weak-to-moderate associations with safe self-medication behavior, indicating that these psychosocial factors are associated with safer NSAID self-medication practices among middle-aged adults; (d) despite these associations, none of the selected psychosocial constructs independently predicted safe self-medication behavior when analyzed collectively, indicating that no single construct sufficiently explains medication safety practices; and (e) safe NSAID self-medication behavior among middle-aged adults appears to be a multifactorial practice influenced by multiple interacting behavioral, psychosocial, and contextual determinants beyond the demographic and psychosocial variables examined in this study. While selected Health Belief Model constructs demonstrated significant associations with safe self-medication practices, these constructs did not independently predict behavior when considered collectively, suggesting that additional factors contribute to responsible self-medication practices.

Implications

Based on the results, the following implications can be drawn.

(1) The result provides partial support for the Health Belief model because knowledge about NSAIDS, perception of susceptibility and severity, and cues to action are associated with safe self-medication. Since the health belief model's variables did not independently predict safe self-medication practices, future studies on the health belief model may explore additional variables incorporating behavioral, contextual, and healthcare-related determinants to better explain responsible self-medication practices.

(2) The study results can be used by community health nurses, pharmacists, doctors, and local authorities to emphasize the importance of individual counseling and community outreach programs for improving knowledge about medications to promote safe and responsible self-medication. Such programs can be designed and implemented to educate the target audience about the safe use of OTC medications, including NSAIDs.

(3) Community health nurses, pharmacists, physicians, and local authorities can counsel frequent and occasional users of OTC drugs on self-medication practices. The counseling should include information on the proper use and dosage of the medication, duration of treatment, potential harmful effects of the drug, and advice-seeking. The implication is that such information will facilitate proper self-medication practices and promote responsible medication use.

(4) The study results can be used by healthcare institutions and local authorities to implement interprofessional strategies for promoting safe self-medication practices including the integration of medication knowledge, pharmacy counseling, and community health nursing will complement one another and enhance safe self-medication practices. These collaborative strategies may strengthen medication safety initiatives and support responsible self-medication practices among middle-aged adults.

(5) Future studies can build on the current findings by expanding the scope of the research question and analyzing a bigger sample size that is more representative of the population. Such studies can examine the relationship between the health belief model and self-medication practices in populations with various levels of health literacy, access to healthcare, and diverse beliefs and attitudes toward medication use and self-medication in particular. It is essential for future studies to include longitudinal or mixed-methodology designs to generate more in-depth and comprehensive information on safe self-medication practices to develop comprehensive evidence-based intervention strategies.

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Competing Interests Statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

Data Availability Statement

The data used in this research can be accessed through a formal request to the author of the study.

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Appendices

No appendices are attached to this study.