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Knowledge, Attitude, and Practices on Self-medication among Nursing Students of Northern Border University: A Cross-sectional Study

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ABSTRACT

Background: Since the 1990s, healthcare practices have increasingly shifted toward a self-directed approach, with individuals taking more responsibility for managing their health. This trend has been driven by rising healthcare costs, long waiting times for professional care, and the widespread availability of over-the-counter medications. Organizations such as the World Self-Medication Industry (WSMI), the International Pharmaceutical Federation, and the World Health Organization have advocated responsible self-medication, emphasizing its benefits for managing minor health concerns efficiently. However, this practice also carries significant risks, including drug misuse, polypharmacy, and the potential worsening of undiagnosed conditions. In Saudi Arabia, self-medication is particularly common among health science students, who often self-diagnose and use medications without consulting healthcare professionals. Studies show that this convenience-focused behavior can lead to delayed medical treatment and increased medication misuse. For instance, the easy accessibility of health information through the internet has contributed to growing confidence in self-management, further fueling this trend. These behaviors highlight the need for a deeper understanding of the factors influencing self-medication to ensure its safe and responsible use. ***Methods:*** This study examined self-medication practices among 150 nursing students at Northern Border University, Arar, Saudi Arabia. Participants were selected based on their relevance to the study, given their healthcare-related knowledge and access to medications. A descriptive cross-sectional study was conducted to assess the knowledge, attitudes, and practices (KAP) of self-medication among nursing students at Northern Border University, Kingdom of Saudi Arabia Data collection focused on demographics, self-medication practices, attitudes, and knowledge. Descriptive statistics, including percentages, medians, and standard deviations, were employed to summarize the data and identify key trends. ***Result*:** Most participants were single females (75.3%), aged 18–25, with most being full-time students (72%). Academic year distribution showed 37.3% were third-year students, followed by 33.3% in their fourth year. Regarding practices, 39.3% consulted doctors only occasionally, and 38.7% reported obtaining medications without prescriptions in less than half of cases. Analgesics were the most frequently self-medicated drugs (86.7%), followed by antihistamines (44%), decongestants (38%), and cough suppressants/expectorants (42%). Common reasons for self-medication included managing symptoms (56.7%), prior knowledge of illnesses (44.7%), and preventive measures (45.3%). Median scores indicated positive attitudes (21.88±4.70) and knowledge (23.10±4.50) toward self-medication, though higher knowledge did not predict safer practices. These findings highlight the prevalence of self-medication among nursing students and the need for targeted educational interventions to promote responsible practices. ***Conclusion:*** Nursing students showed good knowledge and positive attitudes toward self-medication, but this did not lead to safer practices. This highlights the need for nursing education to focus on practical skills, critical thinking, and ethical decision-making. Adding targeted training and public health initiatives to the curriculum can help promote safer self-medication practices. While self-medication can be beneficial for minor health issues, misuse can lead to health risks. Also, this study calls for public awareness campaigns

and better regulation of over-the-counter drugs and it emphasizes the role of healthcare professionals and pharmacists in guiding students toward safe self-medication practices.

Keywords: *Self-medication, Students, Practice, Attitude, knowledge*

INTRODUCTION

Self-medication is a pervasive global practice where individuals take medications without consulting a healthcare professional. It encompasses the use of over the counter (OTC) drugs, dietary supplements, and home remedies to treat common health problems like headaches, colds, or minor injuries. While it provides an opportunity for individuals to manage their health and alleviate symptoms, it also introduces significant risks, such as incorrect self-diagnosis, drug misuse, and adverse drug reactions. Despite these concerns, self-medication continues to be widely practiced due to factors like accessibility, cost, and increased health awareness. Self-medication is the practice of selecting and administering drugs to oneself or family without a physician's prescription or consulting a doctor in case of minor illnesses or self-diagnosed conditions (Ahmad *et al*., 2021). And this was very rampant during the COVID period wherein self-medication is somewhat needed in some unavoidable circumstances. A significant percentage of university students self-medicate as according to this study (Alahmadi, Alotaibi, & Alshammari, 2022). This can cause adverse effects or even worsen public health issues. Moreover, nurses play a critical role in managing self-medication practices. With their extensive training in patient care and drug administration, nurses are uniquely positioned to educate individuals about the proper use of medications and the risks of self-medication (Mardani *et al*., 2020). By promoting responsible practices and guiding patients to seek professional advice, when necessary, nurses can help reduce the misuse of medications. Their involvement in health promotion is essential for curbing the negative impacts of self-medication and ensuring safer healthcare practices in both clinical and community settings.

Nurses, with their extensive training in patient care and drug administration, are in a unique position to influence self-medication practices positively. Their involvement in health promotion can help curb the misuse of medications and guide individuals to seek professional advice when necessary.

Background and Rationale

The global evolution of healthcare practices has seen a shift from reliance on healthcare professionals to a more self-directed approach, especially since the 1990s. The World Self-Medication Industry (WSMI) and the International Pharmaceutical Federation, along with the World Health Organization, have advocated for the responsible use of self-medication, promoting awareness of its potential benefits and risks. Factors such as rising healthcare costs, extended waiting times, and the ease of access to medications, particularly in over-the-counter forms, contribute to the growing trend of self-medication. While self-care empowers individuals to manage minor health concerns efficiently, it is crucial to recognize the risks, including drug misuse, polypharmacy, and exacerbation of undiagnosed conditions.

In Saudi Arabia, self-medication is particularly prevalent among health science students, a demographic that often self-diagnoses and uses medications without consulting healthcare professionals Alenzi, E. O. (2022). Studies indicate that this practice, while offering convenience, poses potential health hazards, such as delayed medical treatment and increased medication abuse. The growing accessibility of health information through the internet further fuels this trend, as individuals feel more confident managing their health without seeking professional advice. Given these trends, understanding the factor's influencing self-medication is essential to ensuring its responsible use and mitigating its risks.

Self-medication, the practice of using medicinal products without professional supervision for minor health issues, is associated with significant gaps in knowledge regarding its risks. Ramesh *et al*. (2019) found that inadequate understanding of over the counter (OTC) drug side effects and interactions leads to improper self-medication practices, although educational interventions, as shown by Khedher *et al*. (2021), can improve nursing students' knowledge and reduce such practices. Attitudes toward self-medication are influenced by cultural, educational, and individual factors; Tadesse *et al*. (2020) reported that nursing students often view self-medication as convenient but are aware of its risks, while Singh *et al*. (2018) found that comprehensive pharmacology education fosters more cautious attitudes. Self-medication practices are prevalent among students, with behaviors such as OTC medication use and shared prescriptions being common, and Alahmadi *et al*. (2022) emphasized the influence of peer behavior and past experiences.

However, improper practices can lead to adverse drug reactions and increased healthcare costs, as McGuire *et al*. (2019) highlighted, underscoring the need for effective regulatory policies, as suggested by Becker *et al*. (2021). Even with pharmacology education, nursing students may still engage in self-medication due to stress and convenience, as Patel *et al*. (2023) noted, and Wong *et al*. (2021) found that nursing students may struggle to apply their knowledge of drug interactions in real-world situations.

The role of nurses in managing self-medication is vital, as they can educate individuals about the proper use of medications, identify the risks associated with self-medication, and promote responsible practices.

Specific Objectives and Hypothesis

This study aims to explore the knowledge, attitude, and self-medication practices among students at Northern Border University, focusing on the factors that influence these behaviors. Specifically, the objectives of this study are to:

1. Assess the sociodemographic profile of the students, including their last doctor consultation, frequency of consultations, age, gender, year level, civil status, educational status, and family income.
2. Evaluate the knowledge, attitude, and practices of the students regarding self-medication.
3. Determine the significant relationships between students' knowledge, attitude, and practices concerning self-medication.
4. Examine whether there are significant differences in the factors affecting self-medication practices based on sociodemographic characteristics.

The prespecified hypothesis for this study includes:

- **H01:** There are no significant relationships between knowledge, attitude, and practices on self-medication among students.
- **H02:** There are no significant differences in the assessment of factors affecting knowledge, attitude, and practices on self-medication when grouped according to their sociodemographic profile.

By understanding the factors that influence self-medication, the study aims to provide insights into how educational interventions can promote responsible self-care practices, reducing the associated risks. Additionally, the findings can guide health professionals, particularly nurses, in their role as educators and advocates for responsible medication use.

MATERIALS AND METHODS

1. Study Design

A descriptive cross-sectional study was conducted to assess the knowledge, attitudes, and practices (KAP) of self-medication among nursing students at Northern Border University, Kingdom of Saudi Arabia. This design is appropriate for understanding the current state of self-medication behaviors, attitudes, and knowledge of nursing students at a single point in time. A structured questionnaire was used as the primary data collection tool.

2. Study Setting

The study was conducted at Northern Border University, a public institution in Arar, Saudi Arabia, offering nursing education. This university was chosen due to its diverse student population and the relevance of the study to nursing students, who possess healthcare-related knowledge and have access to medications. The study was carried out across all academic years of the nursing program, and data was collected from students enrolled in the Bachelor's Degree in Nursing Science program. Data was collected from September 9th, and the duration was one month.

3. Participants

Population:

The target population consisted of 150 nursing students enrolled in the Bachelor's Degree in Nursing Science program at Northern Border University. The participants were selected because their healthcare education and access to medications might influence their knowledge, attitudes, and practices concerning self-medication.

Inclusion Criteria:

- Nursing students enrolled in the first semester of the academic year 2024-2025 at Northern Border University.
- Students actively enrolled in the undergraduate nursing program.
- Students who agreed and consented to participate in the study.

Exclusion Criteria:

- Students who had already graduated from Northern Border University.
- Students enrolled in graduate programs at the university.
- Non-nursing students or students who refused consent or withdrew from study.

Sampling Technique and Sample Size

A simple random sampling technique was employed to select participants. This approach ensured that every nursing student had an equal chance of being included in the study, thereby minimizing sampling bias. The sample size was calculated to achieve a 95% confidence level and a 5% margin of error, targeting approximately 150 students by using Slovin's Formula n = N / (1 + N * e^2).

4. Data Collection Methods

Data Collection Tool:

The primary data collection instrument was a modified structured questionnaire, adapted from the study by Sankdia *et al*. (2017) titled "A Questionnaire Based Study Regarding the Knowledge, Attitude, and Practices of Self-Medication Among Second Year Undergraduate Medical Students." The questionnaire was modified to ensure the inclusion of relevant questions tailored to the nursing students at Northern Border University.

The questionnaire included four sections:

1. Socio-Demographic Information: Questions about the last doctor consultation visit, frequency of consultations, age, gender, year level, civil status, educational status, and monthly family income.
2. Knowledge of Self-Medication: Questions about the definition, risks, and benefits of self-medication.
3. Attitudes Towards Self-Medication: Likert scale items assessing students' opinions on the acceptability, necessity, and frequency of self-medication.
4. Practices of Self-Medication: Questions about frequency, types of medications used, reasons for self-medication, and sources of information.

The questionnaire was designed with a 4-point Likert-type scale (Strongly agree = 4, Agree = 3, Disagree = 2, Strongly disagree = 1).

Pilot Testing and Validity:

The questionnaire was pre-tested on a small group of nursing students (n = 20) who were not part of the main study. This helped assess the clarity, relevance, and ease of understanding of the questions. Necessary adjustments were made based on the feedback from the pilot test.

To ensure content validity, experts in nursing and pharmacology reviewed the questionnaire, confirming its appropriateness for the target population. The reliability of the instrument was assessed using Cronbach's alpha, yielding an acceptable internal consistency coefficient ($\alpha > 0.7$).

5. Data Collection Procedure

Ethical Approval:

Ethical approval was obtained from the Local Committee of Bioethics (LCBE) at Northern Border University. All participants were provided with an informed consent form outlining the study's objectives, procedures, and their right to withdraw at any time without consequence.

Data Collection Process:

Data were collected via an online questionnaire distributed through a Google Form link to each student. Participation was voluntary, and students received weekly reminders to complete and submit the survey within one month period. To maintain confidentiality, no personal identifiers were included in the questionnaire, and all responses were anonymous.

Data Analysis:

The data collected were entered into SPSS (Statistical Package for the Social Sciences) for analysis. The following statistical methods were used:

- Descriptive Statistics: Frequency distributions, percentages, means, and standard deviations were used to summarize the demographic data and KAP variables.
- Inferential Statistics:
    - Independent t-tests were used to compare self-medication practices between different gender groups.
    - One-way ANOVA was applied to assess the relationship between self-medication practices and year of study.

A p-value of < 0.05 was considered statistically significant.

6. Ethical Considerations

The study adhered to the ethical principles outlined in the Declaration of Helsinki. Informed consent was obtained from all participants, and they were made aware that participation was voluntary, and they could withdraw at any time without penalty. The research team ensured confidentiality by securely storing the data and restricting access to only authorized personnel.

7. Limitations

This study has several limitations:

The reliance on a self-administered questionnaire may result in self-reporting bias, as participants might misrepresent or inaccurately recall their self-medication behaviors. The findings of this study may not be generalizable to other populations within the country, as knowledge, attitudes, and practices (KAP) are likely influenced by various sociodemographic factors. And the study was limited to a single university and nursing students in a specific region, which may affect the generalizability of the findings to other populations or regions. Therefore, additional research on self-medication is essential, particularly considering its increasing prevalence in the region.

RESULTS

The researchers selected 150 nursing students from Northern Border University as participants. The participants were distributed across different academic levels, with 11 students from the first year, 33 students from the second year, 56 students from the third year, and 50 students from the fourth year. The study commenced in August 2024 and concluded in November 2024.

The adapted and modified questionnaire was structured into three sections: Knowledge, Attitude, and Practices. These sections were designed to identify the factors influencing knowledge, attitude, and practices regarding self-medication among students at Northern Border University. A pilot test was conducted with 15 participants, who were excluded from the main study, to evaluate and refine the questionnaire. During the data collection process, all 150 participants responded via a Google link distributed through the college's website platform. Participant eligibility was confirmed since the study is really suited for them and the topic is interesting for them to know the outcome also, follow-ups were completed, and the responses were subsequently analyzed to obtain the result.

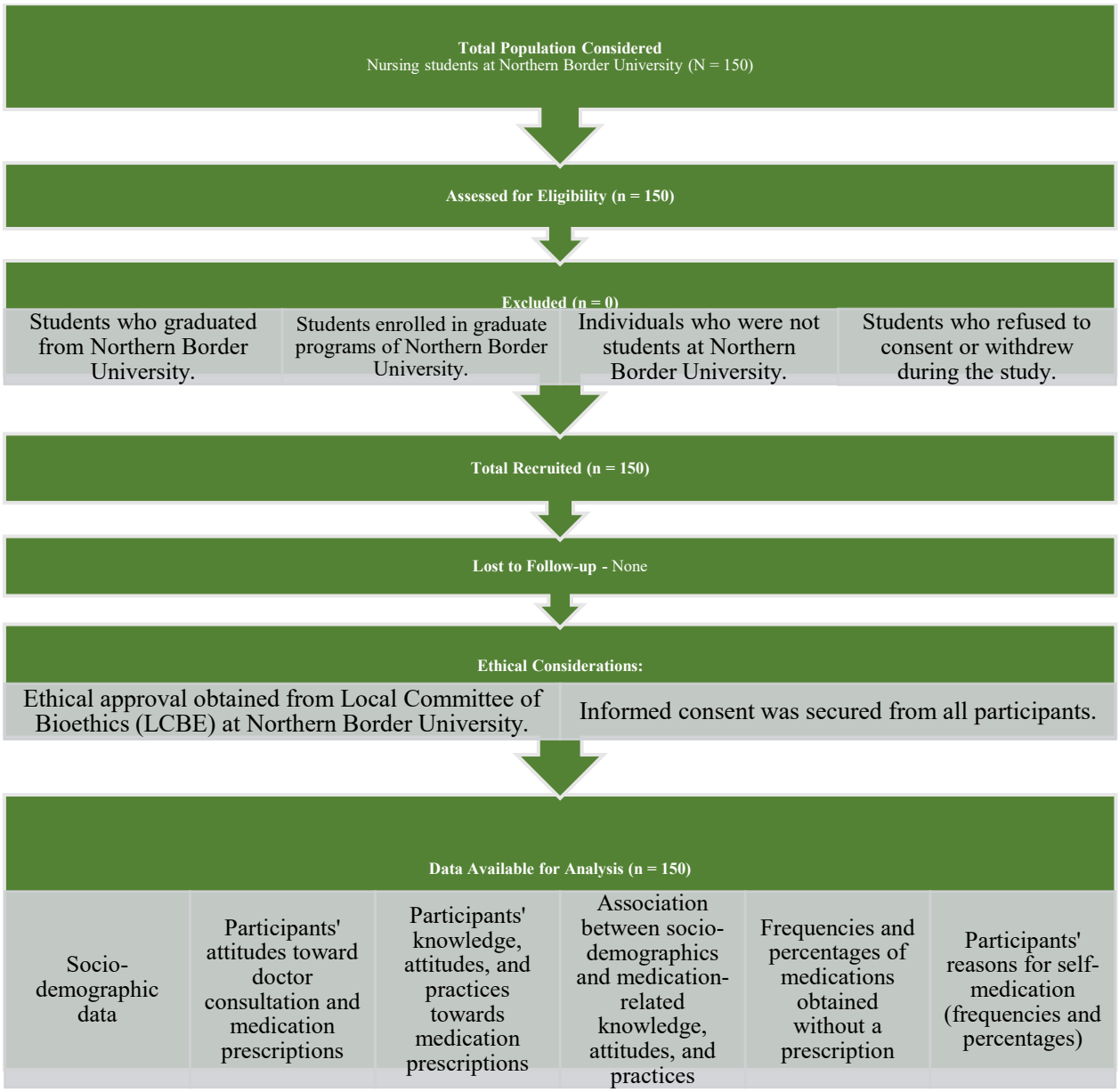

Figure 1: Students recruitment and follow up flow diagram.

Figure 1 presents a student recruitment and follow-up flow diagram, modeled after the "Flow Diagram of the Recruitment and Admissions Process for International Students: Reagent College". It illustrates the process undertaken at Northern Border University for a study involving nursing students. The diagram details each step, including participant selection, eligibility assessment, reasons for exclusion, and the final dataset available for analysis."The study focused on nursing students at Northern Border University, with 150 students initially assessed for eligibility. Exclusion criteria included students who had graduated, were enrolled in graduate programs, were not from Northern Border University, or refused to consent or withdrew from the study. Ultimately, 150 students were successfully recruited, and no participants were lost in follow-up. Data collected included socio-demographic information, attitudes towards doctor consultation and medication prescriptions, knowledge, attitudes, and practices related to medication prescription, as well as frequencies and reasons for self-medication. An inferential comparison between socio-demographics and knowledge, attitudes, and practices.

Table 1: Socio-Demographic Profile of The Participants (n = 150)

Variables	Categories	Frequency (n)	Percentage (%)
Last Doctor Consultation Visit	Public doctor	70	46.7%
	Private doctor	63	42.0%
	None	17	11.3%

Age	18 to 20 years	72	48.0%
	21 to 25 years	68	45.3%
	26 or above	10	6.7%
Gender	Male	37	24.7%
	Female	113	75.3%
Year of Study (College)	First year	11	7.3%
	Second year	33	22.0%
	Third year	56	37.3%
	Fourth year	50	33.3%
Marital Status	Single	144	96.0%
	Married	6	4.0%
Educational Status	Full-time student	108	72.0%
	Working student	42	28.0%
Family Monthly Income (SR)	Less than 5,000	25	16.7%
	5,001 to 10,000	27	18.0%
	10,001 to 15,000	32	21.3%
	15,000 or above	66	44.0%

Table 1 provides an overview of the socio-demographic profile of the 150 participants in the study. Nearly half (48%) of the participants were between 18 and 20 years old, while 45.3% were aged 21 to 25, and a smaller group (6.7%) was 26 or older. The majority (75.3%) were female, while males accounted for 24.7% of the sample. Most participants (96%) were single, with only 4% being married.

Regarding their academic status, 72% were full-time students, while 28% were working students. The distribution across college years varied, with 7.3% in their first year, 22% in their second year, 37.3% in their third year, and 33.3% in their fourth year.

When asked about their most recent doctor visit, 46.7% reported seeing a public doctor, 42% visiting a private doctor, and 11.3% had not seen a doctor at all. In terms of financial background, 44% of participants reported a monthly family income of 15,000 SR or more, while 21.3% fell in the 10,001 to 15,000 SR range. Another 18% reported an income between 5,001 and 10,000 SR, and 16.7% had a family income below 5,000 SR.

Table 2: Participants' Attitudes Towards Doctor Consultation and Medication Prescriptions. (n=150)

Variables	Categories	Frequency (n)	Percentage (%)
How often do you consult your doctor?	Never	8	5.3%
	Rare	34	22.7%
	Sometimes	59	39.3%
	Often	18	12.0%
	Always	31	20.7%
How often do you purchase medication without a prescription?	Never	8	5.3%
	Rare	25	16.7%
	Sometimes	58	38.7%
	Often	36	24.0%
	Always	23	15.3%

Table 2 provides insight into how often participants visit a doctor and how frequently they buy medication without a prescription. Their responses are grouped into five categories: *Never, Rarely, Sometimes, Often,* and *Always*, with both the number of participants and percentages displayed.

When it comes to doctor consultations, most participants (39.3%) said they *sometimes* see a doctor, while 22.7% do so *rarely* and 20.7% *always* seek medical advice. A smaller group (12%) reported visiting the doctor *often*, and only 5.3% said they *never* go.

Regarding purchasing medication without a prescription, 38.7% admitted to doing so *sometimes*, while 24% reported doing it *often*. Another 16.7% said they *rarely* buy medicine without a prescription, 15.3% *always* do, and 5.3% said they *never* purchase medication without a doctor's approval.

Table 3: Participants' Knowledge, Attitudes and Practices Towards Medications Prescription. (n=150)

Dimensions	Statement	Strongly Disagree		Disagree		Agree		Strongly Agree	
		n	%	n	%	n	%	n	%
Knowledge	I get my medications in trusted pharmacies or medical providers.	5	3.3	5	3.3	63	42.0	77	51.3
	I am aware of the appropriate doses for the medications I typically take.	5	3.3	7	4.7	68	45.3	70	46.7
	I am confident with my knowledge of my medications.	7	4.7	9	6.0	79	52.7	55	36.7
	I understand the instructions written in the package insert.	8	5.3	7	4.7	77	51.3	58	38.7
	I am aware of the risk of adverse effects of self-medication.	7	4.7	8	5.3	76	50.7	59	39.3
	I am aware of the risk of drug dependence.	5	3.3	8	5.3	73	48.7	64	42.7
	I am aware that increasing the dose can be harmful.	5	3.3	9	6.0	67	44.7	69	46.0
Knowledge Dimension		**Mean ± SD 23.10 ± 4.50**							
Attitude	I believe that practicing self-medication can help me save time.	10	6.7	9	6.0	80	53.3	51	34.0
	I believe that self-medication can give me quick relief.	9	6.0	10	6.7	86	57.3	45	30.0
	I consider the price of the medication that I get.	6	4.0	13	8.7	81	54.0	50	33.3
	I believe that access to healthcare centers affects medical care.	9	6.0	9	6.0	80	53.3	52	34.7
	I believe that self-medicating is convenient and beneficial to me.	11	7.3	13	8.7	82	54.7	44	29.3
	I believe that self-medicating is good practice.	11	7.3	8	5.3	85	56.7	46	30.7
	I believe self-medication can manage my illness.	8	5.3	12	8.0	83	55.3	47	31.3
Attitude Dimension		**Mean ± SD 21.88 ± 4.70**							
Practices	I visit a qualified medical provider for any illness.	6	4.0	7	4.7	77	51.3	60	40.0
	I checked the expiration date of the medications I use.	7	4.7	6	4.0	78	52.0	59	39.3
	I give advice on self-medication to my family and friends.	8	5.3	14	9.3	79	52.7	49	32.7
	I self-medicate through the influence of advertisements.	11	7.3	12	8.0	80	53.3	47	31.3
	I self-medicate based on my previous experience.	6	4.0	13	8.7	79	52.7	52	34.7
	I self-medicate from previous doctor's prescriptions.	6	4.0	15	10.0	75	50.0	54	36.0
	There are times that after self-medicating, I submit myself to a medical practitioner.	6	4.0	14	9.3	78	52.0	52	34.7
Practices Dimension		**Mean ± SD 22.28 ± 4.52**							

Table 3 provides an overview of how participants perceive and engage with medication prescriptions. The data is organized into three key areas: Knowledge, Attitudes, and Practices, with responses captured using a four-point Likert scale (Strongly Disagree, Disagree, Agree, Strongly Agree). This section reflects participants' understanding of medication safety, their beliefs about self-medication, and how they actually use medications in their daily lives.

Knowledge Dimension

This part evaluates how well participants understand medication safety, appropriate dosages, and the risks tied to self-medication and drug dependence. Notably, 93.3% of participants reported obtaining medications from reputable pharmacies or healthcare providers, and most showed awareness of the dangers linked to incorrect medication use. The average knowledge score (M ± SD = 23.10 ± 4.50) suggests a generally solid grasp of essential medication-related information.

Attitude Dimension

This section captures participants' views on self-medication. Over half (57.3%) agreed that self-medication offers quick relief, while 54.7% considered it a convenient and useful practice. On the other hand, a small portion (7.3%) strongly disagreed with the idea that self-medication is a good approach. The overall attitude score (M ± SD = 21.88 ± 4.70) indicates a neutral to somewhat positive stance toward self-medication.

Practices Dimension

This area focuses on participants' actual behaviors related to medication use. Encouragingly, 91.3% reported checking expiration dates before using medications, and 87.3% sought medical advice when needed. However, 52.7% acknowledged that they sometimes self-medicate based on previous experiences. The average practices score (M ± SD = 22.28 ± 4.52) reveals a mix of cautious and potentially risky behaviors.

Table 4: Inferential comparison between participants' socio-demographics and their knowledge, attitudes, and practices towards medication prescriptions

Variables	Knowledge	Attitudes	Practices
Last doctor or consultant visit	0.49**	0.53**	0.53**
Age	0.24**	0.09**	0.36**
Gender	0.95*	0.18*	0.14*
Marital status	0.10*	0.09*	0.69*
Year of study	0.12**	0.11**	0.19**
Educational status	0.84*	0.30*	0.18*
Family income	0.60**	0.16**	0.12**

Note: t. test: *, ANOVA: **

Inferential statistics were used to study the statistically significant relationship between the participants' socio-demographic profile and their knowledge, attitudes, and practices toward self-medication. Findings showed that there was no statistically significant relationship between the participant's age, gender, marital status, year of study, educational status, and family income level and their knowledge, attitudes, and practices subscales (P > 0.05) **(Table 4)**

H01 There are no significant relationships between students' knowledge, attitude, and practices on self-medication *(This hypothesis is approved).*

H02 There are no significant differences in the assessment of the factors affecting students' knowledge, attitude, and practices on self-medication when they are grouped according to their sociodemographic profile (*This hypothesis is approved*).

Table 5: The frequencies and percentages of medications obtained without a prescription taken by participants (n=150)

Medication Category	Frequency	Percentage
Analgesics	130	86.7%
Antihistamines	66	44%
Decongestants	57	38%
Cough Suppressants and Expectorants	63	42%
Antacids and Acid Reducers	34	22.7%
Laxatives	33	22%
Antidiarrheals	36	24%
Topical Medications	42	48%
Vitamins and Supplements	59	39.3%
Cold and Flu Medications	56	37.3%
Antifungal Medications	27	18%
Skin Care Treatments	55	36.7%
Smoking Cessation Aids	25	16.7%
Sleep Aids	29	19.3%
Eye Drops	49	32.7%
Antibiotics	38	25.3%

This table presents the frequency and percentage of participants who reported using different types of self-medication. Among the categories, analgesics emerged as the most frequently used, with 130 participants (86.7%) reporting their use. This finding suggests that pain management is a primary reason for self-medication. Antihistamines were the second most common, utilized by 66 participants (44%), indicating a significant reliance on these medications for managing allergic reactions. Similarly, cough suppressants and expectorants were used by 63 individuals (42%), highlighting their role in addressing respiratory symptoms such as coughing.

Other commonly used categories included decongestants (57 participants, 38%), which are often taken to relieve nasal congestion, and topical medications (42 participants, 48%), reflecting their frequent use for treating skin-related conditions. Vitamins and supplements were used by 59 participants (39.3%), suggesting a widespread practice of self-administering supplements for general health maintenance. Additionally, cold and flu medications were reported by 56 participants (37.3%), indicating a high prevalence of self-treatment for common viral illnesses.

For digestive concerns, antidiarrheals were used by 36 participants (24%), while antacid and acid reducers were reported by 34 participants (22.7%). Similarly, laxatives were used by 33 participants (22%), reflecting a moderate level of self-medication for gastrointestinal issues.

Of particular concern is the self-administration of antibiotics, reported by 38 participants (25.3%). This practice raises potential public health concerns regarding the misuse and overuse of antibiotics without medical supervision. Antifungal medications were used by 27 participants (18%), suggesting that fungal infections are less frequently self-treated or may require a medical prescription.

Less common categories included smoking cessation aids, used by 25 participants (16.7%), and sleep aids, reported by 29 participants (19.3%). These lower frequencies may reflect the complexity of managing smoking addiction and sleep disturbances without professional guidance. Lastly, eye drops were used by 49 participants (32.7%), indicating that eye-related issues are a relatively common concern for self-medication.

Table 6: The frequency and percentages of Reasons for Self–medication

Reason for Self-Medication	Frequency	Percentage
Others	12	8%
I do not trust my doctor	17	11.30%
I practice self-medication when a doctor's treatment is ineffective	33	22%
I practice self-medication for preventive measures of symptoms of illness	68	45.30%
I am familiar with the course of the illness and its treatment	67	44.70%
I do not want to burden my doctor because the symptoms are not severe	50	33.30%
I practice self-medication when symptoms of an illness emerge	85	56.70%

The table shows the different reasons why people choose to self-medicate, along with how often each reason was reported. The most common reason was the appearance of illness symptoms, with 85 participants (56.7%) saying they take medication on their own when they start feeling sick. 68 participants (45.3%) reported using self-medication to prevent symptoms before they fully develop. Similarly, 67 participants (44.7%) said they feel confident managing their illness because they are familiar with its course and treatment.

Some participants (50, 33.3%) self-medicate because they don't want to bother their doctor when their symptoms seem mild. Others (33, 22%) turn to self-medication when they feel that a doctor's treatment isn't working. A smaller number (17, 11.3%) said they don't fully trust their doctor, which influences their decision to self-medicate. Lastly, 12 participants (8%) mentioned other, unspecified reasons for their self-medication habits.

DISCUSSION

The study examined the knowledge, attitudes, and practices (KAP) of young, unmarried women aged 18 to 25 from middle-income families regarding self-medication. Most participants showed high awareness, with 93% obtaining medications from reputable sources and 92% knowing correct dosages. However, 26.3% used antibiotics without prescriptions, and 44.7% relied on past experiences to treat recurring issues. Moderate healthcare-seeking behavior was observed, as 39.3% visited doctors "sometimes," while 83% were influenced by advertisements. Socio-demographic factors had little impact on KAP ($p > 0.05$), indicating that access to medications and medical knowledge are key drivers of self-medication. The findings showed high usage rates for analgesics (86.7%) and preventative self-medication (45.3%), but the misuse of antibiotics poses risks. Overall, the results emphasize the need for targeted programs to address knowledge gaps and promote safer self-medication practices.

The study has several limitations, including potential biases from the participant profile and methodological design. By focusing on young, unmarried women aged 18 to 25, primarily full-time students from middle-income families, the study introduces selection bias, limiting the generalizability of the findings to other demographic groups. This narrow focus may amplify trends particular to this cohort, such as increased health awareness, while underrepresenting older, male, or lower-income populations. Self-reported data may also introduce recall and social desirability biases, leading participants to

overstate safe practices or downplay risky behaviors. For example, the high percentages of respondents (93%) acquiring medication from reputable sources and 92% aware of correct dosages may reflect idealized behaviors. Additionally, the moderate rate of healthcare-seeking (39.3% visiting doctors "sometimes") may be influenced by perceived study expectations. The cross-sectional design limits causal inferences about the relationship between socio-demographic factors and self-medication practices. The lack of significant associations ($p > 0.05$) between knowledge, attitudes, and practices might result from insufficient variability in the sample rather than a true absence of influence. Furthermore, external factors like advertising influence (83%) and reliance on prior experiences (44.7%) may not have been adequately explored, though they can significantly affect self-medication behaviors. Overall, these biases likely overestimate positive self-care behaviors while underestimating risky practices, such as unprescribed antibiotic use (26.3%). The findings represent trends within this specific cohort and may not fully reflect the broader population, emphasizing the need for diverse samples and longitudinal studies in future research.

The study sheds light on self-medication practices among young, unmarried female students aged 18 to 25 from middle-income families, focusing on their knowledge, attitudes, and practices (KAP). Participants showed moderate healthcare-seeking behavior and a tendency to self-medicate, often influenced by prior experiences and advertising. Most sourced medications from reputable providers and understood correct dosages; however, some engaged in risky behaviors, such as using antibiotics without prescriptions (26.3%).

Socio-demographic factors like gender, age, and income had no significant impact on KAP ($p > 0.05$), consistent with similar research. The reliance on public healthcare and the high analgesic use rate (86.7%) reflects global trends, although antibiotic misuse remains a concern, contributing to antimicrobial resistance. These findings suggest that self-medication is more influenced by accessibility and medical awareness than socio-demographics. While it often serves as a first response for minor ailments, gaps in education about antibiotic risks highlight the need for targeted public health initiatives and stricter regulations. Improved communication between healthcare providers and students, along with culturally relevant education, could enhance safer self-care practices.

The generalizability of this study's results is influenced by its focus on a specific socio-demographic group: young, unmarried women aged 18-25 from middle-income families who are full-time students in Saudi Arabia. This concentration limits the external validity to populations with similar characteristics. While the findings align with global trends in self-medication among students, variations in healthcare systems, cultural attitudes, and access to resources in other regions may restrict their applicability. For instance, a preference for public healthcare and the practice of self-medication based on prior experience may not be relevant in areas with different healthcare infrastructures or cultural practices.

The study's alignment with existing research, such as findings on self-medication among medical students worldwide, enhances its validity within comparable contexts. However, the exclusive focus on a student population—primarily from health-related fields—may not accurately represent behaviors in non-student or non-health-related groups. Factors such as income, education, and medical training significantly influence self-medication practices and may not generalize about populations lacking similar knowledge or resources.

In summary, while the findings provide valuable insights into self-medication behaviors within the studied demographic, caution is warranted when extrapolating these results to broader or more diverse populations. Future research that includes a wider range of socio-demographic groups and varied healthcare contexts would strengthen the generalizability of these findings

The reliance on a self-administered questionnaire may result in self-reporting bias, as participants might misrepresent or inaccurately recall their self-medication behaviors. The findings of this study may not be generalizable to other populations within the country, as knowledge, attitudes, and practices (KAP) are likely influenced by various sociodemographic factors. Therefore, additional research on self-medication is essential, particularly considering its increasing prevalence in the region.

Data Availability Statement

The data used in this study, which assessed the knowledge, attitudes, and practices (KAP) of self-medication among nursing students at Northern Border University, Kingdom of Saudi Arabia, was made available upon request, subject to ethical considerations and institutional guidelines.

The raw data collected via the Google Forms survey, which included responses to the structured questionnaire, was securely stored in an encrypted digital format. The data was made available upon request to qualified researchers or institutions with appropriate justification, and access requests were reviewed by the research team, with ethical approval required. The data was accessible for three years from the study's completion, under institutional data retention policies. It was shared only in a

de-identified format to maintain participant confidentiality, with published data excluding personal identifiers and presented in aggregated form. The data may have been deposited in an appropriate institutional repository or public data archive if approved by the Local Committee of Bioethics (LCBE) at Northern Border University. Access to the data was provided with the understanding that it would be used solely for research purposes and in compliance with the study's ethical approval, ensuring participant confidentiality and adherence to ethical guidelines. The data that support the findings of this study are available on request from the corresponding author.

Author's Contribution

All authors contributed significantly to this research. They collectively participated in conceptualizing the study, reviewing literature, designing the methodology, analyzing data, and discussing the findings. They also ensured ethical compliance, facilitated translations, and explored publication opportunities. Additionally, all authors assisted in data collection and questionnaire distribution, playing a vital role in the study's success.

Lists of Abbreviation

WSMI - Organizations such as the World Self-Medication Industry
OTC – Over the Counter
LCBE – Local Committee for Bioethics
KAP – knowledge, attitude and practices

Ethics Approval and Consent to Participate

The ethics and research committee of our institution approved the conduct of the study, number (HAP-09-A-043). Written informed consent was obtained from the students. This was part of the basis upon which ethical approval was given.

Human and Animal Rights

No animals were used in this research. All human research procedures were followed in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national), and with the Helsinki Declaration of 1975, with the most recent revision occurring in 2013.

Consent for Publication

All study participants gave informed consent to participate in the research which included the agreement that results would be published.

Conflict of Interest

The authors of this study, assessing the knowledge, attitudes, and practices (KAP) of self-medication among nursing students at Northern Border University, Kingdom of Saudi Arabia, declared that there are no conflicts of interest related to this research. No financial support or external funding was received for the completion of this study. Furthermore, there are no personal, professional, or financial relationships that could be perceived as influencing the outcomes or interpretation of the study findings. All aspects of the research were conducted impartially, adhering to ethical guidelines set by the Local Committee of Bioethics (LCBE) at Northern Border University.

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