KNOWLEDGE, ATTITUDE AND PRACTICE ON OVER THE COUNTER (OTC) MEDICINE USE AMONG PHARMACY STUDENTS

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Abstract. Over the counter (OTC) medicines are widely used for self-managing minor health conditions, offering convenience and quick relief. Understanding the knowledge, attitudes, and practices regarding OTC medicines is essential for their safe use. This study assessed these aspects among Diploma in Pharmacy students, a crucial group in the healthcare field. A total of 165 students participated in an online survey adapted from a validated questionnaire. The results showed that 73.3% of students had a good understanding of OTC medicines, with knowledge levels significantly improving as students advanced through their academic program (p=0.014). Attitudinally, 79.4% of students held positive views towards OTC medicines, acknowledging their convenience and effectiveness while also recognizing the importance of cautious use. Self-medication was prevalent among 91.5% of respondents, who cited reasons such as the desire for quick relief (74.8%), time and cost savings (68.2%), and managing mild symptoms (74.2%). Despite the high engagement in self-medication, 18.2% of students reported experiencing adverse effects, and 10.3% admitted to occasionally exceeding recommended dosages. However, safety practices were generally observed, with 96.4% discarding medicines showing changes in appearance. The study highlights the importance of advancing pharmacy students' education to promote safe and informed use of OTC medicines.

Keywords: *Over The Counter (OTC), self-medication, pharmacy students, knowledge and attitudes, safety practices*

Introduction

Over the counter (OTC) medicines, available without a prescription, are widely used for the self-management of minor health conditions due to their perceived ease of access, cost-effectiveness, and convenience (Bekele et al., 2020). However, self-medication carries risks such as drug interactions, misdiagnosis, and misuse, underscoring the need for proper education and guidance (Abdelaziz et al., 2019). Self-medication is particularly prevalent among university students, with a global meta-analysis revealing a 70.1% prevalence rate, especially among medical students (97.2%) compared to non-medical peers (44.7%) (Behzadifar et al., 2020). Region-specific studies corroborate these high rates, such as 89.6% among health sciences students in Iran (Abdi et al., 2018) and 68.1% in rural India (Rangari et al., 2020). Despite good knowledge and positive attitudes towards OTC medicine use, concerning practices, such as using expired medications and neglecting to read labels, persist (Maslat et al., 2023; Abdullah et al., 2022; Mkola et al., 2022). Pharmacy students, expected to have higher knowledge and a more cautious approach to OTC medicines, still exhibit gaps in understanding and practice. While they generally demonstrate positive attitudes towards

OTC medicines, issues like recommending unproven products or misusing medications indicate a need for enhanced education (Bekele et al., 2020; Hanna et al., 2016). Pharmacy education emphasizes symptom assessment and safety, yet there is a pressing need to improve training on the potential side effects and contraindications of OTC medicines (Sinopoulou and Rutter, 2019). Confidence in OTC decision-making often stems more from practical experience than academic training, suggesting that real-life scenarios play a crucial role in developing their expertise (Lucas et al., 2018). The high prevalence of self-medication among pharmacy students, reported at rates of 86-94.6%, raises concerns about overconfidence and potential misuse, even among those with specialized training (Alduraibi and Altowayan, 2022; Alsous et al., 2018; Sharif et al., 2012). These findings underscore the need for stricter regulations, better education on responsible self-medication, and the dissemination of accurate information to promote safe OTC medicine use (Dattatraya et al., 2024).

Pharmacy students, as future healthcare professionals, are pivotal in guiding the public on safe OTC medicine use. Understanding their knowledge, attitudes, and practices (KAP) is crucial to ensuring they are equipped to educate and assist the public effectively. This study focuses on Diploma in Pharmacy students, who are in the early stages of their education. Their perceptions and behaviours towards OTC medicines offer insights into the effectiveness of current educational curricula and identify areas needing further development. By assessing their KAP, this study aims to uncover knowledge gaps, explore attitudes influencing future practice, and examine common self-medication behaviours, contributing to the ongoing discussion on preparing pharmacy students to promote safe OTC medicine use.

Materials and Methods

Study design

This study employed a cross-sectional online survey design (Othman et al., 2022a) to assess the knowledge, attitudes, and practices (KAP) of Diploma in Pharmacy students regarding the use of OTC medicines. The survey was conducted among students enrolled in a Diploma in Pharmacy program at a Malaysian educational institution.

Data collection

The study utilized a questionnaire adapted from a survey conducted by Abdullah et al. (2022). The questionnaire was structured to assess the knowledge, attitudes, and practices (KAP) of Diploma in Pharmacy students concerning OTC medicines. It comprised four key sections: demographic information, knowledge assessment, attitude evaluation, and practice behaviour. The demographic section gathered data on the students' gender, hometown, academic semester, and proximity to medical facilities. The knowledge assessment included 10 questions aimed at evaluating students' understanding of OTC medicines, focusing on their correct usage, potential risks, and side effects. Each correct response will be weighted as 1 point and 0 for incorrect or unsure responses. The total score is 10, 8 to 10 correct responses (80%) are considered as good knowledge. 5 to 7 (50-79%) correct responses are considered as moderate knowledge, 0 to 4 correct responses (0-49%) is considered as poor knowledge. The attitude evaluation employed a 5-point Likert scale to gauge students' beliefs about the safety, effectiveness, and convenience of OTC medicines. The attitude section consists

of 5 questions and students' attitude scores were measured. A negative attitude is determined by students who had attitude scores of less than 20 marks. Meanwhile, students who tend to get 20 marks and above are believed to have a positive attitude toward self-medication. The last section of this study consists of 10 question which assess students' practices of OTC medication. The practice behaviour section examined the students' self-medication habits, including how frequently they used OTC medicines, their reasons for choosing them, and their adherence to safety practices such as reading labels and checking expiration dates. The questionnaire was distributed online via Google Forms (Othman et al., 2024; Ismail et al., 2023) and distributed to the participants through WhatsApp application (Najib et al., 2023; Sulaiman et al., 2023; Othman et al., 2022b) to all 210 students enrolled in the Diploma in Pharmacy program, with 165 students ultimately completing the survey, yielding a response rate of 78.6%. Participation was voluntary, and confidentiality and anonymity were assured to all respondents.

Data analysis

The collected data were analysed using IBM SPSS Statistics version 26.0. Descriptive statistics were used to summarize the demographic characteristics of the respondents and their KAP regarding OTC medicines. Frequencies and percentages were calculated for categorical variables, while means and standard deviations were computed for continuous variables. Chi-square and Fisher's exact tests were used to analyse the association between the demographic data and knowledge. The correlation between academic progression (measured by the semester of study) and knowledge scores was analysed using Spearman's rho correlation coefficient. For attitude and practice data, similar statistical methods were applied to explore potential associations with demographic factors. The significance level was set at $p<0.05$ for all statistical tests. The calculated mean score for attitudes of OTC medicines usage was interpreted based on *Table 1* (Othman et al., 2024).

Table 1. *Interpretation of the calculated mean score*.

Mean range	Intepretation
1.00-1.80	Strongly disagree
1.81-2.60	Disagree
2.61-3.40	Neutral
3.41-4.20	Agree
4.21-5.00	Strongly agree

Results and Discussion

Demographic data

A total of 165 students participated in the study. The characteristics of the respondents are displayed in *Table 2*. Most of the participants were female, with 144 students (87.3%), while male students accounted for 21 participants (12.7%). Regarding their hometown, 109 students (66.1%) were from urban areas, and 56 students (33.9%) were from rural areas. The participants were distributed across different semesters, with 53 students (32.1%) in Part 2, 45 students (27.3%) in Part 4, and 67 students (40.6%) in Part 6. Most students lived within 8 km of medical facilities, with 107 students (64.8%) reporting such proximity. Meanwhile, 33 students (20.0%) lived 8-15 km away, and 25

students (15.2%) resided more than 15 km away from medical facilities. Regarding self-medication practices, 63 students (38.2%) reported frequently engaging in self-medication, 98 students (59.4%) reported rarely self-medicating, and only 4 students (2.4%) indicated that they never practiced self-medication.

***Table 2**. Demographic characteristics of respondents (N=165).*

Variable	Frequency [N] (Percentage, %)
Gender	
Male	21 (12.7)
Female	144 (87.3)
Hometown	
Urban	109 (66.1)
Rural	56 (33.9)
Semester studying	
Part 2	53 (32.1)
Part 4	45 (27.3)
Part 6	67 (40.6)
Medical facilities (From home)	
<8km	107 (64.8)
8-15km	33 (20.0)
>15km	25 (15.2)
Prevalence of self-medication	
Frequently	63 (38.2)
Rarely	98 (59.4)
Never	4 (2.4)

Knowledge towards the use of OTC medicines

The study assessed the knowledge levels of Diploma in Pharmacy students regarding OTC medicines. The results indicated that most participants, 121 out of 165 students (73.3%), demonstrated a good level of knowledge. The mean knowledge score was 8.21 with a standard deviation of 1.399, reflecting a generally high level of understanding among the students. Additionally, 41 students (24.8%) exhibited a moderate level of knowledge, suggesting that while these students have a foundational grasp of OTC medicines, there is room for improvement. A small proportion of the cohort, 3 students (1.8%), showed poor knowledge, indicating a need for targeted educational interventions to ensure these students reach an adequate level of understanding (*Figure 1*).

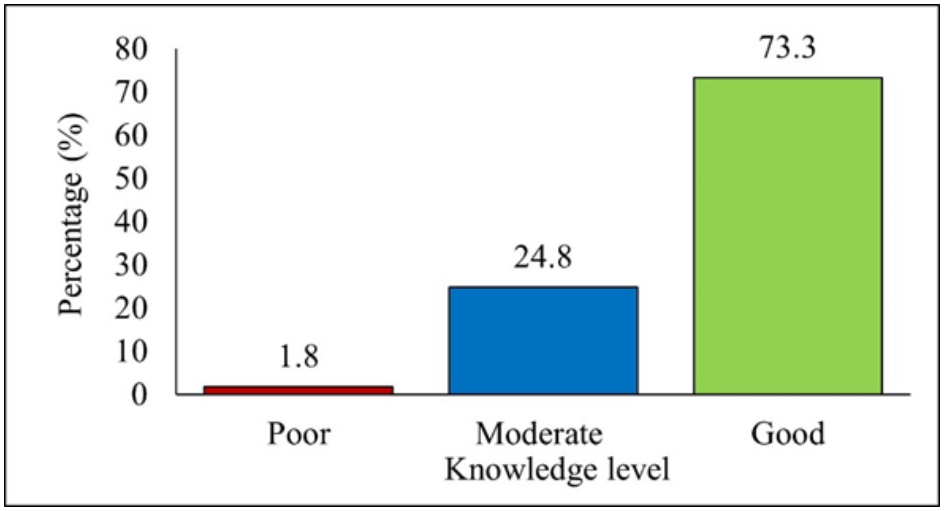

Figure 1. *Respondents' level of knowledge (M=8.21±1.399).*

The association between demographic characteristics and the level of knowledge regarding OTC medicines among Diploma in Pharmacy students was analysed using Fisher's exact test (*Table 3*). The results revealed no significant association between gender and knowledge level, with 71.4% of male students and 73.6% of female students achieving a good knowledge score (p=0.456). Similarly, no significant association was found between students' hometowns and their knowledge levels, with 74.3% of urban students and 71.4% of rural students showing good knowledge (p=0.544). However, a statistically significant association was observed between the semester of study and the level of knowledge (p=0.014). Students in Part 6 were more likely to have a good knowledge score (82.1%) compared to those in Part 2 (60.4%) and Part 4 (75.6%). This suggests that students' knowledge about OTC medicines improves as they advance through their academic program. The correlation analysis using Spearman's rho confirmed this association, with a positive correlation between the semester of study and knowledge score (r=0.280, p<0.001). This indicates that as students advance in their studies, their understanding of OTC medicines significantly increases. No significant association was found between proximity to medical facilities and knowledge levels (p=0.854). The majority of students living less than 8 km from medical facilities (73.8%) had good knowledge, similar to those living 8-15 km away (68%) and those living more than 15 km away (75.8%). Finally, the prevalence of self-medication was not significantly associated with knowledge level (p=0.081). However, students who frequently self-medicated were more likely to have a good knowledge score (84.1%) compared to those who rarely (66.3%) or never (75%) self-medicated. Overall, the semester of study was the only demographic characteristic significantly associated with knowledge levels, indicating that academic progression plays a critical role in enhancing students' understanding of OTC medicines.

Table 3*. Association of demographic characteristics with level of knowledge (N=165).*

Characteristics	Knowledge score			p value
	Good N (%)	Moderate N (%)	Poor N (%)	
Gender				0.456[a]
Male	15 (71.4)	5 (23.8)	1 (4.8)	
Female	106 (73.6)	36 (25.0)	2 (1.4)	

Hometown				0.544[a]
Urban	81 (74.3)	27 (24.8)	1 (0.9)	
Rural	40 (71.4)	14 (25.0)	2 (3.6)	
Semester studying				0.014[a*]
Part 2	32 (19.4)	21 (39.6)	0 (0.0)	
Part 4	34 (75.6)	9 (20.0)	2 (4.4)	
Part 6	55 (82.1)	11 (16.4)	1 (1.5)	
Medical facilities (From home)				0.854[a]
<8km	79 (73.8)	25 (23.4)	3 (2.8)	
8-15km	17 (68.0)	8 (32.0)	0 (0.0)	
>15km	25 (75.8)	8 (24.2)	0 (0.0)	
Prevalence of self-medication				0.081[a]
Frequently	53 (84.1)	9 (14.3)	1 (1.6)	
Rarely	65 (66.3)	31 (31.6)	2 (2.1)	
Never	3 (75.0)	1 (2.5)	0 (0.0)	

*Note: a=Fisher's exact test; *=Statistically significant p value; Good=8-10 marks; Moderate=5-7 marks; Poor<4 marks.*

Attitudes on the use of OTC medicines

The findings indicate that most Diploma in Pharmacy students hold positive attitudes towards the use of OTC medicines (*Table 4*). Overall, the students had a positive attitude towards OTC medicines, with a mean attitude score of 19.8±6.02. Specifically, 79.4% (n=131) of the students exhibited a positive attitude, while 20.6% (34) showed a negative attitude. Most students expressed confidence in the safety of using OTC medicines for self-medication when used correctly, with 84.3% agreeing, including 55.2% who strongly agreed, and only a small percentage (13.9%) disagreeing. A similar pattern was observed regarding the convenience of OTC medicines, where 83.7% of students agreed that they are easy to obtain and use, with 47.9% strongly agreeing and only 15.1% disagreeing. When it came to using OTC medicines during pregnancy and breastfeeding, 72.7% of students agreed that they could be used with caution unless the label advises otherwise, though 13.3% disagreed. Additionally, 74.5% of students agreed that they would take OTC medicines for minor illnesses, with 29.7% strongly agreeing and 13.3% disagreeing. A significant portion of students (81.8%) indicated that while they believe OTC medicines are generally safe, they would seek a pharmacist's advice if they were unsure about which medicine to use for a minor illness. Only 14.5% of students disagreed with this cautious approach.

***Table 4**. Attitudes of respondents to the use of OTC medicines (n=165).*

Statement	N (%)					Mean±SD	Intepretation
	SD	D	N	A	SA		
Using OTC medicines as self-medication is safe when you use them correctly.	22 (13.3)	1 (0.6)	3 (1.8)	48 (29.1)	91 (55.2)	4.12 ±1.34	Agree
OTC medicines are convenient to obtain and use.	23 (13.9)	2 (1.2)	2 (1.2)	59 (35.8)	79 (47.9)	4.02 ±1.34	Agree
OTC medicines can be used in pregnancy and breastfeeding but with caution, unless stated on the label to avoid.	19 (11.5)	3 (1.8)	23 (13.9)	67 (40.6)	53 (32.1)	3.80 ±1.24	Agree
I should take OTC medicines when I have minor illness.	18 (10.9)	4 (2.4)	20 (12.1)	74 (44.8)	49 (29.7)	3.80 ±1.21	Agree
OTC medicines are safe, but I would seek a pharmacist's advice if I were not sure about my minor illness and which	22 (13.3)	2 (1.2)	6 (3.6)	47 (28.5)	88 (53.3)	4.07 ±1.35	Agree

is suitable for it.

Note: SD=Strongly Disagree; D=Disagree; N=Neither Disagree nor Agree; A=Agree; SA=Strongly Agree.

The study also explored the association between demographic characteristics and attitude scores (*Table 5*). The analysis showed that gender did not significantly influence attitudes toward OTC medicines, with 85.7% of male students and 78.5% of female students displaying positive attitudes. Similarly, students' hometowns did not significantly affect their attitudes, with positive attitudes observed in 78.0% of urban students and 82.1% of rural students. While students in higher semesters, particularly those in Part 6, exhibited a slightly higher proportion of positive attitudes (85.1%) compared to those in Part 2 (73.6%) and Part 4 (77.8%), this difference was not statistically significant. The proximity of students' homes to medical facilities also did not significantly impact their attitudes, with positive attitudes being consistent across different distances. The prevalence of self-medication was not significantly associated with attitude scores, although it is noteworthy that all students who reported never self-medicating had positive attitudes, compared to 79.4% of those who frequently self-medicated.

***Table 5**. Association of demographic characteristics with attitude (N=165).*

Characteristics	Attitude score		p value
	Positive N (%)	Negative N (%)	
Gender			0.572[a]
Male	18 (85.7)	3 (14.3)	
Female	113 (78.5)	31 (21.5)	
Hometown			0.531[b]
Urban	85 (78.0)	24 (22.0)	
Rural	46 (82.1)	10 (17.9)	
Semester studying			0.288[b]
Part 2	39 (73.6)	14 (26.4)	
Part 4	35 (77.8)	10 (22.2)	
Part 6	57 (85.1)	10 (14.9)	
Medical facilities (From home)			0.663[b]
<8km	83 (77.6)	24 (22.4)	
8-15km	20 (80.0)	5 (20.0)	
>15km	28 (84.9)	5 (15.1)	
Prevalence of self-medication			0.871[a]
Frequently	50 (79.4)	13 (20.6)	
Rarely	77 (78.6)	21 (21.4)	
Never	4 (100.0)	0 (0.0)	

*Note: a=Fisher's exact test b Chi-square test for independence; *=Statistically significant p value; Positive attitude=score of 20 and above; Negative attitude=score of below 20.*

Respondents' practices regarding the use of OTC medicines

Most respondents (91.5%) reported practicing self-medication with OTC medicines, while a small proportion (8.5%) indicated that they had never self-medicated (*Table 6*). Among those who practiced self-medication, the most common reasons for choosing OTC medicines included the perception of safe and quick relief (74.8%), time and cost savings (68.2%), and the mildness of symptoms (74.2%). Additionally, 55.4% of

respondents cited knowledge gained from past illnesses as a reason for self-medicating. When asked about the circumstances under which they usually consume OTC medicines, 86.7% of respondents stated they do so when symptoms are minor or manageable, while 58.2% reported taking OTC medicines whenever they feel sick. A smaller percentage (18.2%) indicated they use OTC medicines when they cannot visit a doctor. Notably, 18.2% of respondents experienced adverse effects from OTC medicines, while 64.2% reported no adverse effects, and 17.6% were unsure. Regarding dosage, 10.3% of respondents admitted to taking more than the recommended dose of an OTC medicine, while the majority (85.5%) adhered to the recommended dosage. A small percentage (4.2%) were unsure about their dosage practices. Regarding adherence to safe medication practices, 47.3% of respondents always read the instructions on the medicine's label before use, and 44.8% consistently checked the expiry date of the medicines. Most respondents (92.7%) stored their medicines in a cabinet or drawer, with 55.1% also using the refrigerator for storage. It is noteworthy that no respondents reported storing medicines in the bathroom, and 55.8% always stored their OTC medicines in a cool, dry place as recommended. Furthermore, most respondents (96.4%) stated that they would immediately discard any OTC medicine if they noticed a change in its shape, colour, or odour, indicating a strong awareness of the importance of medicine safety. Only 2.4% of respondents indicated they would not discard the medicine under such conditions, while 1.2% were unsure. These practices reflect a generally responsible approach to the use and management of OTC medicines among the respondents.

***Table 6**. Respondents' practices regarding self-medication of OTC drugs.*

Statement	N	(%)
Have you ever practiced self-medication with OTC medicine(s)?		
Yes	151	(91.5)
No	14	(8.5)
What are your reasons for choosing OTC medicine for self-medication?*		
Safe & quick relief	124	(74.8)
Mild symptoms	123	(74.2)
Time and cost saving	113	(68.2)
Knowledge gained from past illnesses	92	(55.4)
Emergency illness		
Taking a long time to wait for a doctor	41	(25.2)
Distance to health facility	26	(15.6)
When do you usually consume OTC medicine(s)?*		
Symptoms are minor or manageable.	143	(86.7)
Whenever I feel sick	96	(58.2)
Whenever I cannot visit doctor	30	(18.2)
Have you experienced adverse effects from the OTC medicine(s)?		
Yes	30	(18.2)
No	106	(64.2)
Do not know	29	(17.6)
Have you ever taken more than the recommended dose for the OTC medicine(s)?		
Yes	17	(10.3)
No	141	(85.5)
Do not know	7	(4.2)
How often do you read the instructions on the medicine's label before use?		
Never	2	(1.2)
Rarely	7	(4.0)
Sometimes	36	(21.8)
Often	42	(25.5)
Always	78	(47.3)
How often do you check the expiry date?		
Never	2	(1.2)
Rarely	5	(3.0)
Sometimes	34	(20.6)
Often	50	(30.3)
Always	74	(44.8)

Where do you usually store your medicine?*		
Cabinet/drawer	153	(92.7)
Refrigerator	91	(55.1)
Locked drawer	36	(21.8)
Near kitchen stove	3	(1.8)
Bathroom	0	(0)
How often do you store your OTC medicine(s) in a cool, dry place or as stated on the label?		
Never	0	(0)
Rarely	0	(0)
Sometimes	20	(12.1)
Often	53	(32.1)
Always	92	(55.8)
If the OTC medicine showed a change in shape, colour, or odour, I would immediately discard the medicine.		
Yes	159	(96.4)
No	4	(2.4)
Do not know	2	(1.2)

Note: Multiple responses possible. Therefore, the total may exceed 100%.

Most students reported consulting pharmacists as their primary source of information before using OTC medicines, with 78.8% indicating this preference. The internet was the second most frequently used source, with 57.0% of students relying on online information. Additionally, 46.1% of students sought advice from relatives or friends, while 40.0% consulted doctors. Books or lecture notes were considered by 37.6% of students as a source of information, and 34.5% referred to drug leaflets. These results suggest that while healthcare professionals and online resources are the most common sources of information for students, personal networks and educational materials also play significant roles in their decision-making process regarding OTC medicine use (*Figure 2*). Most students reported using OTC medicines for common conditions such as headaches and fever, with 92.1% indicating they use OTC medicines for both conditions. Cough, cold, or flu symptoms were also a prevalent reason for OTC medicine use, reported by 82.4% of students. Other conditions for which students commonly used OTC medicines included diarrhoea (40.0%) and body pain (39.4%). Less commonly reported conditions included period pain and allergies, each mentioned by 1.8% of students. Very few students reported using OTC medicines for constipation (1.2%), gastric issues (0.6%), rashes (0.6%), sunburn (0.6%), or mouth ulcers (0.6%). These results suggest that students predominantly rely on OTC medicines for treating common ailments such as fever, headache, and respiratory symptoms, while usage for other conditions is relatively infrequent (*Figure 3*).

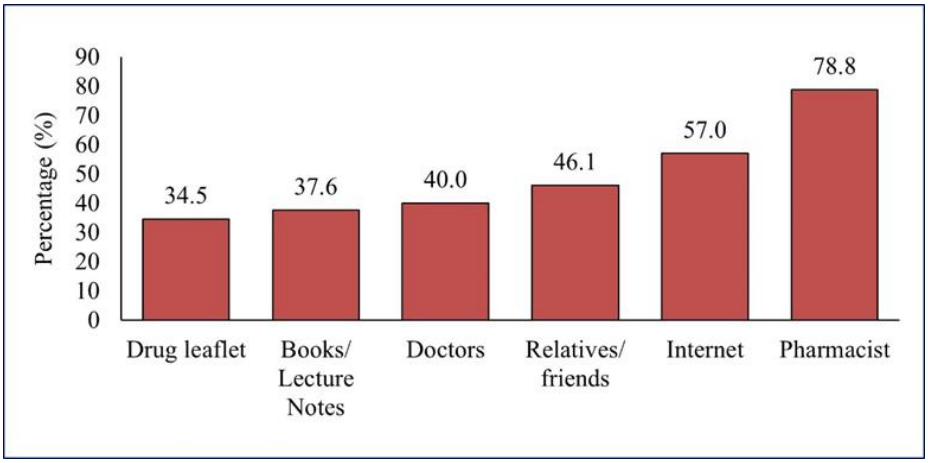

Figure 2. *Sources of information considered by respondents before using OTC medicines.*

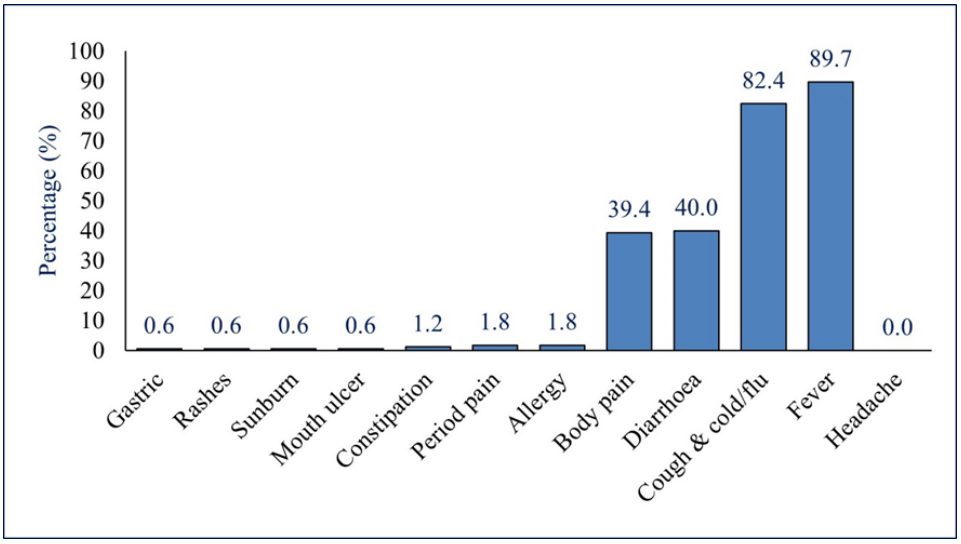

Figure 3. *Respondents' common ailments for self-medication with OTC medicines.*

The most frequently used OTC medicines among students were painkillers, with 78.8% of respondents indicating their use. Cough and cold preparations were also widely used, with 72.1% of students reporting their use. Additionally, 69.1% of students frequently used vitamins, making them one of the top OTC products consumed. Antihistamines were used by 44.8% of students, followed by analgesics (31.5%) and antacids (25.5%). Other less commonly used OTC medicines included antidiarrheals (24.2%), ophthalmic products (22.4%), and laxatives (17.0%). A smaller percentage of students reported using antibiotics (14.5%) and anti-emetics (13.3%). These results indicate that students primarily rely on OTC medicines for pain relief, respiratory symptoms, and general health maintenance, while the use of other specific OTC products is less common (*Figure 4*). This study provides a comprehensive overview of the knowledge, attitudes, and practices regarding OTC medicines among Diploma in Pharmacy students. The findings indicate that most students possess a good level of knowledge, particularly those in advanced semesters, which underscores the positive impact of academic progression on their understanding of OTC medicines. Specifically, students in higher semesters (Part 6) demonstrated significantly greater knowledge compared to those in earlier stages ($p=0.014$). This positive correlation between the semester of study and knowledge score, confirmed by Spearman's rho analysis, suggests that academic progression plays a crucial role in enhancing students' comprehension of OTC medicines. The higher representation of Part 6 students (40.6%) in the sample may indicate that more experienced students are overrepresented, reflecting more established attitudes and practices concerning OTC medicine use. This aligns with previous studies suggesting that higher education levels are associated with an increased likelihood of self-medication, as students gain more exposure to medical knowledge over time (Rathod et al., 2023; Beyene et al., 2017).

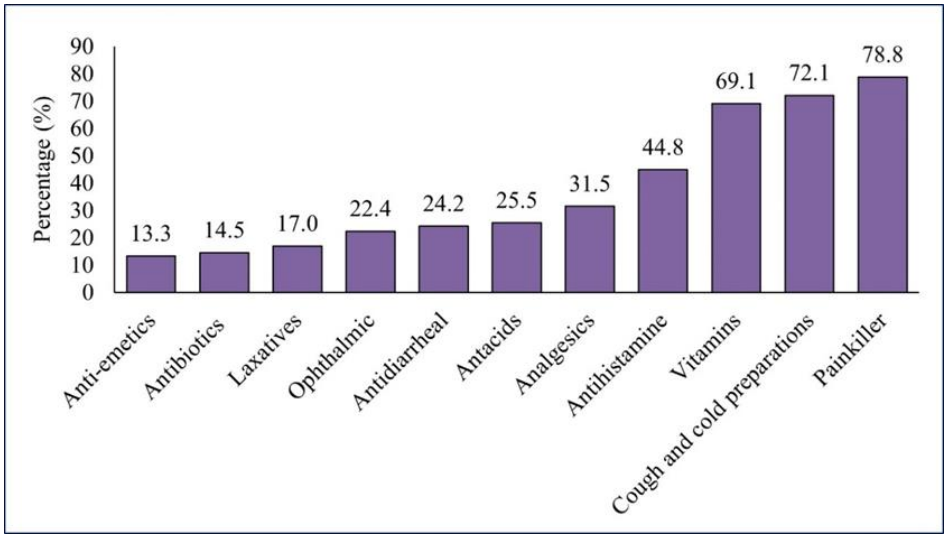

Figure 4. *Most used OTC medicines by respondents.*

The predominance of students from urban areas (66.1%) in the study could be indicative of better access to educational institutions and healthcare facilities, which may influence their knowledge and practices regarding OTC medicines. Urban students generally have more exposure to healthcare resources and information compared to their rural counterparts, potentially affecting their self-medication practices. Studies have shown that urban populations tend to have better knowledge about OTC medications compared to rural populations (Singh et al., 2015). However, the study did not find a significant relationship between factors such as gender, hometown, proximity to medical facilities, and self-medication habits with knowledge levels. Self-medication with OTC drugs was found to be prevalent among the students, with 91.5% of respondents reporting engagement in self-medication. While this high prevalence is consistent with broader trends observed among health science students, it also highlights the importance of educating pharmacy students on the responsible use of OTC medicines (Araia et al., 2019). The primary factors driving this behaviour include the perception of OTC medicines as safe and providing quick relief (74.8%), along with time and cost savings (68.2%). The mildness of symptoms (74.2%) often led students to opt for self-medication rather than seeking professional medical advice. These findings are consistent with other studies that emphasize common reasons for self-medication, such as previous successful experiences, easy accessibility to medicines, and the belief that the illness does not require a doctor's visit (Tesfay et al., 2022; Ateshim et al., 2019).

The study found that students generally hold a positive attitude towards the use of OTC medicines, recognizing their safety and convenience when used correctly. This positive attitude may reflect the effectiveness of their educational program in promoting responsible self-medication practices. Similarly, another study reported that 99.43% of students exhibited a positive attitude towards OTC drugs (Shrestha and Bhandari, 2024), reinforcing the idea that students across various educational settings tend to view OTC medicines favourably. However, concerning practices such as prolonged use without reading instructions and reliance on unproven products have been identified in other studies, emphasizing the need for ongoing education (Bekele et al., 2020; Kołłątaj et al., 2015). Painkillers were identified as the most used OTC medicines among students, with 78.8% of respondents reporting their use, followed by cough and cold

preparations at 72.1%. These findings align with other research suggesting that OTC medications, particularly painkillers and cough/cold preparations, are frequently used by students, especially during examination periods (Maslat et al., 2023; Orayj et al., 2021; Alsous et al., 2018). This reliance on OTC medicines to manage symptoms that could potentially hinder academic performance underscores the importance of understanding and promoting safe usage practices within this population. While most respondents demonstrated a responsible approach to the storage and usage of OTC medicines, the reported adverse effects and instances of taking more than the recommended dose suggest areas where further education is needed. Given the potential risks associated with OTC medications, such as adverse reactions and misuse, there is a clear need for increased awareness and education on their proper use among students (Ghosh et al., 2015; Almalak et al., 2014). Researchers recommend continued education on the dangers of self-medication and improved access to healthcare services to mitigate these risks (Rangari et al., 2020; Abdi et al., 2018).

Conclusion

This study underscores the solid foundation of knowledge and generally positive attitudes towards OTC medicines among Diploma in Pharmacy students, especially those in more advanced semesters. The prevalent practice of self-medication among these students is balanced by a cautious and responsible approach to the use of OTC medicines, reflecting the effectiveness of their educational training. The results highlight the critical need for ongoing education and access to trustworthy information to maintain and enhance safe and effective OTC medicine use among future pharmacists. Further research should investigate the long-term effects of targeted educational interventions on enhancing students' knowledge and self-medication practices, ensuring they are well-prepared to guide public health in their professional careers.

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Conflict of interest

The authors declare no conflict of interest.

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