

A Cross-Sectional Analysis to Assess Knowledge, Perception and Determinants of Self-Medication Practices

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ABSTRACT

Background: As per WHO, Self-medication involves selecting medicines for self-diagnosed conditions, often without medical consultation, leading to misuse. Limited research examines how knowledge, attitude and practices influence misuse. Thus, this study aimed to assess the prevalence of SMP and to evaluate knowledge, perception, practices and determinants of SMP among participants. **Materials and Methods:** This prospective cross-sectional study was carried out using a validated self-administered questionnaire from staff and students during the 2022-23 academic years. **Results:** The overall prevalence of SMP was high at 72.6%. Females had a higher rate of SM (83.3%), with the 26-30 age groups being the most prevalent. Among healthcare students, Ph.D. students had the highest SMP prevalence, while D. Pharma students had the lowest. Fourth-year students self-medicated more than others. The prevalence of SMP was notably higher among individuals with good knowledge compared to those with poor knowledge. Discipline and year of study were key predictors of good knowledge. Reasons for SMP included treating minor ailments and having medication knowledge. Commonly treated conditions were headaches, cough and cold. Medicines majorly used included antipyretics and antimicrobials. Most medicines were obtained from pharmacies and dosage information from PILs. Discontinuation of self-medication was mainly due to running out of medicines and symptom disappearance. **Conclusion:** The frequent self-medication with antimicrobials highlights the need for antibiotic stewardship programs. High self-medication rates call for advocacy and safe SMP training. Reducing SMP requires raising awareness of its risks and regulating pharmacies to dispense medicines rationally.

Keywords: Self-medication, Knowledge, Perception, Prevalence.

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INTRODUCTION

Self-care, as defined by the World Health Organization (WHO), encompasses the ability of individuals, families and communities to promote their health, prevent diseases, maintain well-being and cope with illnesses and disabilities, either independently or with minimal support from healthcare professionals. This concept positions individuals as active agents in managing their health within the healthcare system, allowing for decisions regarding self-medication, non-drug self-treatment, social support during illness and even first aid without direct supervision.¹

Self-Medication Practice (SMP), is a crucial element of self-care, involving the selection and use of medicines by individuals to treat self-recognized illnesses or symptoms.² Recognized by WHO, SMP acknowledges that individuals bear personal responsibility for managing their health and minor ailments can

often be handled without direct intervention from healthcare professionals. Factors such as improved general knowledge, education levels and socio-economic status contribute to the development and acceptance of SMP in various countries.

To facilitate safe self-care, tools have been developed, including making safe-to-use medicines available without prescription, identifying suitable devices and diagnostics and providing training in first aid. Regulatory bodies play a vital role in ensuring that Over-the-Counter (OTC) products meet specific criteria to be considered safe for self-medication. These criteria include low inherent toxicity, appropriateness for self-medication, no undue delay in seeking medical attention and absence of properties that make the product undesirable.³

The benefits associated with self-medication include the public's opportunity to address troublesome symptoms conveniently and economically, access to safe and effective medicines for minor ailments, reduced wastage of medical resources and lower costs in community-funded healthcare programs. However, self-medication also possesses risks, such as incorrect self-diagnosis, delayed appropriate medical advice, incorrect



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therapy choices, failure to recognize adverse effects and the potential for misuse.

Misuse of SMP is a concern, with consumers using medicinal products not designated as OTC and self-recognizing disorders based on symptoms observed in others. Availability of OTC products may create a perception that all medicines are safe, leading to intermittent or continued use without proper consultation. Misuse overlooks essential elements in prescribing medicines, raising concerns about efficacy, safety and toxicity.

Factors influencing misuse include the urge for self-care, sympathy for family members, lack of health services, poverty, ignorance, misleading advertisements and the availability of drugs outside pharmacies. Studies indicate a widespread prevalence of misuse, with percentages ranging from 52.6%⁴ to 100%⁵ in various regions and demographics.

To address these concerns and better understand the knowledge and perception towards self-medication, a study was conducted among students and staff of pharmacy and physiotherapy departments enrolled in the Nargund group of institutions. The aim was to evaluate self-medication practices, associated predictors/factors and the role of knowledge and perception in influencing the misuse of self-medication provisions.

MATERIALS AND METHODS

Study settings and Study population

A cross-sectional study was undertaken to examine the knowledge, perception and self-medication practices among undergraduates, postgraduates and staff affiliated with the Nargund Group of Institutions in Bengaluru, pursuing professional courses in pharmacy and physiotherapy. The study was spanned for six months, from June 2023 to December 2023. Ethical approval for the study was obtained from the Institutional Ethics Committee (Ref: NCP/HEC/-CERTI-004/2022-23) and the research adhered to the principles outlined in the "Declaration of Helsinki."

Data collection instrument

The questionnaire used in the study incorporated pre-validated questions from an earlier study for knowledge and perception assessment.⁶ In contrast, questions for the practice section were adopted from six different studies due to the inadequacy of questions covering the practice domain.⁶⁻¹¹ The questionnaire consisted of section A (demographic details), section B (knowledge and perception-based questions) and section C (Practice patterns).

Scoring criteria for 8 knowledge-based and 3 perception-based questions

Scores for knowledge and perception were obtained using the Likert scale as shown in the below flowchart. This binary categorization was utilized from Bloom's cut-off criteria in

similar articles.¹²⁻¹⁴ A 5-point Likert scale was used (strongly agree-5, agree-4, uncertain-3, strongly disagree-1). A maximum obtainable score was calculated as 40. A total score of at least 32 ($\geq 80\%$) was categorized as 'good knowledge, while a score less than 32 ($< 80\%$) was categorized as 'poor' knowledge. The same algorithm was used for the analysis of three perception-based questions, where the maximum obtainable score was considered as 15. This scoring criterion was obtained from a similar study.⁶

Inclusion and Exclusion criteria

The study included students and staff affiliated with the Nargund Group of Institutions, enrolled in the academic session of 2022/2023. The participants included individuals from the fields of pharmacy and physiotherapy. Before participation in the study, voluntary informed consent was obtained from each participant. Exclusions comprised students who were absent during the questionnaire administration and those unwilling to provide consent for the study.

Sample size estimation

Based on the population of 1100 registered students and staff for the 2022-2023 batch, comprising pharmacy (820), physiotherapy (180) and staff (100) at 95% confidence interval and 5% alpha error, a sample size of 420 was chosen after getting a minimum of 293 using Yamane's formula.¹⁵

$$n = N / (1 + N(e)^2)$$

Where: n signifies the sample size; N signifies the population of the study; e signifies the margin error (0.05).

Statistical analysis

The data underwent coding, cleaning and analysis using both Excel and SPSS software. Descriptive statistics were employed to provide a summary of the data. The internal consistency and reliability of the 11-item self-medication knowledge and perception questions, sourced from a previously validated questionnaire, were assessed using the Cronbach alpha test, yielding a value of 0.68.⁶ To identify predictors of self-medication practices, binary logistic regression with adjusted odds ratios was applied and also as an account for confounding factors. The association between demographic variables and respondents' engagement in self-medication practices was analyzed using the Chi-square test. The level of significance was set at p -value < 0.05 .

RESULTS

Demographic characteristics influencing self-medication practices are shown in Table 1. Out of 420 distributed questionnaires, all were completed, resulting in a 100% response rate. The study included 198 males (47.1%), with 60.1% practicing self-medication and 222 females (52.8%), among whom 83.8% engaged in self-medication, yielding an overall prevalence of

Table 1: Distribution of demographics among respondents (n=420).

Variables	Self-medication N (%)=305(72.6)	No self-medication N (%)=115(27.4)	Chi-square	p-value
Gender				
Male	119 (60.1)	79 (39.9)	29.5	< 0.01*
Female	186 (83.8)	36 (16.2)		
Age (years)				
16-20	76 (59.8)	51 (40.2)	15.7	0.001*
21-25	198 (77.3)	58 (22.7)		
26-30	18 (85.7)	3 (14.3)		
> 30	13 (81.3)	3 (18.8)		
Course				
M. Pharma	41 (74.5)	14 (25.5)	27.02	<0.001*
Pharm.D	79 (77.5)	23 (22.5)		
B. Pharma	74 (67.3)	36 (32.7)		
Ph.D.	10 (90.9)	1 (9.1)		
D. Pharma	38 (53.5)	33 (46.5)		
Physiotherapy	63 (88.7)	8 (11.3)		
Year of Study				
1 st	47 (61.8)	29 (38.1)	17.07	0.009*
2 nd	52 (71.2)	21 (28.7)		
3 rd	39 (61.9)	24 (38.1)		
4 th	88 (84.6)	16 (15.4)		
5 th	31 (77.5)	9 (22.5)		
6 th	27 (71.1)	11 (28.9)		
Staff	21 (80.7)	5 (19.2)		

M.Pharm-masters of pharmacy; Pharm.D- Doctor of pharmacy; B.pharma- Bachelors of pharmacy; Ph.D.-doctor of philosophy; D.pharma-Diploma in pharmacy.*Statistically significant (p -value < 0.05).

72.6%. The highest prevalence of self-medication occurred among females (83.8%) and those aged 21-25 years (77.3%). Among healthcare students, the most prevalent group is Ph.D. (90.9%) and the least is D Pharma (53.5%). The incidence of self-medication varied across different study years as shown in Table 1.

Table 2 reveals the evaluation of knowledge and perception among respondents for SMP. The prevalence of self-medication practice was notably higher among individuals with good knowledge (80.5%) compared to those with poor knowledge (67.6%). Similarly, the data indicates that individuals with good perception are more inclined to self-medicate (77%) compared to those with poor perception (63.9%). A statistically significant difference underscores the influence of possessing good knowledge and perception on self-medication practice as shown in Table 2.

The determinants of knowledge and perception of SMP is depicted in Table 3. Respondents' disciplines and year of study were found to be independent predictors of poor knowledge as there is a strong statistically significant association as shown in Table 4. The odds of having poor knowledge for students of the

discipline of physiotherapy are relatively high (AOR: 12.349) and p -value < 0.001. In terms of years of study, students in the final year show significantly lower odds of possessing poor knowledge (AOR: 0.123, p <0.001) compared to 1st year students. In the context of perception, the adjusted analysis shows that females are less likely to have poor perceptions compared to males. Similarly, the respondents of age group 16-20 are more likely to possess poor perception (AOR: 0.466, p -value-0.003) when compared to responders of age group >30 years (AOR: 0.216, p -value<0.001) as shown in Table 3.

Tables 4 and 5 reveals that, the respondents mostly self-medicated to treat minor ailments and due to their confidence in knowing what to use. The commonly self-treated conditions were found to be Headache (231; 11.85%), Cough and cold (194; 9.95%), vomiting (170; 8.72%), while the least treated conditions were genital infections (11; 0.56%) and skin rash (33; 1.69%). Our study also revealed that the common classes of medicines used for self-medication were antipyretics, antimicrobials and proton pump inhibitors. The respondent's practice patterns are analyzed in Tables 4 and 5.

Table 2: Analysis of knowledge and perception among respondents (n=420).

Cut-off score	Status	Self-medicated	No self-medication	Chi-square (p-value)	Likelihood ratio (p-value)
<80	Poor knowledge	173 (67.6)	83 (32.4)	8.379	8.636
≥ 80	Good knowledge	132 (80.5)	32 (19.5)	(0.004*)	(0.003*)
<80	Poor Perception	83 (63.9)	49 (37.1)	9.185	8.914
≥ 80	Good Perception	222 (77.0)	66 (23.0)	(0.002*)	(0.003*)

*Statistically significant (p-value < 0.05).

Table 3: Determinants of poor knowledge and perception among respondents (n=420).

Predictors of Poor Knowledge				
Variables	Univariate Crude OR (95% CI)	P-value	Multivariate Adjusted OR (95% CI)	p-value
Females ^a	1.159 (0.78-1.717)	0.460	0.822 (0.53 -1.28)	0.390
Discipline of physiotherapy ^b	10.787 (4.24-27.45)	<0.001*	12.349 (4.68-32.6)	<0.001*
Final year students ^c	0.338 (0.18-0.64)	< 0.01*	0.123 (0.05-0.29)	<0.001*
Age group of > 30 years ^d	0.477 (0.16-1.36)	0.166	2.696 (0.19-37.0)	0.458
Predictors of poor perception				
Variables	Univariate Crude OR (95% CI)	p-value	Multivariate Adjusted OR (95% CI)	p-value
Females ^a	0.567(0.37-0.86)	0.007*	0.466 (0.28-0.77)	0.003*
Discipline of physiotherapy ^b	1.007 (0.58-1.74)	0.981	1.273(0.70-2-31)	0.428
Final year students ^c	0.810 (0.59-1.11)	0.180	0.490 (0.05-4.73)	0.538
Age group of > 30 years ^d	1.209 (0.45-3.26)	0.707	0.216 (0.09-0.47)	< 0.001*

aCompared to males; bCompared to the discipline of pharmacy; cCompared to first year students; dCompared to age group of 16-20 years, OR- Odds ratio, *Statistically significant (p-value < 0.05)

Table 4: Summary of reasons for self-medication.

^a Reasons for Self-Medication (n=555)	Frequency	Percentage (%)
Treatment of minor ailments	191	34.4
I have medical knowledge of what to use	149	26.8
I do not want to waste time at the clinic	18	3.2
I know what to use from old prescription	27	4.8
I cannot afford laboratory fees	16	2.8
I had left-over medications	18	3.2
I have medications from family members	26	4.6
The pain was severe	66	11.8
I cannot wait for the laboratory report	20	3.6
I cannot afford consultation fees	24	4.3

^aMultiple responses.

DISCUSSION

This study aimed to assess the prevalence of self-medication among both students and healthcare staff enrolled at the Nargund group of institutions, along with their knowledge of and attitudes toward this practice. By doing so, we sought to gain a deeper understanding of the frequency of self-medication within this population, while exploring the reasons that encourage such practice. Our findings unveiled a substantial prevalence rate of self-medication practice, reaching 72.6% across different healthcare disciplines among students. There was a high rate of self-medication practice consistent with previous studies across different countries, which focus largely on university students.¹⁶⁻²³ Our findings revealed the self-medication practice was highest in females compared to males which correlates with previous studies.^{8,24-26} The gender difference among the respondents might be linked to the engagement of the females in the self-recommendation of the analgesic group of medications to relieve pains during their monthly menstrual cycle, as females have a lesser pain threshold than males. Previous studies have also documented that professional students tend to self-medicate probably owing to believing that they know what to use.²⁶⁻²⁹

Table 5: Analysis of self-medication practice patterns.

Variables ^a	Frequency	Percentage (%)
Medicines used for SMP (n=741)		
Antipyretics	132	17.7
NSAIDs	93	12.5
Anti-allergic	84	11.3
Anti-microbial	121	16.2
Cough syrup	92	12.3
Steroids	40	5.3
Proton pump inhibitors	108	14.5
Sleeping pills	30	4.0
Multivitamins	41	5.5
Sources of medicine procurement (n=514)		
Pharmacy	169	32.9
Hospital	114	22.2
Family/friends	104	20.8
Primary health center	71	13.8
e-commerce	53	10.3
Sources of medicine information (n=504)		
Patient information leaflet	178	35.5
Internet	99	19.7
Family/friends	53	10.6
Newspapers and magazines	104	20.7
Textbooks	68	13.5
Reasons of stopping self-medication (n=456)		
After a few days regardless of the outcome	50	10.9
After the medicines ran out	150	32.9
After symptoms disappeared	128	28.1
After completing the course	128	28.1

^aMultiple responses.SMP- self-medication practices.

Previous studies have also documented that 5th year students tend to engage in self-medication more than others.⁶

Furthermore, physiotherapy respondents tend to self-medicate more, but had the least knowledge of SMP, when compared to the respondents of the pharmacy discipline. Typically, pharmacy students have higher knowledge and perception of self-medication mainly because they are largely going to be the future curators of medicines, so they possess more knowledge of self-medication than the physiotherapy students who study least on medicines and self-medication practice. This gap perhaps suggests a need to further look into the training curriculum of the healthcare students in general and the physiotherapy students in particular.

Our study found that the top two reasons for self-medication practice were the treatment of minor ailments and having sufficient knowledge of what to use, as reflected by the other study done in Nigeria.⁶ It was found that there was a similarity with the Nigerian study⁶ where the most commonly treated condition by self-medication was Headache. The category of medication mostly used in this study included antipyretics, antibiotics and proton pump inhibitors. These findings are consistent with other studies in Nigeria.³⁰ Antipyretics and antimicrobials were the top two highest self-medicated classes of drugs; this could be due to the taboo among Indians of using antipyretics and antibiotics together to self-treat fever. In India, a significant portion of antibiotics are sold without oversight by community pharmacies. To mitigate potential health risks and ensure public safety, regulatory authorities must scrutinize this phenomenon closely. Notably, our research underscores that pharmacies serve as the primary source for obtaining medications for self-medication. Community pharmacists, guided by the ethical standards of their profession, bear the responsibility of ensuring that medicines are dispensed judiciously, providing appropriate guidance on their rational use to those genuinely in need.

CONCLUSION

The prevalence of SMP was found to be moderately high. Approximately half of the respondents demonstrated poor knowledge among those who had self-medicated and those who did not, while more than half of them exhibited good perception of self-medication practices. Respondents' discipline and year of study were the notable independent predictors of good knowledge of self-medication. It was found that students from the physiotherapy discipline had higher odds of poor knowledge; this often emphasizes the necessity of pertinent advocacy and the inclusion of elements of safe SMP in the formal training. To prevent the widespread harmful effects of SMP among the public, it may also be required to reimpose national guidelines on medicine access and put robust mechanisms in place to carry out the policy. Two crucial strategies to reduce the practice are raising community knowledge of the: Negative consequences of self-medication (wrong diagnosis, overdose, masking other diseases and falling into addiction) and Regulating pharmacies by encouraging them to dispense prescription-only medicines in the presence of a prescription from a qualified medical practitioner.

There is an urgent need to implement antibiotic stewardship among healthcare professionals and students as the study revealed antibiotics in the top two most commonly self-medicated class of drugs.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ETHICAL APPROVAL

The ethical approval was provided by the institutional ethics committee of Nargund College of Pharmacy, Bangalore (Ref ID: NCP/HEC/-CERTI-004/2022-23) after a thorough discussion and review of the study protocol.

CONSENT TO PARTICIPATE

The informed consent form used in this study was carefully designed to ensure clarity and comprehensibility of the study's purpose. Each participant was provided with the consent form and their consent was obtained prior to their participation in the study. The process emphasized their understanding and voluntary participation.

ABBREVIATIONS

SMP: Self-medication practice; **SM:** Self-medication; **WHO:** World Health Organization; **OTC:** Over the counter; **D. Pharma:** Diploma in pharmacy; **Ph.D:** Doctor of Philosophy; **PharmD:** Doctor of Pharmacy; **M.Pharma:** Masters of Pharmacy; **B Pharma:** Bachelor of pharmacy; **PIL:** Patient information leaflet.

AUTHORS CONTRIBUTION

Hiba was responsible for the conceptualization of the study design, methodology and data analysis. Data collection, entry and cleaning was done by Mariyam, Malathi and Anubhab Bhattacharjee. All the authors interpreted the results and Hiba contributed to the drafting of the manuscript. The final version of the manuscript has been reviewed and approved by all authors who agree with its content, as well as its submission for publication; they further agree to be accountable for all aspects of the work in ensuring its accuracy or integrity."

SUMMARY

This study explores self-medication practices, knowledge and perceptions among students and staff in the pharmacy and physiotherapy departments at the Nargund Group of Institutions. Conducted over six months, the cross-sectional study included 420 participants and revealed a 72.6% prevalence of self-medication, with higher rates among females and older students. Key findings indicate that good knowledge and positive perceptions significantly influence self-medication practices.

However, physiotherapy students exhibited notable knowledge gaps compared to their pharmacy counterparts. Commonly self-medicated conditions included headaches, coughs and colds, with frequent use of antipyretics, antimicrobials and proton pump inhibitors. The study underscores the need for enhanced educational programs, stricter regulations and public awareness campaigns to promote safe self-medication practices and mitigate associated risks.

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