

Prevalence and Patterns of self-medication practices in the urban areas of Belagavi, Karnataka; A Community Based Study

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ABSTRACT

Background: Self-medication, the use of drugs without professional supervision for self-diagnosed ailments, is a global public health concern. In India, high prevalence stems from easy OTC drug access, economic constraints, and limited healthcare services. The WHO highlights the need to understand self-medication to address risks like adverse drug reactions and antimicrobial resistance. **Aim & Objective:** To evaluate the prevalence and patterns of self-medication practices among the urban population of Belagavi, Karnataka. **Methods and Material:** A community-based cross-sectional study was conducted from October 2022 to September 2023, involving 400 systematically selected participants from two urban health centres. Data was collected through face-to-face interviews using a validated questionnaire and analysed using SPSS 25.0 with descriptive statistics. **Results:** The study found that 62.3% of participants practiced self-medication in the last three months. The sample included 51.8% females and 48.2% males, with the highest prevalence in the 21–30 age group (24.0%). Most were married (80.5%) and graduates (26.5%). Key reasons were time-saving (54.5%) and previous prescriptions (24.3%). Common symptoms were headache (79.5%) and fever (47.8%), with paracetamol (98%) being the most used medication. **Conclusions:** The high prevalence of self-medication in urban Belagavi underscores the urgent need for targeted public health interventions. We recommend measures to improve healthcare accessibility, implement stricter regulations for over-the-counter medications, and promote health education as a crucial tool to foster responsible medication use and mitigate potential health risks, which can be severe and life-threatening.

KEYWORDS

Self-Medication; OTC Drugs; Antimicrobial Resistance; Urban Population; Public Health Interventions

INTRODUCTION

In modern healthcare systems, self-medication represents an important junction between public health, access to healthcare, and patient autonomy. (1) The World Health Organization has defined it as "the use of pharmaceutical or medicinal products by the consumer to treat self-recognized disorders or symptoms, the intermittent or continued use of a medication previously prescribed by a physician for chronic or recurring disease or symptoms, or the use of medication recommended by lay sources or health workers not entitled to prescribe medicines." (2,3) Self-medication has emerged as a major global health phenomenon, with prevalence

rates ranging dramatically from 11.7% to 92% across various geographical and socioeconomic contexts. (4)

Although the Indian regulatory framework allows for the use of medications over the counter, the lack of a centrally uniform OTC drug list creates a muddled atmosphere for consumers and healthcare providers. (5) Regional studies across the subcontinent report surprising fluctuations in the prevalence rate of self-medication: 11.9% in Puducherry, 73.6% in Rajasthan, 78.7% in Tamil Nadu, and even 92.8% in Delhi. (6) These disparities represent the complex interaction of cultural norms, educational backgrounds, healthcare

accessibility, and economic factors influencing medication-seeking behaviours. Self-medication is integral to primary healthcare, especially in areas with weak health infrastructure. In many hilly and tribal regions of India, where healthcare professional shortages are acute, self-medication often becomes the only viable option for addressing health conditions. (7)

While this practice can reduce the workload on healthcare systems and often comes at a cheaper cost, it poses significant risks, including misdiagnosis, inappropriate therapeutic choices, adverse drug reactions, and drug interactions. (8) The unsupervised use of antimicrobials is particularly concerning as a contributor to the global antimicrobial resistance (AMR) crisis, especially in developing countries where antibiotic stewardship programs are still underdeveloped. Factors contributing to resistant pathogens include inappropriate antibiotic use, incomplete treatment courses, and availability without prescription. The situation in developing countries is often worse due to limited healthcare access and the urgent need for regulatory control over pharmaceutical sales. (9) Additionally, the dynamic nature of self-medication practices, shaped by emerging healthcare policies and changing socioeconomic conditions, calls for continuous investigation and updated data. (10)

The present study aims to comprehensively understand the prevalence of self-medication and patterns among the urban population of Belagavi, Karnataka. This research seeks to contribute to the existing literature by providing valuable insights into these patterns in a specific urban Indian context, informing public health policy, improving patient education efforts, and developing targeted interventions to promote responsible medication use. These findings will be of immense importance to healthcare providers, policymakers, and public health practitioners working to optimize healthcare delivery and mitigate the risks of self-medication practices.

Aim & Objectives: To evaluate the prevalence and patterns of self-medication practices among the urban population of Belagavi, Karnataka.

MATERIAL & METHODS

The study was undertaken at Rukmini Nagar UHC's urban field practice areas and Ashok Nagar UHC in Belagavi district, Karnataka, India. The population of Rukmini Nagar was 64,404, distributed across 13,076 households, while Ashok Nagar had a population of 26,004 with 1,200 households. This study employed a cross-sectional design and was

conducted over 12 months, from October 1, 2022, to September 30, 2023.

The sample size was calculated using a standard formula based on a prevalence of 35.1%, an absolute error of 5%, and a 95% confidence interval, resulting in a sample size 364.47, rounded to 400. The sample size allocation between the two areas utilized systematic and population-proportionate sampling techniques. Regarding population proportions, Rukmini Nagar contributed a larger sample share than Ashok Nagar. Sampling intervals were determined separately for each area, with every 46th household selected in Rukmini Nagar and every 10th household in Ashok Nagar, beginning at a random point within the first interval.

Data collection involved systematic random selection of households, and one respondent aged 18 years or older was chosen from each selected household using a lottery method. Face-to-face interviews were conducted using a pre-validated and pre-tested questionnaire divided into sections. The first section captured sociodemographic information such as age, gender, occupation, marital status, religion, and education. Self-medication practices were defined, and participants were asked about their practices over the last three months, including reasons, types of medications used, sources, and adverse events.

Ethical clearance was obtained from the Institutional Ethics Committee, Medical College. Informed written consent was secured from all participants. A pilot study was conducted in 40 households to refine the questionnaire. Inclusion criteria mandated that participants reside in the study area for at least 12 months, while households locked after three successive visits were excluded. Data were analysed using SPSS version 25.0. Descriptive statistics summarized demographic characteristics and prevalence rates, with means and standard deviations used for continuous variables and frequencies and percentages for categorical variables.

RESULTS

In Table 1, The demographic study indicated varied participation across gender, age, marital status, and religion. Among 400 participants, 193 were male and 207 were female. The incidence of self-medication exhibited differences among age groups, with the greatest rates seen in the 21-30 and 41-50 age group. Marital status and religious affiliation did not significantly influence self-medication behaviours; however, married persons and Hindus exhibited marginally elevated rates of self-medication.

Table 1: Demographic Characteristics of Study Participants (N= 400)

		Consumption of self-medication in Last three months?		
		YES	NO	Tot Perce al nt (n) (%)
Gender	Male	113	80	193 48
	Female	136	71	207 52
Age Group	18-40	102	63	165 41
	41-60	109	35	144 36
	>60 Yrs	38	53	91 23
Marital Status	Unmarrie d	52	19	71 17.75
	Married	194	128	322 80.5
Religion	Widowed	3	4	7 1.75
	Hindu	183	104	287 72
	Muslim	66	47	113 28

Educational qualifications substantially relates with self-medication habits. Individuals with primary, secondary, and diploma education had higher rates of self-medication than those with undergraduate and postgraduate degrees. Occupational analysis indicated substantial disparities, with housewives, employees, and students exhibiting a higher propensity for self-medication. The size of the family is substantially linked with self-medication habits, with families including 5-7 persons exhibiting the highest prevalence. Socioeconomic level markedly affected self-medication, with Class III participants exhibiting the highest prevalence in Table 2.

Table 2: Sociodemographic characteristics of Study Participants (N= 400)

		Consumption of self-medication in the last 3 months			
		YES	NO	Total (n)	Percent (%)
Highest Qualification	Illiterate	17	3	20	5
	Primary School	47	24	71	18
	High School	52	14	66	16.5
	PUC College	42	28	70	17.5
	Diploma	40	2	42	10.5
	Graduate	44	62	106	26.5
	Post Graduate	7	18	25	6
Occupation	Student	44	11	55	13.75
	Housewife	81	49	130	32.5
	Employee	79	52	131	32.75
	Business	40	5	45	11
	Retired	5	34	39	10
Family Members	02-Apr	80	50	130	33
	05-Jul	133	83	216	54
	08-Oct	25	16	41	10
	>10	11	2	13	3
Socio-Economic Status	CLASS I	0	7	7	2
	CLASS II	90	100	190	47.5
	CLASS III	148	34	182	45.5
	CLASS IV	11	10	21	5

Headache was identified as the predominant symptom prompting self-medication (79.5%), followed by fever (47.8%) and muscle/body discomfort (40.6%). Paracetamol predominated in self-medication behaviours, utilized by 98% of subjects. Diclofenac (37.8%) and Pantoprazole/Rantac (34.5%) were the subsequent most prevalent drugs. It indicates that individuals predominantly self-medicate for prevalent, mild symptoms with over-the-counter analgesics and antacids Table 3.

Price was the predominant factor in medicine selection (94.4%), demonstrating that economic

considerations substantially affect pharmaceutical selections. Pharmacists were essential since 53.8% of individuals chose brands based on their suggestions. Pharmacy establishments constituted the primary source of drugs (98%), underscoring their essential function in healthcare accessibility. 59.4% of individuals did not review prescribing material, and 91% possessed a partial comprehension of pharmaceutical instructions, indicating possible hazards in self-medication practices Table 4.

According to Table 5, most individuals (209) lacked health insurance, potentially influencing self-

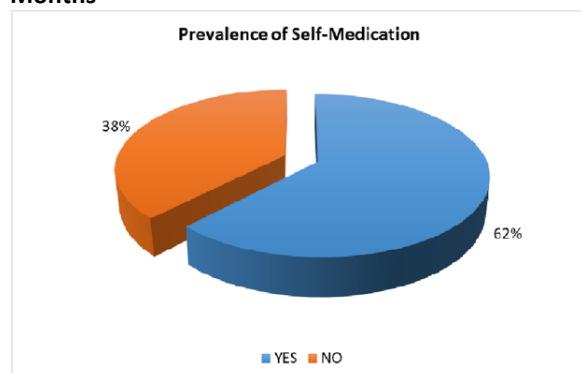
medication behaviours. Government insurance encompassed 109 individuals. 63 possessed private medical insurance, and 19 had rural insurance. The absence of extensive health coverage may compel individuals to resort to self-medication as a financially viable healthcare option.

The prevalence of self-medication practices among study participants within the last three months reveals that a significant majority, 62%, have taken self-medication. In contrast, 38% of the participants have not engaged in self-medication, as illustrated in Figure 1. The reasons for self-medication among the participants are varied. The most common reason, cited by 87.5% of those who self-medicated, is that it saves time. Another significant reason is using an old prescription, reported by 39% of participants. High doctors' fees motivated 26.5% of the participants to medicate self-, while 18% used medicines that belonged to family members. A small fraction, 2.4%, had other reasons, such as the clinic being far away and the doctor being busy with many patients, as shown in Figure 2.

Table 3: Diseases/Symptoms and Drugs Used for Self-Medication

	Frequency (n)	Percent (%)
Fever	119	47.8
Headache	198	79.5
Running nose	62	24.9
Cough	22	8.8
Acidity	93	37.3
Muscle/body pain	101	40.6
Joint pain	48	19.3
Menstrual problems	39	15.7
Others	30	12
Drug Used		
Paracetamol	244	98
Diclofenac	132	37.8
Pantoprazole/ Rantac	82	34.5
Cetirizine/ CPM	46	19.3
Cough syrup	21	8.4

Figure 1: Distribution of Study Participants Engaged in Self-medication During the Last Three Months



Meftalspas	39	15.7
Others	19	7.6

Table 4: Factors Influencing Self-Medication Practices (n=249)

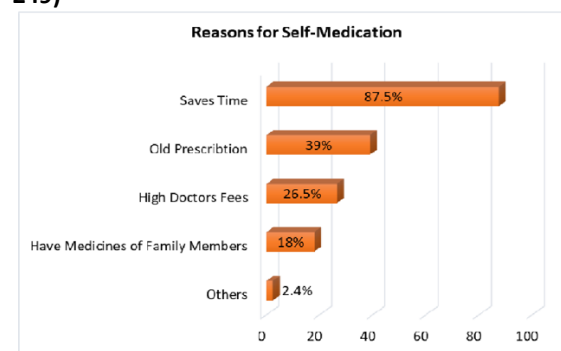
	Frequency (n)	Percent (%)
Factors Considered When Selecting Drugs		
Price	235	94.4
Pharmaceutical Company	4	1.6
Type Of Medicine	142	57
Factors Influencing the Selection of a Particular Brand for Self-Medication		
Recommended by Pharmacist	134	53.8
Old prescription of Doctor	83	33.4
Used by Peer friends/family	19	7.6
Previous Experience	13	5.2
Sources for Obtaining Drugs for Self-Medication		
Pharmacy Shop	244	98
Left Over From Previous Prescription	155	62.2
Friends/ Family	33	13.3
Checking Prescribing Information for Self-Medication		
Yes, sometimes	101	40.6
No, never	148	59.4
Understanding of Prescribing Information Prior to Self-Medication		
Partially Understood	92	91
Not at all	9	9

Note: **Multiple responses

Table 5: Health Insurance of Self-Medication (n=400)

Health Insurance	YES	NO	Total
No insurance	161	48	209
Government Insurance	48	61	109
Rural Insurance	12	7	19
Private Medical Insurance-	28	35	63

Figure 2: Distribution of Study Participants According to Reasons for Self-Medication (n=249)



Note: **Multiple response

DISCUSSION

The study's demographic findings revealed a relatively balanced gender distribution among the 400 participants (193 males, 207 females). This distribution aligns with research by Paul *et al.*, who reported a similar gender balance (50.5% males, 49.5% females) in their study from Ernakulum District. (11) The higher prevalence of self-medication among the 18-40 and 41-60 age groups corresponds with findings by Gupta and Chakraborty, who noted peak self-medication practices among those aged 28-37. (12) Similarly, Choudhury *et al.* reported the highest prevalence among individuals aged 20-30 (30%) in Delhi.

Educational qualifications significantly influenced self-medication practices, with higher rates among those with primary, secondary, and diploma education than graduates and postgraduates. This finding parallels research by Saha *et al.* in Thimphu and Chattogram, where participants with primary and secondary education levels showed greater inclination toward self-medication. (7) The trend suggests that lower educational levels may correlate with reduced awareness of self-medication risks.

The study found significant occupational variations in self-medication practices, with homemakers, employees, and students showing higher prevalence. This pattern aligns with findings from Saha *et al.*, who reported substantial self-medication practices among employed individuals (45%) and students (22%). (7) Additionally, Mangal *et al.* found a high prevalence among housewives (58%) in Southern Rajasthan. (13)

Family size emerged as a significant factor, with families of 4-6 members showing the highest self-medication rates. This finding corresponds with research by Saha *et al.*, who observed that larger families demonstrated higher tendencies toward self-medication due to shared health practices and limited healthcare access. (7)

Headache emerged as the predominant reason for self-medication (79.5%), followed by fever (47.8%) and muscle/body pain (40.6%). These findings align with research by Pranav *et al.* in Karnataka, who reported headaches (40%), fever (20.3%), and other pain-related conditions as primary reasons for self-medication. (14) Similarly, Saha *et al.* found headaches (32.4%) and bodily discomfort (11.11%) as common reasons for self-medication. (7)

Paracetamol was the most frequently used medication (98%), followed by Diclofenac (37.8%) and Pantoprazole/Rantac (34.5%). This preference for Paracetamol aligns with findings from multiple studies, including research by Borah *et al.* in Assam,

where 79.1% of participants used Paracetamol for self-medication. (15)

Price emerged as the primary factor in medication selection (94.4%), highlighting the significant role of economic considerations in healthcare decisions. This finding corresponds with research by Samuel *et al.* in Erode, India, where cost was a crucial factor in self-medication decisions. (16) The high reliance on pharmacists for brand selection (53.8%) aligns with findings by Wijesinghe *et al.* in Sri Lanka, where 50% of respondents chose drugs based on pharmacist advice. (17)

The study revealed that 52.3% of participants lacked health insurance, which may contribute to self-medication practices. This finding is slightly better than the national average reported by KPMG (2020), which indicated that approximately 60% of the Indian population lacked health insurance. (18) The limited insurance coverage may explain the high prevalence of self-medication (62%) in the study, as individuals might resort to self-medication as a more affordable healthcare option.

CONCLUSION

This study contributes significantly to understanding self-medication patterns and their determinants in urban populations. The high prevalence of self-medication in the urban population of Belagavi, influenced by various sociodemographic factors, underscores the need for comprehensive public health interventions. The findings emphasize the need for integrated approaches combining improved healthcare access, enhanced health literacy, and strengthened regulatory frameworks to promote responsible medication use. Such interventions must balance the practical advantages of self-medication with the imperative to protect public health and prevent adverse outcomes associated with improper medication use.

LIMITATION OF THE STUDY

The study did not investigate the clinical outcomes of self-medication practices, such as adverse drug reactions or treatment failures, which are crucial for comprehending the full health implications of self-medication. Addressing these limitations in future research can enhance our understanding and inform more effective public health strategies.

RELEVANCE OF THE STUDY

The study's findings can guide the formulation of more effective regulations and guidelines for the sale and use of medications, potentially leading to

stricter control measures. Prevention strategies can be more proactive, targeting the root causes and risk factors identified in the study. This study adds to knowledge on self-medication practices, especially from an urban Indian context, which is often underrepresented in global research. This contribution helps fill existing knowledge gaps and provides a basis for comparative studies.

AUTHORS CONTRIBUTION

All authors have contributed equally.

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Nil

CONFLICT OF INTEREST

There are no conflicts of interest.

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DECLARATION OF GENERATIVE AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors haven't used any generative AI/AI assisted technologies in the writing process.

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