Vol. 12, No. 1 (2025), pp.56–66

CHITKARA UNIVERSITY

Journal of Multidisciplinary Research in Healthcare

Drug Use Behaviors and Awareness in Telangana: A Study on Antibiotics, NSAIDs, and Acid-Suppressants

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ARTICLE INFORMATION

Received: November 18, 2025
Accepted: January 08, 2026
Published Online: January 29, 2026

Keywords:
Self-medication, Antibiotics, Acid suppressants, NSAIDs, OTC drugs

DOI: 10.15415/jmrh.2025.121007

ABSTRACT

Background: The high and unregulated usage of antibiotics, nonsteroidal anti-inflammatory drugs NSAIDs, and acid suppressant medications has brought several emerging issues related to public health, such as drug interactions, addiction to self-treatment, and antibiotic resistance. There is a need to evaluate the level of knowledge, attitudes, and practices of the population regarding these widely consumed drugs in order to establish effective education and regulation programs.

Purpose: The purpose of the study was to measure the awareness and behavior of the general population in relation to the rational use of antibiotics, NSAIDs, and acid suppressant drugs, as well as to establish the relationship between demographic factors and self-medication practices.

Methodology: The survey was a cross-sectional questionnaire-based study in which 400 participants aged 18 years or older were included. Descriptive and inferential statistics were used to analyze the data in order to determine the level of knowledge, patterns of medication use, and the relationship between education, age, and self-medication behavior.

Findings: A total of 400 respondents participated in the study, with the majority being young adults aged between 18 and 25 years (58.5%) and having higher levels of education. Antibiotic use in the past six months was reported by (83.7%) of participants, with the most commonly used antibiotics being amoxicillin clavulanic acid (16.2%) and amoxicillin (12%). Prescriptions were used by (66%) of participants to obtain antibiotics, while (34%) accessed antibiotics without a prescription, and only half of the users completed the full course of treatment. Self-medication was common (67.2%), most frequently involving paracetamol and acid suppressant drugs, mainly due to previous experience (54.5%) or convenient access (21.5%). The use of acid suppressants was frequent (64.5%) and generally unmonitored. The main sources of information were doctors (43.8%) and pharmacists (29.8%), and (85.2%) of respondents expressed willingness to receive educational content, indicating the need to strengthen awareness regarding rational and safe drug use. Self-medication was prevalent across all education levels, and a statistically significant association was found between level of education and self-medication practices ($p < 0.05$). Failure to complete the prescribed course of antibiotics showed a strong and statistically significant correlation with the use of acid suppressant medications ($p < 0.001$).

Conclusion: The findings indicate a significant lack of knowledge and widespread irrational use of antibiotics, NSAIDs, and acid suppressant medications. However, the high willingness of the population to receive education presents an opportunity for implementing community based educational interventions, pharmacist led counseling, and public health campaigns. Improving awareness and promoting the rational use of medications can reduce drug misuse and adverse effects and contribute to combating antibiotic resistance.

1. Introduction

The concept of antimicrobial resistance (AMR) is an acute health issue of interest in the global context, associated with high morbidity and mortality rates, accompanied by high health care costs. By 2019, there were about 4.95 million AMR related deaths attributed to bacteria, 1.27 million of them directly associated with resistant infections, and the highest burden is found in low resource settings (Murray *et al.*, 2022). AMR is a serious global health care issue that is linked with poor morbidity, mortality, long term hospital readmission, and excessive expense on health

care. The socioeconomic status, medical and agricultural activities, tourism, and globalization determine the rapid development and use of antibiotics in general, lack of alternatives, and the absence of alternatives. The antimicrobial resistance (AMR) battle should be sustainable and a shared activity, which should also encompass improved policy, community-based education regarding antibiotic use, enhanced surveillance, infection prevention, and new antimicrobial treatment. The future of medicine, health, and economy is the international effort and the combined efforts aimed at AMR reduction (Ho *et al.*, 2025).

Self-medication is a severe public health concern in India, which elevates morbidity and the development of antibiotic resistance due to improper or delayed medication. A Central Indian urban community-based survey found that 60 percent of participants self-medicated, with the most common drugs being analgesics (66.25%) and antipyretics (59.16%). Time saving and the assumption that the condition was not serious enough to warrant clinical care were the main factors that led to self-medication. To promote responsible drug use among cities and LMICs, these findings advance the need to concentrate on health education, improved health care access, and regulations (Rathod *et al.*, 2023). Their application is influenced by a great number of social and demographic factors that prove the need to take total health measures. Safe pharmaceutical usage should be promoted with the help of better rules and regulations, improved medical knowledge, and access to medicine. The understanding of these trends is critical to guide legislation, preventive efforts, and community health efforts, particularly in countries with low or middle incomes where self-administration is widespread but not well represented in the literature (Bellad & George, 2025).

Due to the easy access of OTC pain relievers, and the common people being less educated about the risks associated with the use of these drugs, the misuse of these drugs is emerging as an increasing global health issue. Risk factors can be social pressure, fascination, and prior mental illness or drug use disorders. Inappropriate use may lead to dependency, harmful effects, and excessive dose. An integrated plan is required to perform effective reduction, and it involves conducting public outreach to gain knowledge, administrative policy such as limiting distribution or specifying prescriptions, and involvement of pharmacists and medical care providers. Stricter rules, effective campaigns, and continued participation of professionals are required to promote the proper use of medicines (Dharani & Pavithra, 2025).

OTC drugs offer quick and inexpensive relief from trivial illnesses, however because of the convenience of consumption and apparent reliability, they frequently result in abuse, toxic effects, dependence, and interactions between drugs. Pregnant women and children are especially at risk. Pharmacists play a critical role in regulating the misuse of medications by providing surveillance and counseling. To guarantee responsible use and preserve a balance between accessibility and safety to safeguard public health, laws, public awareness campaigns, and digital interventions must be strengthened (Sapkal *et al.*, 2025).

OTC prescriptions of antibiotics are made for self-limiting viral diseases such as fever, cough, and diarrhea, often not exceeding 1 to 2 days. There is poor knowledge regarding antimicrobial resistance (AMR), and pharmacists assign OTC practices to government policies, prescribers, informal providers, consumer demand, and commercial interests. Some of the major contributors are lack of access to health care by the people, financial and time limitations, poor regulations, and lack of inspections (Kotwani *et al.*, 2021).

A conflict among defense mechanisms and pH in the stomach leads to ulcers in the gastrointestinal tract. NSAIDs, potassium supplements, bisphosphonates, and doxycycline are among the medications that can raise the probability of ulcers. By blocking COX 1, NSAIDs decrease stomach mucus and also elevate acidity (Keller *et al.*, 2024).

It is possible that up to 70% of proton pump inhibitor prescriptions have no discernible clinical benefit. Promoting prudent PPI usage or PPI stewardship could support prevention of infections and antibiotic stewardship initiatives in light of the growing concern of antimicrobial resistance. Targeted intervention programs are necessary because stopping incorrect acid suppressive drugs may help lower the risk of infection and colonization by multidrug resistant organisms (Willems *et al.*, 2020).

Globally, PPI use is increasing, which raises health hazards and medical care expenditures. Misuse often happens for ulcer protection in low-risk individuals, stress ulceration prophylaxis outside intensive care units, steroid or anticoagulant drugs without danger, and inappropriate treatment of functional dyspepsia. These patterns underscore the necessity for prudent PPI usage and present difficulties for regulatory bodies (Savarino *et al.*, 2018).

The objective of the research is to determine the level of knowledge and practices associated with the use of antibiotics, self-medication, and acid suppressant drugs in a metropolitan population. The study aims to determine self-medication and OTC drug use patterns, underlying factors that cause misuse, and possible risks related to misuse of inappropriate use in order to educate directed interventions, public health interventions, and stewardship programs.

2. Methodology

- **Study Design:** Cross sectional descriptive survey.
- **Study Site:** Telangana.
- **Sampling Methodology:** A convenience sampling technique was employed in the form of an online Google Form that was distributed to adults aged above 18. Due to logistical issues, time constraints, the need for quick data collection, and the lack of a thorough sampling frame of people using OTC and prescription drugs in the community, probability sampling techniques were not practical. Convenience sampling was deemed suitable to capture a diverse adult population within the designated study period because of the exploratory nature of the study and its focus on evaluating general patterns of medication use.
- **Questionnaire Development and Validation:** After a thorough analysis of previously published research on antibiotic use, NSAID consumption, acid suppressant therapy, and self-medication practices, the questionnaire was created.
- A pilot survey with 20 participants was used to test the content validity of the questions in terms of their comprehensibility, relevance, and clarity. Minor adjustments were made to increase clarity and consistency based on participant feedback.
- **Study Period:** Two months- The study was carried out over a two-month period, which was judged sufficient to minimise recall bias, ensure timely data collection, and attain the necessary sample size.
- **Population:** Individuals aged 18 years or older who have recently used antibiotics, acid suppressants, NSAIDs, or over the counter medications.
- **Sample Size:** 400
- **Study Criteria:**
  - **Inclusion Criteria:** The research study included individuals who were willing to provide informed consent, were at least 18 years old, and had a history of using antibiotics, acid suppressant medicines, NSAIDs, or other OTC drugs.
  - **Exclusion Criteria:** The study excluded participants with cognitive problems that could influence their ability to provide accurate data or those who were too ill to respond.
  - **Data Collection:** Data were collected using a structured questionnaire containing demographic information, gender, antibiotic use, NSAID and OTC drug use, acid suppressant drug use, causes of self-medication, sources of information about medicines, and counseling on safe medicine use.

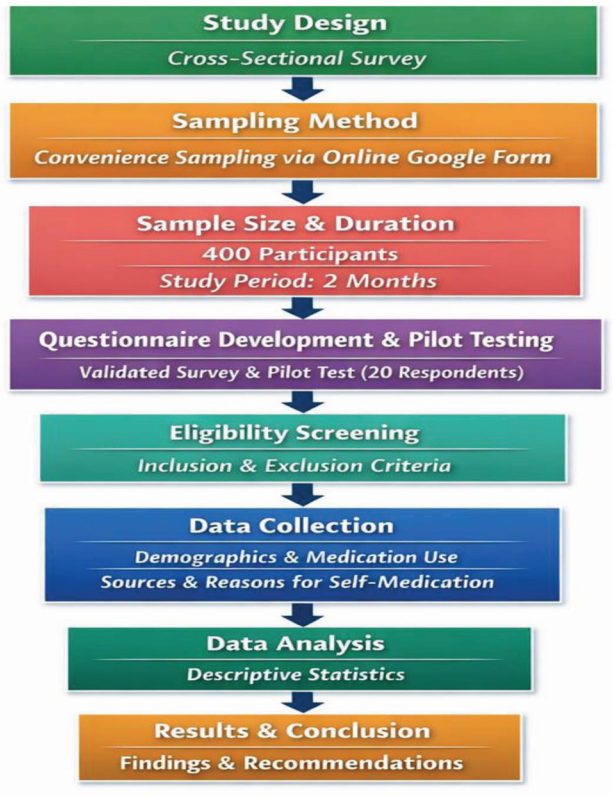

Figure 1: Methodology Flowchart Depicting the Study Design, Sampling Strategy, Questionnaire Development, Participant Selection, Data Collection, and Analysis Process

3. Results

Four hundred respondents were involved in the survey. Ages were 18 to 25 years 58.5%; 26 to 35 years 20% and 36 to 45 years 14.5%, with only 5.5% aged 46 to 60 years and 1.5% aged over 60 years. This indicates higher participation among young adults. The percentage of males was 53% (n = 212) and females 47% (n = 188), which suggests that the gender distribution was almost equal. A total of 42.5 percent were graduates, 30 percent postgraduates or professionals, 16 percent had schooling, and 11.5 percent had no formal education, indicating that a majority of the respondents had a graduate or higher education level (Table 1).

Table 1: Respondent Demographics (n=400)

Age	Count	Percentage (%)*
18-25	234	58.5
26-35	80	20
36-45	58	14.5
46-60	22	5.5

>60	6	1.5
Gender	**Count**	**Percentage (%)**
Male	212	53
Female	188	47
Education	**Count**	**Percentage (%)**
Graduate (Bachelor)	170	42.5
No Formal Education	46	11.5
School Level (up to 12th)	64	16
Postgraduate / Professional Degree	120	30

**Data represent the demographic characteristics of the study subjects (n = 400). Calculation of percentages was done based on the overall number of respondents. The responses were grouped into gender, age, and educational qualification.*

Of the 400 respondents, 335 (83.7%) reported the use of antibiotics within the past six months, and 65 (16.2%) did not. Amoxicillin + clavulanic acid was the most frequently used antibiotic (16.2%), followed by amoxicillin (12%), ciprofloxacin (6.5%), metronidazole (3.7%), and then cefixime (3.5%). Alternative antibiotics such as norfloxacin, cefpodoxime, and diclofenac accounted for 15.2%, and unawareness of the brand used was reported by 6.7% of respondents. Pharmacists (22 percent), friends or family (4 percent), leftover medication (8 percent), and prescriptions from doctors (66 percent) were the major sources of antibiotics. Half (50%) of the participants who used antibiotics completed the entire course, while 41.5% stopped after feeling better, 0.5% stopped due to side effects, and 8% were not sure. Regarding knowledge, 47% correctly identified that antibiotics do not work against viral infections, while 26.5% were incorrect and 26.5% were unsure. There was moderate awareness regarding course completion, with 63% believing that it was necessary, 14.2% believing that it was not necessary, and 22.7% being unsure (Table 2).

Table 2: Frequency of Antibiotic Use in Last 6 Months (%)

Parameter	Response	n	%*
Used Antibiotics in Past 6 Months	Yes	335	83.7
	No	65	16.2
	Augmentin (amoxicillin + clavulanic acid)	65	16.2
	Amoxil (amoxicillin)	48	12
Brands Reported	Ciplox (ciprofloxacin)	26	6.5
	Flagyl (metronidazole)	15	3.7
	Zifi (cefixime)	14	3.5
	Don't know / Not sure	27	6.7
	Other (specify) e.g., Diclofenac, Cefpodoxime, proxetil, Norfloxacin, Anti-fungal	61	15.2
Source of Antibiotic	Doctor's prescription	264	66
	Pharmacist suggested / sold it	88	22
	Used leftover medicine from home	32	8
	Friend / relative suggested it	16	4
Completed Full Course	Yes - completed as prescribed	200	50
	No - stopped early (felt better)	166	41.5
	No - stopped due to side effects	2	0.5
	Not applicable / Don't remember	32	8
Knowledge – Antibiotics work for viruses	True	188	47
	False	106	26.5
	Don't know	106	26.5
Knowledge – Finish entire course	True	252	63
	False	57	14.2
	Don't know	91	22.7

**The data indicate the knowledge and usage trends of antibiotics among 400 participants, and percentages were calculated based on the total responses of the participants. Some of the variables included course completion, brand used, source of procurement, frequency of antibiotic use, and familiarity with the effectiveness of antibiotics and their proper use.*

Out of 400 respondents, 269 (67.2%) reported that they self-medicated within the last six months, while 131 (32.7%) did not. The brands Crocin, Dolo, and Calpol (36.2%), acid suppressant drugs such as Omez, Pantop,

Pan 40, or Rantac (17.2%), and ibuprofen-based products (8%) were the most commonly used OTC or NSAID medications. Other medications included Combiflam or Ibuflam (8.7%), Voveran or Diclowell (4.2%), antacids such as Digene and Gelusil (2%), and other unspecified drugs (23%). Almost half of the respondents (47 percent) reported using OTC medicines at least once in the last month, 20.7 percent used them 3 to 5 times, 3.2 percent used them more than five times, and 29 percent reported no use. The main causes of self-medication included past illness experience (54.5%), convenient access (21.5%), avoidance of doctor inpatient care (7.5%), and recommendation from someone (6.2%). Among those who practiced self-medication, 22.7% reported experiencing side effects, 55% did not report any side effects, and 22.2% were unsure (Table 3).

Table 3: Self-Medication Practices

Parameter	Response	n	%*
Used Medicines without Consulting a Doctor in Past 6 Months	Yes	269	67.2
	No	131	32.7
OTC / NSAID Brands Used	Crocin / Dolo / Calpol (paracetamol)	145	36.2
	Combiflam / Ibuflam	35	8.7
	Omez / Pantop / Pan 40 / Rantac (acid-suppressant)	71	17.2
	Voveran / Diclowell (diclofenac)	17	4.2
	Digene / Gelusil / Eno (antacid)	8	2
	Brufen / Ibugesic / Ibruwell (ibuprofen)	32	8
	Others	92	23
Frequency (last month)	> 5 times	13	3.2
	1–2 times	188	47
	3–5 times	83	20.7
	Never	116	29
Reasons for Self-Medication	Past Experience	218	54.5
	Easy access	86	21.5
	Avoid doctor visit	30	7.5
	Advice from family / friend	25	6.2
	Others	41	10.2
	No - I did not experience side effects	220	55
Experienced Side Effects	Yes - I experienced side effects	91	22.7
	Not sure	89	22.2

**The self-medication practices of 400 research participants are represented in this data. The total number of responses was used to determine percentages. Among the variables included were frequency and causes of self-medication, commonly used NSAID, OTC, and acid suppressant brands, and the occurrence of adverse consequences.*

Among the 400 respondents, 258 (64.5%) had used acid suppressant or antacid medications in the past six months, while 142 (35.5%) had not. The main reasons for use were regular acidity or indigestion (28.2%), gastric discomfort during antibiotic therapy (16.7%), and irritation after painkiller use (16.2%). A smaller proportion (7%) used these medications under long term medical advice, while 8.2% reported other reasons. Most respondents obtained these drugs through a doctor's prescription (32.5%), followed by pharmacists (19%) or over the counter purchase (19.7%). A small proportion (2.5%) used leftover medications, and 26.2% were nonusers. Regarding frequency of use, 33.5% reported rare use (1 to 2 times per month), 16.2% reported occasional use (4 to 5 times per month), 2.5% reported frequent use (2 to 3 times per week), and 3.2% reported very frequent use (alternate day), while 44.5% reported no recent use (Table 4).

Table 4: Use of Acid Suppressant

Parameter	Response	n	%*
Used Acid-Suppressant / Antacid in Past 6 Months	Yes	258	64.5
	No	142	35.5
Main Reason for Use	Regular acidity / indigestion	113	28.2
	Gastric irritation after painkillers	65	16.2
	Stomach upset / heartburn during antibiotic use	67	16.7
	Doctor prescribed for long-term use	28	7
	Not using medication	94	23.5
	Other	33	8.2
Source of Acid-Suppressant / Antacid	Doctor prescription	130	32.5
	Pharmacist suggested / sold OTC	76	19
	Bought directly OTC (self)	79	19.7
	From family / leftover at home	10	2.5
	Not using medicine	105	26.2

	Frequently (weekly twice or thrice)	10	2.5
Frequency (per month)	Occasionally (4_5 times in a month)	65	16.2
	Very frequently (almost alternative day)	13	3.2
	Rarely (1-2 times in a month)	134	33.5
	Never	178	44.5

** The information demonstrates the usage of antacids and acid suppressant medications by the research participants (n = 400). Total responses were used for calculating percentages. The variables included the main source of medication, frequency of use, and primary motivations for consumption.*

The results show that acid suppressant drugs are widely available and commonly used for routine gastrointestinal complaints, through both self-initiated and doctor prescribed use.

The study findings showed a statistically significant relationship between educational level and self-medication practice (χ^2 = 7.83, 3, p = 0.049). Graduates (81.2%) and postgraduates or professionals (83.3%) had higher rates of self-medication compared to participants with school level education (81.3%) and those with no formal education (97.8%). This observation indicates that self-medication practices were prevalent across all educational categories, with particularly high prevalence among individuals with no formal education (Table 5).

Table 5: Correlation between Education and Self-Medication among the Participants of the Study (N = 400)

Educational Level	**Self-Medication Yes, n (%)**	**Self-Medication No, n (%)**	**Total, n (%)***
Graduate (Bachelor)	138 (81.2)	32 (18.8)	170 (42.5)
No Formal Education	45 (97.8)	1 (2.2)	46 (11.5)
Postgraduate / Professional	100 (83.3)	20 (16.7)	120 (30.0)
School Level (up to 12th)	52 (81.3)	12 (18.7)	64 (16.0)
Total	335 (83.8)	65 (16.2)	400 (100)

** The values are in frequency (n) and percentage (%). The Chi-square test was used to test an association between the educational level and self-medication practice. The χ^2 = 7.83 at a df = 3, p = 0.0496 (statistically significant at p < 0.05).*

The participants of the study were highly statistically significantly associated with completion of the prescribed antibiotic course and use of acid suppressant drugs (χ^2 = 32.11, df = 3, p < 0.00001). Patients who stopped taking antibiotics prematurely (either because of relief of symptoms or due to side effects) had a higher prevalence of acid suppressant use compared to patients who completed the full course of antibiotics. This indicates a close correlation between improper use of antibiotics and subsequent treatment of gastrointestinal symptoms with acid suppressant drugs (Table 6).

Table 6: Relationship between Completion of Prescribed Antibiotic Course and Use of Acid-Suppressant Drugs among the People who Participated in the Study (N=400)

Completion of Antibiotic Course	**Acid-Suppressant Use Yes, n (%)**	**Acid-Suppressant Use No, n (%)**	**Total, n (%)***
No - stopped early (felt better)	100 (60.2)	66 (39.8)	166 (41.5)
No - stopped due to side effects	2 (100.0)	0 (0.0)	2 (0.5)
Not applicable / Don't remember	8 (25.0)	24 (75.0)	32 (8.0)
Yes - completed as prescribed	148 (74.0)	52 (26.0)	200 (50.0)
Total	258 (64.5)	142 (35.5)	400 (100)

** The values are presented as frequency (n) and percentage (%) of the responses. The Chi square test was used to determine the association between completion of the prescribed antibiotic course and the use of acid suppressant drugs. χ^2 = 32.11, df = 3, p = 0.00001, which is statistically significant (highly significant).*

The most common source of medicine information was doctors (43.8%), followed by pharmacists (29.8%). Previous prescriptions or personal experience accounted for 16%, while the internet and social media served as sources for 6.5% of participants. A smaller proportion (4%) relied on family or friends for medicine related information (Figure 2). The data indicate the primary sources of knowledge on medicines consulted by participants (n = 400). The most common sources were physicians (43.8%) and pharmacists (29.8%), followed by internet resources and previous prescriptions.

The survey also assessed participants' willingness to receive educational materials or counseling regarding

the rational use of antibiotics, self-medication, and acid suppressant drugs. Out of 400 respondents, a large majority, 341 individuals (85.2%), expressed interest in receiving educational material, while only 59 participants (14.7%) were not interested (Figure 3).

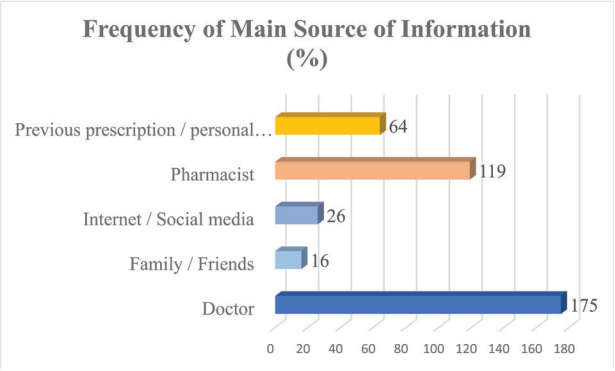

Figure 2: Frequency of Main Source of Information (%)

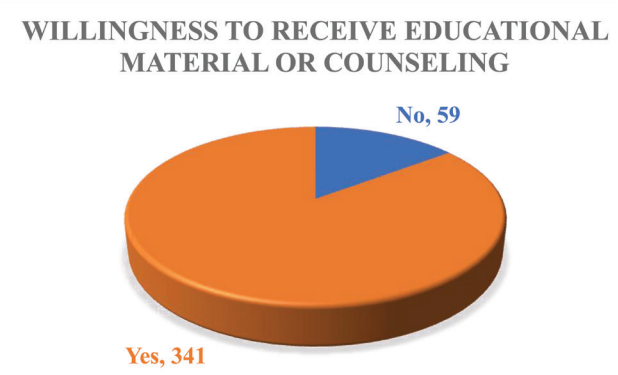

Figure 3: Willingness to Receive Educational Material or Counseling

4. Discussion

4.1. Age Distribution

The subjects in this study were aged between 18 and 25 years, which implies that most of the participants in this range were students and young adults. Similar studies have shown that the tendency of self-medication spans the entire age group, and that age, level of education, socioeconomic status, and family type have no notable influence (Bellad & George, 2025). Studies from Southern Italy also reported high rates of antibiotic use among adults, often associated with misconceptions about correct indications (Bianco *et al.*, 2020). Adolescent studies found significant knowledge gaps regarding OTC drugs and side effects, highlighting the need for health education in schools, more regulation, and involvement of pharmacists (Ma & Zhang, 2025). Previous studies also reported that self-medication with NSAIDs was highest among those aged 18 to 39 years, with preference for branded products (66.2%) and OTC products (16.2%) (Benites-Meza *et al.*, 2025).

4.2. Gender Distribution

In this study, males (53%) slightly outnumbered females (47%). Some studies have suggested potential effects of gender on knowledge and practices related to antibiotic use, although the evidence is not conclusive and definitive conclusions cannot yet be made (Pham-Duc & Sriparamananthan, 2021).

4.3. Educational Status

The sample for this study was well educated, with most respondents having a postgraduate or graduate level of education. Previous studies have found that higher education correlates with higher antibiotic knowledge but also with a tendency to self-medicate and store leftover antibiotics (Shehadeh *et al.*, 2012). Nevertheless, weak understanding among the population and the lack of focus on antibiotic misuse and resistance by health authorities indicate the urgent need for educational and awareness initiatives (Fortwengel & Krause, 2017).

4.4. Frequency of Antibiotic Use

Between 75% and 83% of respondents reported antibiotic use within the previous six months, suggesting frequent community exposure. Antibiotic choices are sometimes influenced by previous prescriptions, personal experience, and advice from family, friends, and pharmacists (Rajendran *et al.*, 2019). Problems include reuse of old prescriptions, self-medication for minor diseases, changing antibiotics, and discontinuing medication once symptoms ease, highlighting the need for health education, particularly among the educated group. The most commonly dispensed antibiotics by pharmacists include amoxicillin-clavulanate, cefixime, cefadroxil, ofloxacin, azithromycin, ciprofloxacin, and gentamicin (Kotwani *et al.*, 2021). The ongoing emergence of antimicrobial resistance through mutations or horizontal gene transfer further underscores the importance of rational antibiotic use (Salam *et al.*, 2023).

4.5. Antibiotic Source, Adherence and Knowledge Levels

While most antibiotics were obtained through doctor prescriptions, two thirds (66%) of respondents obtained antibiotics via prescription, 22% through pharmacists,

and 12% through leftover medicines or sharing, which is a concerning non-prescription use pattern and a key public health issue. Other trends reported in India include low dispenser knowledge of antimicrobial resistance and the need for greater antibiotic stewardship in pharmacies and healthcare facilities (Kotwani *et al.*, 2021).

Sixty three percent of respondents knew it was important to complete the antibiotic course, but only 50% actually finished their course, with 41.5% stopping when they felt better. Such low adherence is a major contributor to antimicrobial resistance. With few new antibiotics in the development pipeline, continued misuse threatens global health improvements (Rather *et al.*, 2017).

There was also a lack of knowledge regarding antibiotic effectiveness: 53% either misunderstood or did not know that antibiotics do not work against viruses. Confusion between bacterial and viral infections, and misunderstandings regarding human versus bacterial resistance, were also reported in previous studies (Bhardwaj *et al.*, 2021).

4.6. Self-Medication Practices

Consistent with global trends in unsupervised drug use, 67.25% of participants reported self-medication in the last six months. Common reasons included perception of the disease as mild, previous experience with medicines, and emergency situations (Rathod *et al.*, 2023). Paracetamol (Crocin, Dolo, Calpol) was the most commonly used OTC medication, reflecting ease of access and perception of safety. The notable use of acid-suppressants (17.25%) such as Omez, Pantop, and Rantac indicates either increased gastrointestinal complaints or misuse for minor symptoms. According to global and Indian guidelines, antacids and H2 receptor antagonists are used for mild reflux, while PPIs are reserved for frequent and severe symptoms (Garg *et al.*, 2022).

The main factors driving self-medication were medical history (54.5%) and availability of over-the-counter medicines (21.5%), with avoidance of doctors (7.5%) reflecting economic and accessibility considerations (Mohammed *et al.*, 2021). Specifically, 22.75% of self-medicated participants reported side effects, indicating health risks from unsupervised use of NSAIDs or acid-suppressants, which may lead to gastrointestinal or renal problems (Sohail *et al.*, 2023).

4.7. Use of Antacid and Acid Suppressant Medication

In this study, 64.5% of respondents had used acid-suppressant or antacid medications in the past six months, indicating high reliance on these drugs for gastric symptoms. This aligns with studies showing increased OTC availability and guideline-independent long-term PPI use without clear discontinuation plans (Edinoff *et al.*, 2023). The most common indications were chronic acidity, indigestion, and gastric irritation due to analgesics or antibiotics. Antacids and PPIs are among the most commonly self-medicated drugs worldwide, providing symptomatic relief for conditions such as GERD and heartburn (Garg *et al.*, 2022).

Nearly 40% of respondents used these drugs without a prescription, while only 7% reported long-term use. Ease of access and perceived safety contribute to unsupervised use. Inappropriate or long-term PPI use has been associated with adverse events, including vitamin B12 deficiency, fractures, metabolic disorders, and rebound acid hypersecretion upon withdrawal (Mir *et al.*, 2024; Namikawa & Björnsson, 2024), emphasizing the need for public awareness and pharmacist education to promote rational use (Alhomoud *et al.*, 2025; Ali *et al.*, 2025).

4.8. Source of Information Regarding Medicines

The majority of respondents (73.6%) relied on physicians or pharmacists for medicine information, indicating trust in professional advice. Personal experience (16%) and online sources (6.5%) highlight the role of self-directed and online information. Social media can spread both awareness and misinformation (Groshek *et al.*, 2018). These findings reinforce the need for pharmacist-led community education and antibiotic stewardship programs to promote safe medicine use (Królak-Ulińska *et al.*, 2025).

4.9. Ability to Accept Educational Material or Counseling

The high positive response to educational material (85%) reflects a strong public desire to participate in programs promoting safe drug use. Despite knowledge gaps regarding antibiotic resistance and self-medication, this enthusiasm indicates readiness for behavioral change. Other studies confirm that community-based and pharmacist-led educational interventions effectively improve awareness of rational drug use (Jaam *et al.*, 2021).

4.10. Educational Level Effect on Self-Medication Practices

The research found a statistically significant correlation between educational level and self-medication practice. Although education generally promotes rational drug use, a high level of self-medication was observed among graduates and postgraduates, suggesting that educational status alone may not prevent inappropriate medication practices.

4.11. Association between Antibiotic Non-Completion and Acid-Suppressant Drug Use

The study revealed a strong and highly significant relationship between non-adherence to antibiotic treatment

and use of acid-suppressant medications. Participants who discontinued antibiotics prematurely, especially when symptoms improved, exhibited higher intake of acid-suppressants, likely due to gastric irritation caused by antibiotics or dyspeptic reactions.

5. Limitations

- **Cross-sectional design:** The research captures practices at a single point in time and is unable to draw causal relationships between knowledge, attitudes, and behaviors.
- **Imbalanced representation:** Gender and educational level were balanced, but younger adults were predominant, which may have biased the results toward greater awareness but higher OTC use.
- **Limitations of questionnaires:** The questionnaire was structured, which might not have provided insight into deeper motivational reasons or cultural factors influencing drug use.

6. Conclusion

Despite intermediate levels of awareness regarding proper drug use, the survey revealed that self-medication (67.3%), acid-suppressant use (64.5%), and antibiotic use (83.7%) were all high among adults. A relatively positive finding was that 85 percent of respondents were willing to receive educational resources regarding responsible drug use, despite prevalent misuse and misunderstanding.

The significant correlations observed between self-medication, antibiotic use, and acid-suppressant use indicate a pattern of irrational and interrelated behaviors, which may lead to negative outcomes and antimicrobial resistance. Educational level was also significant, with higher education associated with better knowledge on drugs. The study found statistically significant correlations between education level and self-medication practices, indicating that improper use of medicine is common across all education levels. Non-adherence to prescribed antibiotic treatment was closely linked to higher consumption of acid-suppressant medications, reflecting a tendency to use secondary medications after inappropriate antibiotic behaviors.

These findings emphasize the importance of awareness campaigns to improve population health by providing knowledge and encouraging safer healthcare practices. The conclusions highlight the need for urgent implementation of health promotion programs, pharmacist-led consultation, and inclusion of medicine literacy programs in primary care. The rational, safe, and responsible use of medicine can be fostered by the population's strong willingness to learn.

Acknowledgements

The authors declare that there are no acknowledgments for this research paper.

Authorship Contribution

Each of the authors contributed significantly to the study through conceptualization, study design, data collection, data analysis, interpretation, and preparation of the manuscript. Collaboration included review, editing, and approval of the final manuscript.

Ethical Approval

Participation was voluntary, and informed consent was obtained electronically. All participants consented to take part in the anonymous survey for research purposes. No personal data were collected, and confidentiality was maintained throughout the study.

Funding

No funding agency, whether public, commercial, or not-for-profit, provided a specific grant for this research. The authors independently supported the study.

Conflict of Interest

The authors declare no conflict of interest related to this study.

Data Availability Statement

The authors declare that the data supporting the conclusions of this study are included within the article.

Declarations

The authors declare that this manuscript is original, has not been published previously, and is not under consideration for publication elsewhere. All authors have contributed significantly and consent to publication in the present journal.

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