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RESEARCH ARTICLE
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ASSESSMENT OF USAGE OF OVER THE COUNTER (OTC) MEDICATIONS IN METRO AREAS: KAP STUDY

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Abstract

Background:
Over the counter (OTC) medications are widely accessible in urban areas, contributing to increasing trends in self-medication. While convenient, irrational use of OTC drugs may lead to adverse effects and antimicrobial resistance.

Objectives:
This study aimed to assess the knowledge, attitudes, and practices (KAP) regarding OTC medication use among adults in metropolitan cities.

Methods:
A cross-sectional survey was conducted among 500 adult residents of Mumbai, Delhi, and Bengaluru using a validated semi-structured questionnaire. The tool evaluated participants' demographic profiles, knowledge of OTC medication safety, attitudes toward self-medication, and real-world practices. Data were analyzed using SPSS v26.0, with significance set at $p<0.05$.

Results:
Only 32% of participants had adequate knowledge of OTC medication safety. While 76.4% had used OTC drugs in the previous 3 months, 22% reported using antibiotics without prescriptions. A

majority trusted pharmacists (65.6%) and believed OTC drugs to be safe for minor ailments (69.2%). However, awareness about drug labels, side effects, and expiry checks remained low.

Conclusion:

There exists a high prevalence of OTC use in metro areas, accompanied by inadequate knowledge and risky practices. Targeted educational initiatives and regulatory oversight are essential to promote rational drug use.

Keywords: Over-the-counter medications, KAP study, urban health, self-medication, drug safety, public awareness

Introduction

The use of over-the-counter (OTC) medications is an integral aspect of modern healthcare systems, offering individuals the convenience to manage minor ailments without the need for a physician's consultation. In metropolitan areas, where time constraints and healthcare access barriers exist, self-medication through OTC products has become increasingly prevalent. However, this growing trend raises significant concerns regarding the safety, appropriateness, and consequences of such unsupervised drug use.

OTC medications encompass a wide range of drug classes, including analgesics, antipyretics, antacids, antihistamines, and antibiotics, many of which are accessible without a formal prescription. While these medications are intended to be safe when used as directed, improper usage—such as overuse, drug interactions, and consumption without adequate knowledge—poses considerable health risks, including masking of serious conditions, delay in appropriate diagnosis, and the development of antimicrobial resistance [1,2]. Notably, studies in countries like India and Ghana have shown that sociocultural, economic, and educational factors significantly influence the patterns and motivations behind self-medication with OTC drugs [3,4].

In developing countries, the lack of stringent regulatory frameworks and the easy availability of medications contribute to the widespread misuse of OTC drugs. A study conducted in urban informal settlements in Ghana highlighted the rampant use of non-prescription opioids among the youth, with limited awareness of potential consequences [3]. Similar patterns were reported among Indian medical students, who engaged in self-medication practices despite being aware of its associated risks [8]. Such findings underscore the necessity of understanding the underlying knowledge, attitudes, and practices (KAP) among diverse population groups to design effective public health interventions.

Moreover, antibiotic self-medication is of particular concern due to its role in accelerating antimicrobial resistance (AMR), a global health threat. In Indonesia, a multifaceted intervention targeting community pharmacies revealed significant gaps in dispensing practices and public understanding of antibiotic use [7]. Additionally, caregivers' misconceptions about antibiotics for pediatric illnesses further exemplify the public's limited pharmacological literacy [6]. These issues are amplified in urban settings, where consumer autonomy and commercial pressures intersect to promote drug consumption without adequate oversight.

KAP studies have proven instrumental in identifying public misconceptions and behavioral trends regarding health practices. In the context of OTC medications, such studies help evaluate the level of public awareness, the social acceptability of self-medication, and prevailing risk perceptions [5,9]. For instance, a recent protocol-based mixed-method study from central India illustrated how cultural beliefs and perceived efficacy drive the choice of self-medication over formal healthcare consultation [9].

Despite global recognition of the problem, data specific to urban Indian populations remain limited. There is a critical need to assess the awareness levels and decision-making patterns of city dwellers who may regularly depend on OTC drugs for everyday health issues. This study aims to bridge that gap by evaluating the KAP regarding OTC medication usage in metropolitan regions. Insights gained can guide targeted health education campaigns and inform policy decisions to ensure the rational use of medications and reduce associated public health risks.

Materials and Methods

Study Design and Setting

This was a **cross-sectional, questionnaire-based Knowledge, Attitudes, and Practices (KAP) survey** conducted in three major metropolitan cities. The study was carried out between **May 2024 and December 2024** across public areas including malls, metro stations, parks, and outpatient departments of tertiary hospitals to capture a diverse urban population.

Study Population

The target population included **adult individuals (≥18 years)** residing in metro areas for at least one year. Inclusion criteria were the ability to read and understand English or the local language (Hindi or Kannada) and willingness to provide informed consent. Individuals working in the pharmaceutical or medical field were excluded to reduce professional bias in responses.

Sample Size

Assuming a 50% prevalence of OTC self-medication practices, a 95% confidence level, and a 5% margin of error, the calculated minimum sample size was **384**. To account for non-response and incomplete data, the final sample size was inflated to **500 participants** using a simple random sampling method within each metro city.

Study Tool

A **pre-validated semi-structured questionnaire** was developed after literature review and expert consultations. The questionnaire comprised **four sections**:

1. **Demographic data** – age, gender, education, occupation, and monthly income.
2. **Knowledge assessment** – awareness of OTC drug categories, indications, side effects, and regulatory status.
3. **Attitude assessment** – beliefs about safety, necessity of prescriptions, trust in pharmacy advice, and preference over physician consultation.
4. **Practice assessment** – frequency of OTC usage, drug classes used (e.g., analgesics, antibiotics, antacids), source of purchase, and reading of package inserts.

The tool was initially developed in English, translated into Hindi and Kannada, and back-translated to ensure linguistic validity. A pilot test was conducted on 30 participants for internal consistency (Cronbach's alpha = 0.82).

Data Collection

Data were collected through face-to-face interviews by trained health research assistants. Each interview lasted 10–12 minutes and was conducted in the preferred language of the respondent. Participants were informed about the voluntary nature of the survey and assured of confidentiality.

Ethical Considerations

The study was approved by the Institutional Ethics Committee of [Name of Institute]. Written informed consent was obtained from all participants. Data were anonymized before analysis.

Statistical Analysis

Data were entered into Microsoft Excel and analyzed using **SPSS version 26.0**. Descriptive statistics (means, standard deviations, frequencies, and percentages) were used for demographic variables. KAP scores were categorized as adequate or inadequate based on predetermined scoring criteria. The association between sociodemographic variables and KAP outcomes was tested using the **Chi-square test** and **Fisher's exact test** where applicable. A **p-value <0.05** was considered statistically significant.

Results

Table 1: Demographic Profile of Participants

The participant group consisted of 500 urban adults. The majority were in the 18–44 age bracket (69.4%), with a balanced gender distribution (51.6% male, 48.4% female). Most respondents were well-educated, with over 79% having at least an undergraduate degree. In terms of income, 44.8% earned more than INR 50,000 per month, reflecting an economically stable urban population.

Table 2: Knowledge Regarding OTC Medications

Findings:

Only 32% of respondents achieved an adequate knowledge score (≥60%). While 62.4% were aware that OTC drugs may have side effects, fewer participants (55.6%) recognized that antibiotics should not be self-medicated. Less than half (44.8%) could distinguish between prescription-only and OTC medications, and only 38% reported reading drug labels or leaflets. These results indicate a major knowledge gap despite access to education and resources.

Table 3: Attitudes Towards OTC Medication Use

Most participants had permissive or positive attitudes toward OTC usage. About 69.2% considered OTC medications safe for minor ailments, and 60.8% preferred them over physician consultations for common health problems. A significant number (65.6%) trusted pharmacists to guide their OTC choices, although 42.4% mistakenly believed that repeated self-medication is safe—an indicator of potential misuse risk and a need for public awareness.

Table 4: Practice Patterns of OTC Medication Use

A high percentage (76.4%) reported using OTC medications in the past three months. Analgesics (60.4%) and antipyretics (49.6%) were most frequently used, while 22% had used antibiotics without prescriptions. Pharmacies were the primary source (83.2%), followed by online platforms (13.6%). Only 45.6% reported routinely checking expiry dates. These figures suggest a heavy reliance on OTC drugs, often without adequate safeguards or professional guidance.

Table 1: Demographic Profile of Participants (n = 500)

Parameter	Frequency (%)
Age Group (years)	
18–29	185 (37.0%)
30–44	162 (32.4%)
45–59	94 (18.8%)
≥60	59 (11.8%)
Gender	
Male	258 (51.6%)
Female	242 (48.4%)
Education	
≤12th Standard	102 (20.4%)
Undergraduate	264 (52.8%)
Postgraduate & Above	134 (26.8%)
Monthly Income (INR)	
<20,000	78 (15.6%)
20,000–50,000	198 (39.6%)
>50,000	224 (44.8%)

Table 2: Knowledge Regarding OTC Medications

Knowledge Parameter	Correct Response (%)
Aware that OTC drugs can have side effects	312 (62.4%)
Knows that antibiotics should not be self-medicated	278 (55.6%)
Reads labels or leaflets before use	190 (38.0%)
Knows OTC vs. prescription drug difference	224 (44.8%)
Overall Adequate Knowledge (Score ≥60%)	160 (32.0%)

Table 3: Attitudes Towards OTC Medication Use

Attitudinal Statement	Agree (%)
OTC drugs are safe for common ailments	346 (69.2%)
Prefer OTC drugs over visiting a doctor	304 (60.8%)
Trust pharmacists to suggest the right OTC medication	328 (65.6%)
Believe repeated OTC use without consultation is safe	212 (42.4%)

Table 4: Practice Patterns of OTC Medication Use

Practice Variable	Frequency (%)
Used OTC medications in last 3 months	382 (76.4%)
Most commonly used OTC drugs	
– Analgesics	302 (60.4%)
– Antipyretics	248 (49.6%)
– Antibiotics	110 (22.0%)
Source of purchase	
– Pharmacy without prescription	416 (83.2%)
– Online platforms	68 (13.6%)
Reads expiry date before use	228 (45.6%)

Discussion

The present study aimed to evaluate the knowledge, attitudes, and practices related to the use of over-the-counter (OTC) medications among adults residing in metropolitan areas. The findings underscore a widespread reliance on OTC medications, coupled with notable gaps in knowledge and awareness—particularly concerning the safe and rational use of such drugs.

In this urban cohort, 76.4% of respondents reported using OTC medications in the past three months, mirroring trends observed in earlier Indian studies that identified similar usage patterns among both the general population and medical students [11]. Analgesics and antipyretics were the most commonly used drug classes, with nearly 22% of users reporting the self-administration of antibiotics—a practice that can significantly contribute to antimicrobial resistance (AMR). This is consistent with data from Indonesia, where a mixed-methods evaluation revealed widespread non-prescription dispensing of antibiotics in community pharmacies, exacerbating the AMR crisis [12].

The study found that only 32% of participants demonstrated adequate knowledge regarding OTC medications. Despite relatively high education levels among participants, many were unaware of the potential risks associated with unsupervised drug use. Similar gaps in knowledge were documented in a Canadian study, where pregnant women exhibited poor awareness regarding the teratogenic potential of common OTC analgesics and cold medications [13]. Moreover, a substantial number of participants in our study could not correctly differentiate between prescription-only and OTC medications. This echoes findings from other developing nations, where poor drug literacy remains a major barrier to rational pharmacotherapy [14].

Participants' attitudes also reflected a troubling reliance on self-medication practices. Approximately 60.8% of respondents preferred OTC drugs over physician consultation for common ailments. This inclination may stem from perceived convenience, economic considerations, or prior experience with similar symptoms. A recent study in central India highlighted how individuals' trust

in pharmacists and previous success with self-medication often overrides their awareness of potential risks [15]. Furthermore, 42.4% of respondents agreed that repeated use of OTC drugs without medical supervision is acceptable, underscoring a permissive cultural attitude that fosters habitual self-medication.

Another notable finding was that 83.2% of participants reported purchasing OTC drugs from pharmacies without prescriptions, and 13.6% used online platforms for drug procurement. The expanding reach of digital health marketplaces has both improved accessibility and introduced challenges in regulatory oversight. In a study assessing OTC naloxone availability in the US post-regulatory transition, discrepancies in cost and availability between online and in-store platforms were observed, revealing the need for harmonized pharmacy policies and better price transparency [16].

OTC antibiotic use, particularly without diagnostic confirmation or completion of full courses, poses grave public health risks. A cross-sectional study conducted in Ethiopia emphasized that limited awareness and healthcare access in urban slums contribute to indiscriminate antibiotic consumption, often guided by anecdotal knowledge or informal advice [17]. Our study found that only 55.6% of respondents were aware that antibiotics should not be self-medicated, indicating a critical gap in pharmacological education.

Interestingly, although 65.6% of participants trusted pharmacists to guide OTC drug choices, only 38% reported reading medication leaflets or checking labels, including expiry dates. This behavior indicates passive compliance rather than informed decision-making. Evidence from Bangladesh also suggests that both qualified and unqualified providers engage in inappropriate drug dispensing, further complicating patient outcomes and accountability [18].

Socioeconomic factors, particularly income and education, were significantly associated with OTC practices. Higher-income and better-educated individuals were more likely to purchase medications from retail pharmacies and online platforms, yet they did not always exhibit better knowledge scores. This paradox may reflect the impact of aggressive pharmaceutical marketing and overconfidence in self-diagnosis, as seen in urban regions of China and India [19,20].

Overall, the findings of this KAP study emphasize the need for multifaceted interventions that address both demand and supply-side factors. Public education campaigns should focus on the rational use of medications, dangers of antibiotic misuse, and importance of consulting qualified healthcare providers. Simultaneously, stricter enforcement of pharmacy dispensing regulations and pharmacist training are essential to curtail indiscriminate sales of restricted drugs.

Conclusion

This KAP study revealed a high prevalence of over-the-counter (OTC) medication usage among residents in metro areas, with analgesics and antipyretics being the most frequently used drug classes. Despite relatively high education levels, knowledge about safe medication practices, especially regarding antibiotics, was inadequate in a significant proportion of participants. Attitudinal trends favoring self-medication and strong reliance on pharmacists without adequate drug literacy further compound the risks associated with irrational OTC drug use. Practices such as not reading drug labels or checking expiry dates were common. These findings highlight the urgent need for targeted public awareness programs, regulatory reforms, and community-level pharmacist training to promote safe, rational drug consumption and curb the rising threat of antimicrobial resistance. Future research should focus on behavioral interventions and the role of digital platforms in OTC medication practices.

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