



Assessment on Consumption of Over-the-Counter Drugs among General Population: A Cross-Sectional Study

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ABSTRACT

Background: Over-The-Counter (OTC) drugs are those sold by pharmacist without the need for prescription. Despite their benefits, improper usage of OTC medicines leads to adverse reactions and drug interactions. The present study aims at assessing the prevalence and practice of OTC drug consumption among the General population. **Materials & Methods:** After getting approval from Institutional ethics committee and informed consent from participants, a Cross-sectional study was done on a convenient sample of 400 adult population in Guntur district, Andhra Pradesh, India by using a self-administered questionnaire. **Results:** Prevalence of OTC drug usage was found to be 75.8% with males comprising 54% and females 46%. OTC drug consumption is more in urban areas (44.7%) when compared to rural (39.6%) & tribal (15.7%) areas, more in age groups 12-25 years (36%) & above 50years (35%); more prevalent among household population (21%) followed by students (19.2%) and retired people (19%). OTC medicines are mostly preferred for symptoms of cough & cold (48.3%) followed by fever (32.1%) and pain (16.9%). Commonly used drugs are cold remedies (50%) followed by analgesics (19%) and antibiotics (11.4%). The common reasons for OTC drug use are quick recovery (37.9%), long waiting hours (29.7%), cost (27.8%) and fear of hospital (6.4%). Regarding the information of drugs, 49% get information from pharmacists followed by internet (12.3%), friends (9%), media and advertisements (5.4%). Among the most followed improper practices, 44.3% share their medicines, 35.2% change dosages on their own and 20.5% do not check expiry date; 7.2% wait at home if the symptoms are not reduced; 6.2% try home remedies and 2.4% depend on pharmacy for further cure. **Conclusion:** Lack of strict regulations and easy accessibility of OTC drugs mainly contribute to their increased consumption in India. Flooding information on Internet and social media seemingly increased the OTC drug consumption. Improper practices and use of prescription-only-drugs including antibiotics are prevalent among population. Evaluation of OTC drug consumption assists for designing appropriate drug policies & awareness programs.

Keywords: prevalence, pharmacists, expiry date, prescription-only-drugs, drug policies

INTRODUCTION

The rise in self-medication (SM) and the consumption of over-the-counter (OTC) drugs presents significant public health concerns, particularly in India, where more than 50% of these drugs are dispensed inappropriately. ⁽¹⁾ The widespread availability of OTC medications enables individuals to manage minor ailments independently, reducing the burden on healthcare systems. However, this convenience comes with substantial risks, including misdiagnosis, incorrect dosages, drug interactions, and the masking of serious health conditions that require professional attention. ⁽²⁾ Many adverse drug reactions (ADRs) associated with self-medication are preventable through proper guidance, underscoring the urgent need for public education regarding the safe use of OTC drugs. ⁽³⁾

The steady growth of OTC drug consumption in India, projected at a rate of 7.85%, ⁽⁴⁾ reflects both societal trends and economic factors. Increased accessibility and affordability, coupled with heightened public awareness through media and the internet, contribute to the appeal of OTC medications. However, this trend also highlights the critical need for informed usage. Advertising often emphasizes the benefits of these drugs while minimizing or omitting potential risks, creating a knowledge gap that leaves



consumers unaware of the dangers associated with misuse, incorrect dosages, or drug interactions. ⁽⁵⁾ Socio-demographic factors, such as age, education, income level, and geographic location, further influence patterns of OTC drug use. For example, individuals in urban areas with higher education may have better access to safe drug usage information than those in rural settings. ⁽⁶⁾

Effective public health interventions are essential to mitigate the risks associated with self-medication. Targeted educational programs aimed at increasing awareness of the potential dangers of OTC medications can empower individuals to make informed decisions about their health. ⁽⁷⁾ Additionally, stricter regulations on OTC drug advertising can help ensure that consumers receive balanced information about both benefits and risks. Currently, India's lack of specific regulations for OTC medications poses a significant public health concern, as it blurs the lines between prescription-only drugs and those suitable for self-medication. ⁽⁸⁾ Establishing clear guidelines and categorizing drugs based on their potential risks, as many other countries do, could greatly enhance safety in OTC drug usage. ⁽⁹⁾

Furthermore, assessing OTC drug usage across various socio-demographic and economic groups is crucial for understanding the complexities of self-medication. Variables such as education, occupation, and income level heavily influence individuals' perceptions and use of OTC drugs. ⁽¹⁰⁾ Targeted public health strategies can then address these gaps by promoting safe medication practices, educating the public about ADRs, and advocating for more regulated access to higher-risk drugs. ⁽¹¹⁾ Self-medication is particularly prevalent for common ailments such as headaches, joint pain, fever, colds, coughs, allergies, heartburn, and diarrhea, as many individuals perceive these conditions as manageable without professional guidance. ⁽¹²⁾ However, the increased access to medicines, without a corresponding rise in health literacy, poses significant risks. Unsupervised self-medication can lead to inappropriate dosing, misuse, and dangerous drug–drug and drug–disease interactions. ⁽¹³⁾

Public health initiatives can work to reduce the risks of self-medication while enabling individuals to responsibly benefit from the availability of OTC drugs. ⁽¹⁴⁾

MATERIALS AND METHODS

This cross-sectional study, conducted in Guntur District, Andhra Pradesh, India, explored the knowledge, attitudes, and practices surrounding over-the-counter (OTC) medication use among the general adult population. A sample of 400 adults was surveyed using a self-administered, pre-validated questionnaire adapted from a previous study by Abdullah et al. (2022). The questionnaire, translated into English and Telugu, was assessed by a Pharmacology expert for readability and relevance and piloted for cultural appropriateness. Data collection occurred over three months (January–March 2023) using a digital platform, with distribution facilitated by social media and email. The study utilized descriptive statistics—frequencies, percentages, and medians—to analyze the data, highlighting patterns and trends in OTC drug usage. Ethical approval was granted by the Institutional Ethics Committee at Guntur Medical College, ensuring participant confidentiality, anonymity, and voluntary participation. The findings offer a detailed understanding of OTC drug consumption behaviors within this population, accommodating local language and context while upholding ethical standards.

RESULTS:

The study was conducted with 400 adults, consisting of 191 males and 209 females. The prevalence of OTC drug usage was found to be 75.8%, with a higher consumption rate among males (41.5%, n=166) compared to females (34.3%, n=137), depicted in fig.1. In terms of age, OTC consumption was more prevalent among those under 25 years (36%) and those above 50 years (35%), with the 26-50 age group showing a slightly lower usage rate (29%) which is shown in fig.2.

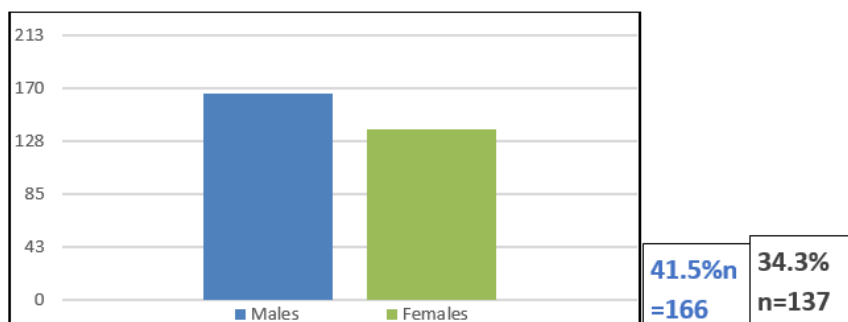


Fig. 1. Gender variation in OTC drug consumption

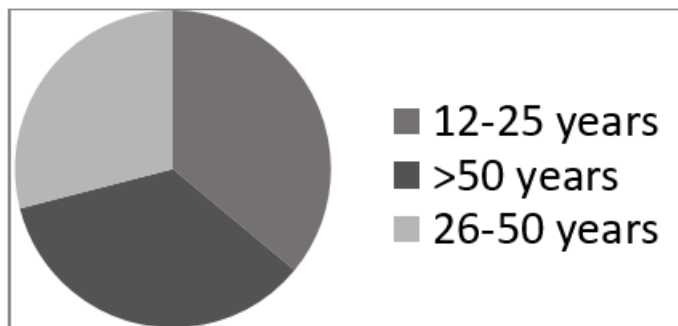


Fig.2. Age-wise distribution of OTC drug consumption

It was shown in fig.3 that OTC medication usage was significantly higher in urban populations (44.7%) compared to rural (39.6%) and tribal areas (15.7%). Fig.4 shows that the socioeconomic class differences revealed that the lower-middle class reported the highest usage (33%), followed by the upper-middle class (32%), lower class (28%), and upper class (18%).

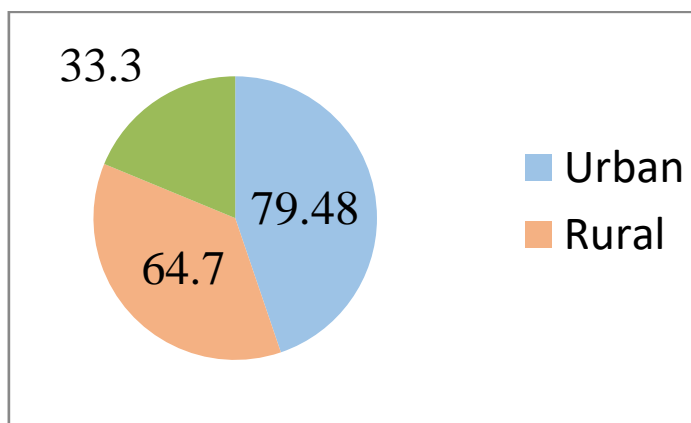


Fig.3. Region wise distribution of OTC drugs consumption

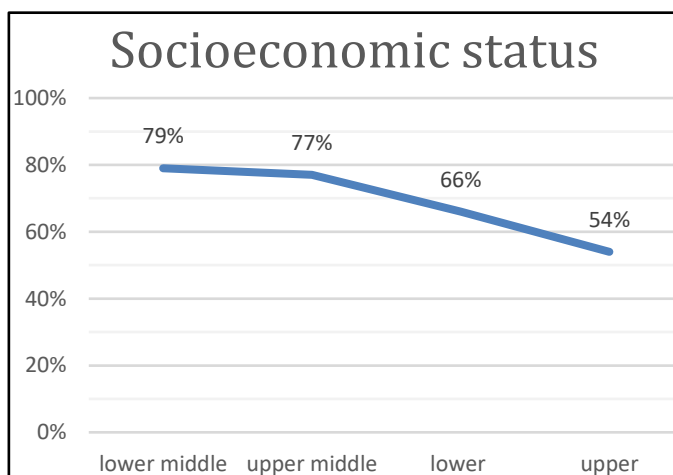


Fig. 4. Prevalence of OTC drug consumption among different socioeconomic groups

The highest consumption rates were seen among homemakers (21%) and students (19.2%), followed by retired individuals (19%), business persons (18%), daily wage workers (12%), and employees (11%). Education level also influenced OTC drug use, with graduates showing the highest prevalence (78%) compared to those with intermediate (62%), secondary (64%), and primary education (33%).



The primary motivations for self-medication included the anticipation of quick recovery, reduction in medication expenses, avoiding long waiting times, and fear of doctor visits. Cough and cold medications were the most commonly used OTC drugs (46%), followed by treatments for fever (33%), pain (14%), diarrhea (5%), and skin issues (2%). Market data showed that cough and cold medicines held the largest share (50%), followed by analgesics (19%), antibiotics (11%), antacids (8.8%), multivitamins (7.6%), and skin ointments (3.6%).

Sources of information on OTC drugs were predominantly pharmacies (65%), followed by the internet (16%), friends (12%), and media or advertisements (7%). Improper practices observed among participants included sharing medications with family members (44%), self-adjusting doses without consulting a physician (35%), and neglecting to check expiry dates (21%). When OTC medications were ineffective, 7.2% of participants reported waiting at home for recovery, 6.2% tried home remedies, and 2.4% revisited the pharmacy for further management as summarized in Table 1.

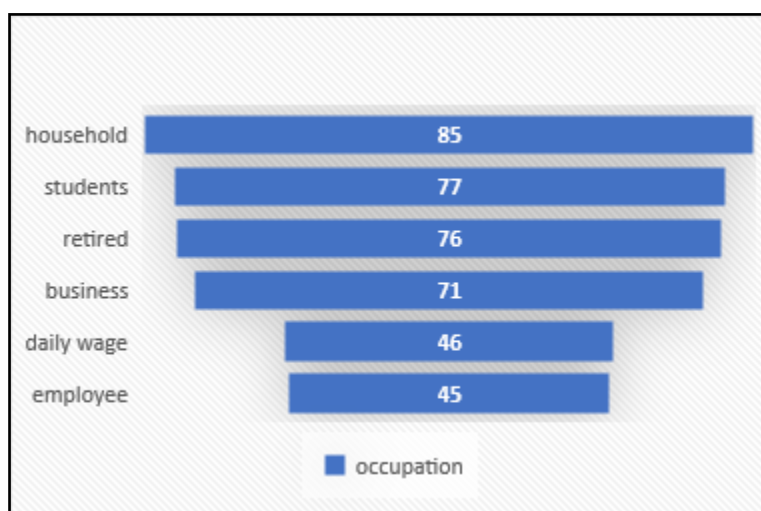


Fig. 5. OTC drug consumption among various occupation groups

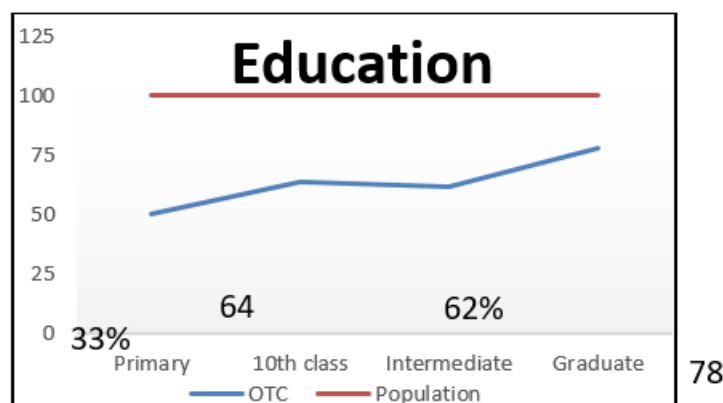


Fig.6. OTC drug consumption in various literature groups

Anticipation of quick recovery, to reduce medication expenses, to avoid long waiting hours and for fear of doctor's visit are some of the reasons mentioned by people for the consumption of OTC medication (Fig.7) and most of the OTC medication is for cough and cold (46%) followed by fever (33%), pains (14%), diarrhoea (5%), skin problems (2%) with cough and cold medicines constituting the highest percentage of OTC drug market (50%) followed by analgesics (19%), antibiotics (11%), antacids (8.8%), multivitamins (7.6%) and skin ointments (3.6%). (Fig.8)

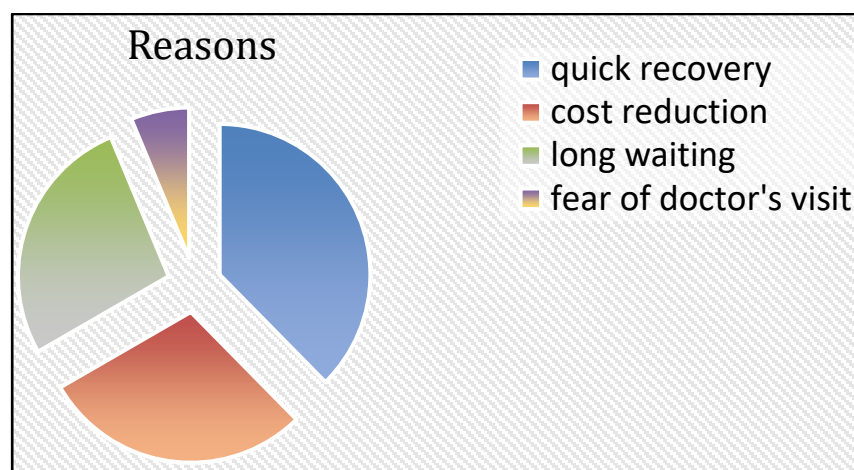


Fig. 7. Main reasons influencing consumption of OTC medicines

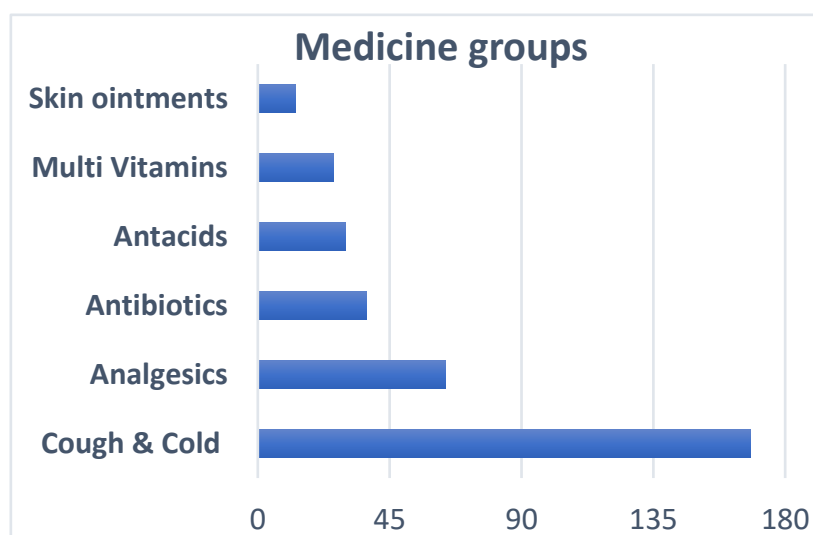


Fig. 8. Common medications consumed as OTC drugs

Table.1. Sources and various practices observed with OTC medication use

Aspect	Category	Percentage (%)
Sources of Information on OTC Drugs	Pharmacy	65
	Internet	16
	Friends	12
	Media/Advertisements	7
Improper Practices Observed	Sharing medications with family	44
	Self-adjusting doses	35
	Neglecting to check expiry dates	21
Responses When OTC Medications Ineffective	Waiting at home for recovery	7.2
	Trying home remedies	6.2
	Revisiting the pharmacy	2.4



DISCUSSION:

The study reports a 75.8% prevalence of OTC drug usage, which aligns with findings from the Nigerian study done by Bassi. P. U et.al. ⁽¹⁵⁾ indicating a 69.4% prevalence of self-medication practices. This similarity underscores a global trend in OTC consumption, where male participants tend to self-medicate more than female participants. The motivations for self-medication—quick recovery and time-saving—are echoed in the Malaysian study done by Mok CZ et al. ⁽¹⁶⁾ where 62% of respondents cited convenience as a key factor. This consistency highlights how demographic factors, such as gender and age, shape self-medication behaviours across different contexts. The results show urban residents have higher OTC usage (44.7%) compared to rural (39.6%) and tribal (15.7%) populations. This mirrors findings from Bangladesh ⁽¹⁷⁾, in a study done by Ayan saha et.al. where urban areas had a 50% prevalence. These geographical discrepancies suggest that urban populations benefit from better access to pharmacies and health information, which can significantly influence self-medication behaviours. Furthermore, findings regarding socioeconomic disparities, with lower-middle and upper-middle classes showing higher usage, resonate with the study among Spanish population ⁽⁴⁾ which also indicated higher self-medication rates in lower socioeconomic groups and in urban population, likely due to financial constraints and easy accessibility respectively.

The findings regarding high OTC drug consumption among students (19.2%) and graduates (78%) support previous research in Turkey ⁽¹⁸⁾ done by Okyay R A et.al. with 63.4% prevalence among students and graduates where higher education levels correlate with increased medication knowledge. While higher educational attainment might contribute to a more informed approach to self-medication, it does not always ensure safe practices, as educated individuals may still engage in risky self-prescribing behaviours. This discrepancy raises concerns about the adequacy of education regarding medication safety across different educational levels. The primary ailments identified in the study (coughs and colds) correspond with trends observed in other studies, where similar ailments are commonly treated with OTC medications. ⁽³⁾ The emphasis on respiratory medications could indeed be amplified by recent health crises, like the COVID-19 pandemic. Moreover, the 11% antibiotic usage without prescription reflects a global concern, similar to findings in various countries ^(19, 20) prompting calls for stricter regulations to curb misuse.

The reliance on pharmacies (65%) as the primary source of OTC medication information aligns with findings from Jordan by Abuhamdah SMA et.al. ⁽²¹⁾, indicating pharmacies as critical information hubs. However, the notable percentage of individuals seeking information from the internet (16%) raises concerns about the accuracy of the information obtained, similar to the Ethiopian study done by Tekeba et.al. ⁽²²⁾ where a significant portion relied on digital sources. The identification of risky practices, such as sharing medications and neglecting expiration dates, highlights a need for improved public education on safe self-medication practices. Present study reveals systemic barriers, such as high consultation costs and poor access to healthcare facilities, influencing individuals to self-medicate. This observation aligns with findings from a study done by Juneja K et.al. in Uttar Pradesh, India ⁽²³⁾, suggesting that enhancing healthcare accessibility could mitigate self-medication rates. Addressing these barriers may be critical in reducing the reliance on OTC medications, particularly among those with milder symptoms who may choose to forgo professional medical advice.

Limitations: The study's focus on a specific population in Guntur District limits its generalizability, as cultural, religious, and social factors unique to this group may not reflect broader demographics. External influences like pandemics or seasonal allergies can further bias findings by altering medication use patterns unrelated to individual attitudes toward self-medication. Additionally, the study's exclusion of lifestyle indicators (e.g., smoking, alcohol use) and socio-demographic factors (e.g., marital status) limits insight into how these aspects influence self-medication behaviors. Future research incorporating diverse populations and additional variables would enhance the relevance and applicability of the findings.

CONCLUSION:

The rise in OTC drug consumption in India stems from factors like lenient regulations and easy access to medications, including prescription-only drugs like antibiotics. This accessibility, coupled with the convenience of nearby pharmacies, encourages self-medication, often at the expense of medical consultation. Additionally, health information online has normalized self-treatment, though it can lead to unsafe practices when misinformation prevails. Misuse, especially of antibiotics, risks drug resistance, underscoring the need for monitoring OTC trends to guide drug policies and public awareness. Understanding consumption patterns helps identify commonly misused drugs, paving the way for targeted regulations and educational campaigns on safe self-medication. International studies reflect similar trends, indicating that OTC usage is influenced by socioeconomic and cultural factors, suggesting the need for localized interventions. Tailored approaches should address healthcare access and cultural norms, emphasizing safer practices and better regulation of OTC availability. Overall, promoting informed self-medication and implementing strong regulatory measures can reduce health risks, supporting a healthier public.



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