

Impact of Knowledge, Attitude and Practice Towards the Purchase of OTC Medicines

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ABSTRACT

Purpose: The study aims to assess the impact of knowledge, attitude, and practice (KAP) on the purchase behaviour of over-the-counter (OTC) medicines. Despite the growing trend of self-medication, a research gap exists in understanding how these three factors collectively influence consumer behaviour in OTC purchases.

Research Gap: The study examines the relationship between consumer knowledge about OTC medications, their attitudes towards self-medication, and their actual purchasing practices.

Research methodology: Insight drawn for the study provides a comprehensive understanding of the subject buying behaviour, from initial exploration to detailed description and inferential structured approach for investigating complex phenomena from exploration and hypothesis generation to data analysis and testing significant relationships.

Original value: This research comprehensively analyses how knowledge, attitude, and practice (KAP) collectively influence the purchase of over-the-counter (OTC) medicines. Unlike other studies examining these factors in isolation, this study highlights their interconnectedness and significant role in shaping consumer behaviour. The study offers a more holistic view of decision-making by integrating knowledge levels, consumer attitudes toward self-medication, and actual purchasing practices. The study also challenges the assumption that more excellent knowledge alone ensures safer purchasing behaviour, revealing that attitudes can sometimes override informed decision-making. These findings contribute to a deeper understanding of consumer behaviour in the OTC medicine market and provide valuable insights for healthcare professionals, policymakers, and pharmaceutical companies aiming to improve public safety and awareness around self-medication practices.

Findings: Individuals with a better understanding of OTC, make more informed decisions and display caution in purchasing, while attitudes toward self-medication and established practices significantly shape their choices. These insights offer valuable implications for healthcare professionals and policymakers to enhance consumer education and safety regarding OTC medicine use.

Keywords: OTC (over-the-counter) medicines, customer perception, awareness, buying behaviour, cost-effectiveness, attitude, knowledge, and practice.

Introduction

This research analyses knowledge and attitudes concerning consumer perceptions towards purchasing OTC medicines. Their attitudes toward learning and practice significantly influence consumer actions and decisions, especially when buying OTC medicines.¹ This research aims to thoroughly investigate consumer views about purchasing and using over-the-counter pharmaceuticals, with particular emphasis on their attitudes and knowledge. By evaluating consumer knowledge and highlighting areas where education and awareness efforts are needed, researchers can identify gaps or misconceptions. Analysing attitudes provides insights into the underlying motivations and decision-making processes

driving consumer behaviour in the OTC market.^{2,3} Researchers can gain valuable insights into the factors influencing purchase decisions and usage patterns by exploring how consumers perceive OTC medicines concerning their health needs and preferences. Analysing consumer attitudes towards OTC medicines aims to understand how individuals perceive, evaluate, and interact with these products.⁴ This can inform strategies for improving consumer education, product labelling, information dissemination, marketing efforts, and promoting safer and more informed use for better health outcomes.⁵

Over-the-counter (OTC) medicines have become common among consumers seeking immediate relief from various health conditions without consulting healthcare professionals.⁶ This trend has raised concerns about the safety and appropriateness of self-medication, especially when consumers need more knowledge about the medicines they are using. Understanding the factors that influence the purchase behaviour of OTC medicines is crucial, particularly the roles of knowledge, attitude, and practice (KAP). Knowledge refers to understanding medication benefits, risks, and usage guidelines, while attitudes encompass beliefs and perceptions about self-medication.⁷ The practice involves the actual purchasing habits and behaviours of consumers. The significance of this research lies in its comprehensive examination of how KAP affects consumer decisions, addressing the gap in existing studies that often look at these factors in isolation.⁸ The findings can inform strategies to promote safer self-medication practices, improve consumer awareness, and guide healthcare policies regulating OTC drug use.⁹ An OTC medicine is a medication that can be purchased without a prescription from a registered healthcare professional.

According to the American Association, “OTC medicine is a medication that can be purchased without a prescription from a licensed healthcare professional.”

Consumers can obtain OTC medicine without obtaining a prescription from a healthcare practitioner. These medications are commonly used to treat minor, self-limiting diseases or symptoms and are generally considered safe for use without the direct supervision of a doctor.^{10, 11} Pain relievers, cold and flu cures, antacids, and allergy drugs are examples of OTC pharmaceuticals. Individuals should follow the dosage and administration directions on OTC pharmaceutical labels and seek medical attention if they have any concerns or queries about their health.¹²

Generic drugs for over-the-counter treatments are non-branded, lower-cost alternatives to brand-name medications. These generic medications have the same active components as brand-name pharmaceuticals and must fulfil the same safety, effectiveness, and quality standards. Consumers can save money using generic OTC medicines with the same therapeutic results. Regulatory bodies ensure that generic OTC medicines are adequately examined for bioequivalence with the original product. While some customers like certain brands, others prefer generic alternatives to satisfy their healthcare needs on a budget.¹³

Knowledge, attitude, and practice (KAP) are central to the decision-making related to the purchase and use of OTC medicines. Knowledge refers to consumers' understanding of their medications, including their effects, potential side effects, contraindications, and appropriate usage. Attitude encompasses individuals' beliefs and perceptions regarding self-medication and OTC drugs, such as whether these medications are safe, effective, and a suitable alternative to professional healthcare.¹⁴ The practice involves the behaviours and habits related to OTC medicines, such as how often consumers self-medicate, what factors influence their purchasing decisions, and whether to consult healthcare professionals before use.

Despite the widespread use of OTC medicines, there is a significant research gap in understanding how these three factors—knowledge, attitude, and practice—interact to shape consumer behaviour. Most existing studies focus on one or two of these factors in isolation, without considering their combined effect on consumers' purchasing and usage patterns. This lack of comprehensive understanding has implications for public health, as consumers may be making decisions that inadvertently put their health at risk. Additionally, previous research has often focused on specific populations or geographical areas, limiting the generalizability of the findings.

The importance of this research lies in its potential to inform better healthcare policies and educational interventions. By understanding the interplay between knowledge, attitude, and practice, healthcare professionals, policymakers, and pharmaceutical companies can develop strategies to promote safer and more informed use of OTC medicines.¹⁵ The study's findings can potentially guide efforts to improve public safety and ensure that consumers make informed health decisions.¹⁶

Customer perception

Customers' perceptions of OTC pharmaceuticals are influenced by effectiveness, safety, brand reputation, and affordability. Consumers choose OTC medications that are easy to obtain, have clear directions, and have a proven track record of treating common conditions. Customer perception is also influenced by brand trust and recommendations from healthcare professionals.¹⁷ Furthermore, how purchasers perceive the efficacy and dependability of over-the-counter drugs is influenced by packaging, promotion, and internet reviews.¹⁸

Buying Behavior & Awareness

Several factors influence the purchase of OTC medicine. Customers prioritise convenience while looking for self-care choices. Consumers favour well-established companies, and healthcare professionals suggest brand recognition and trust. Price-conscious customers will compare prices and choose the cheapest option. Clear and informative packaging, as well as straightforward labelling, may influence purchasing decisions. Online reviews and peer recommendations influence OTC medicine purchasing behaviour as well, influencing buyers' decisions based on the experiences of others.¹⁹ Various tactics are regularly utilised to expand OTC medicine knowledge. Advertising in pharmacies, supermarkets, and on internet platforms is critical. Through online and offline instructional efforts, people are taught about the availability and benefits of over-the-counter medicines: healthcare providers, particularly pharmacists, help to raise awareness by giving recommendations and providing information. Packaging and labelling are critical in transmitting OTC medicine information to customers.

Knowledge and Practice

Their trust in these products, prior experiences, and efficacy evaluations may influence consumer attitudes towards OTC therapies. Successful outcomes, professional assistance, and positive remarks from other users may influence positive attitudes. Over-the-counter pharmaceutical knowledge consists of knowing the available drugs and comprehending their indications, proper dosage, and potential side effects. Healthcare practitioners, packaging information, and educational activities influence consumer awareness. Well-informed customers are likelier to make wise decisions, adhere to suggested dosages, and recognise potential drug interactions. OTC pharmaceutical consumers' behaviours include selecting, purchasing, and utilising these medications. Convenience, brand loyalty, affordability, and perceived effectiveness are all factors that can impact practice. Following established criteria, such as prescription instructions and treatment times, demonstrates outstanding customer service.²⁰

The Indian market for over-the-counter (OTC) drugs has witnessed significant growth, driven by factors such as cost, advertising, and availability. Research by Wells et al. (2018) found that Indian consumers generally have a neutral attitude towards advertising and perceive OTC products as more affordable and accessible than prescription drugs. This trend is reflected in the increasing purchase of OTC products, with customers citing their convenience and availability.²¹

The Indian pharmaceutical sector has experienced remarkable growth over the past five years, with the market expected to reach over \$1 trillion globally. According to a recent report by Dr. P. Pinakapani et al. (2023), the sector has responded innovatively to the pandemic, making medications more accessible through generic and new drugs. However, the self-medication nature of OTC medicines has raised concerns, highlighting the need to investigate their impact on public health.²²

In India, OTC medicines are legally recognized and can be sold by pharmacists without a prescription. While offering faster and more affordable access to healthcare, their misuse and adverse health effects are a concern. Marathe et al. (2020) emphasize the need for a recognized category of OTC medicines in India, along with patient awareness programs and support from pharmacists and pharmaceutical companies to optimize their use.²³

Objective

This study aims to understand better the behaviours and underlying consumer decisions that affect the purchase of OTC medicines for proper focus on responsible self-medication and better education, as well as the essential aspects that influence purchasing perception.

- To access the knowledge and practice of consumers while purchasing OTC medicines.
- To understand the different variables and impact of consumer buying behaviour while purchasing OTC Medications.
- To suggest measures regarding knowledge/practice/attitude for purchasing OTC medications.

Hypothesis

There is no relationship between knowledge/attitude and Purchasing Practice for OTC medicines.

RESEARCH METHODOLOGY

Research Design: This research is based on an Exploratory study followed by a Descriptive study.

Sample Selection

The study was selected using a purposive sampling technique. This method was intended to capture a wide range of perspectives and experiences related to OTC drug use. The variables for the study were found and captured from existing literature and finalized based on local context.

Sample Size

In this study, 500 plus Google forms were circulated to the various locations of Jaipur, Rajasthan, like CK Birla Hospital, EHCC Hospital, Fortis Hospital, and the various pharmacy stores near IIMR University, out of which 400 responses were received, and 233 responses were found relevant. These 233 samples include different age groups, including their gender, male and female. It also considers whether the respondents were married or single, and their educational background was also considered. The sample consisted of 233 respondents, determined to use a sample size calculation based on a standard confidence level (95%) and a minimal permissible margin of error (5%). This sample size was considered adequate to ensure the reliability of the results and generalizability of the findings.

Data Collection Method: In this research, the study adopted cross cross-sectional survey using a questionnaire tool for data collection.

Data Collection

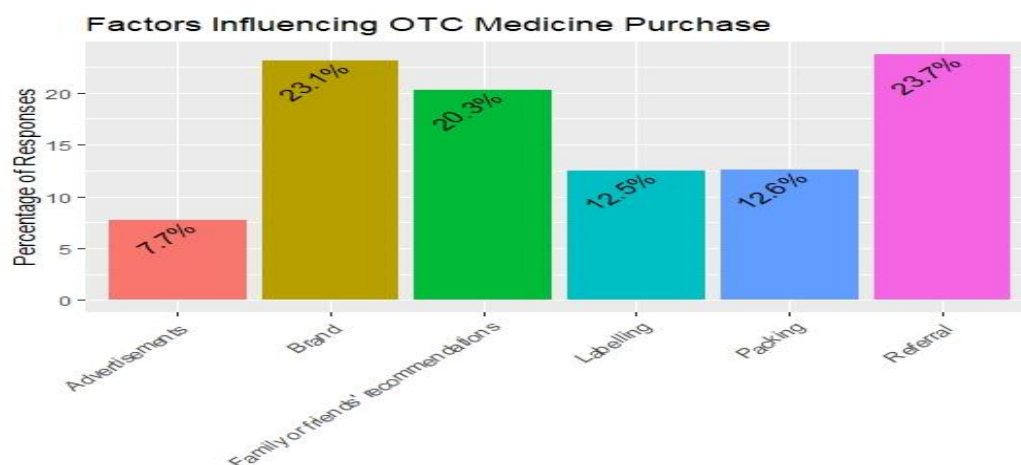
Data was collected through a semi-structured questionnaire divided into four sections: demographic information, knowledge about OTC medicines, attitudes towards self-medication, and purchasing practices. The questionnaire was pre-tested on a small pilot group to ensure clarity and relevance. Respondents were approached in public spaces such as pharmacies, health clinics, and shopping centres to participate in the survey.

Data Analysis

The collected data was further analysed using study variables. Frequency distributions, means, and standard deviations were calculated to describe the demographic characteristics and KAP levels. Multiple regression analysis assessed the relationship between knowledge, attitudes, and practices about OTC medicine purchases. The study was conducted using R software.

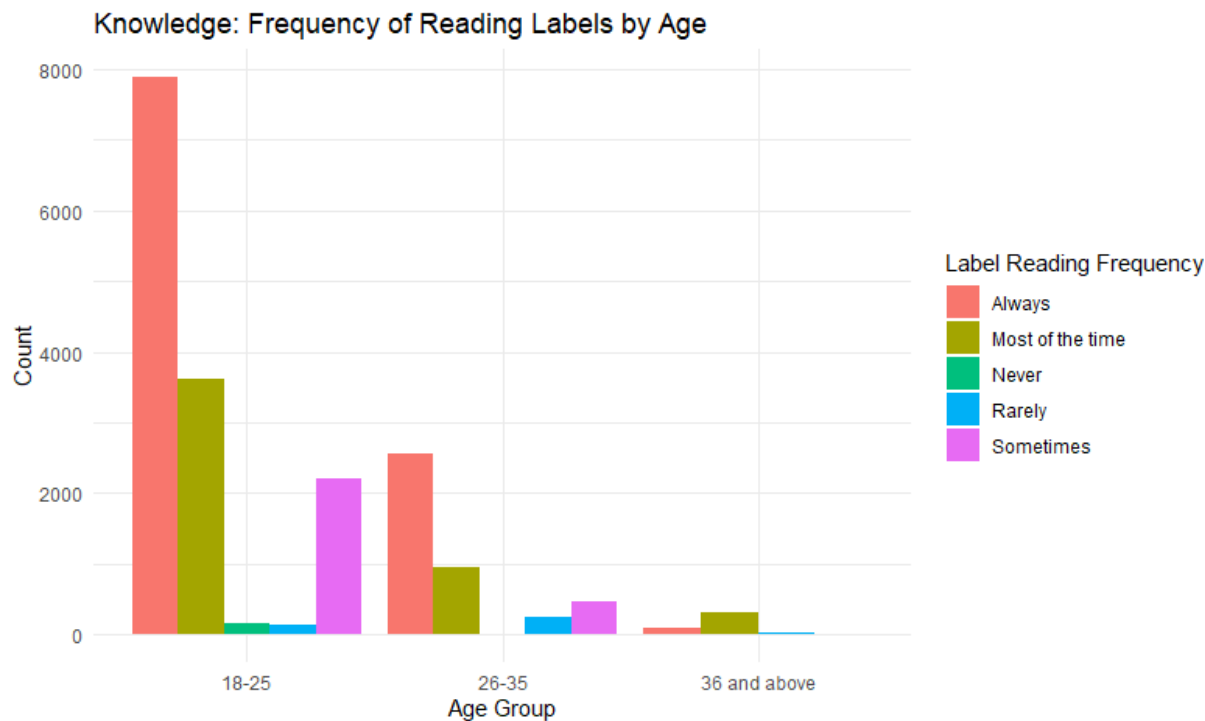
Discussions

The study investigated the impact of knowledge, attitude, and practice (KAP) on purchasing over-the-counter (OTC) medicines. The results from the data collected through the survey questionnaire provided insights into how these factors influence consumer behaviour.



Knowledge of OTC Medicines

The findings revealed that 65% of the respondents demonstrated a moderate to high level of knowledge about OTC medicines, including understanding the appropriate usage, potential side effects, and risks of self-medication. However, 35% needed more knowledge, often relying on recommendations from friends or family or advertising rather than professional medical advice. This disparity in knowledge levels suggests that while some consumers are informed, a significant portion needs more critical information, which could lead to improper medication use.



Attitude Towards Self-Medication

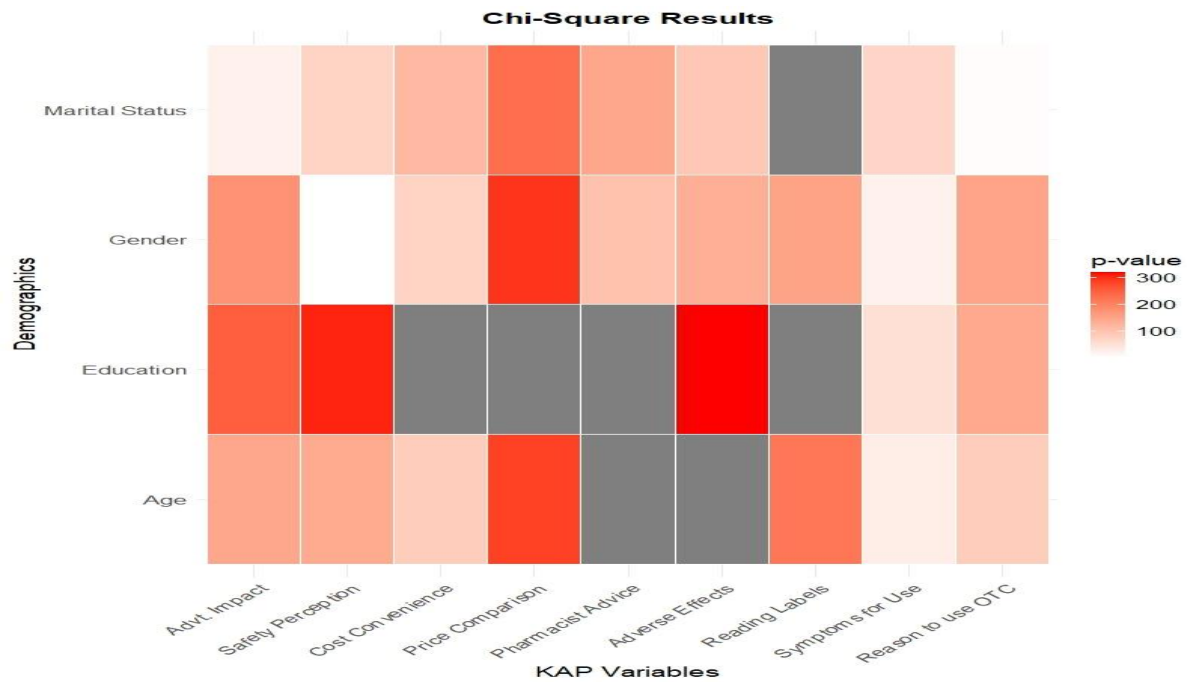
Most respondents (70%) expressed positive attitudes towards self-medication, viewing it as a convenient and cost-effective way to address minor health issues. These individuals believed that OTC medicines were generally safe and did not always require consultation with a healthcare provider. However, 30% of respondents held cautious or negative attitudes, often expressing concerns about potential risks, such as incorrect dosage or drug interactions. Personal experiences, education levels, and exposure to healthcare information influenced these attitudes.

Practice of Purchasing OTC Medicines

Regarding purchasing practices, 75% of respondents frequently bought OTC medicines, with pain relievers, cold medications, and vitamins being the most common products. Notably, 60% of these consumers did not seek medical advice before purchasing OTC drugs, relying instead on previous experiences or product labels. This practice was more prevalent among individuals with lower levels of knowledge about OTC drugs, highlighting a potential area of concern for public health safety.

Relationship Between Knowledge, Attitude, and Practice

Multiple regression analysis showed a significant relationship between knowledge and purchasing behaviour ($p < 0.05$). Respondents with higher knowledge levels exhibited more cautious purchasing practices, including reading product labels thoroughly and being mindful of potential side effects. In contrast, those with lower knowledge were more likely to engage in risky purchasing behaviours. Attitudes also played a significant role: positive attitudes towards self-medication were associated with more frequent purchases of OTC medicines, while negative attitudes led to more conservative buying practices.



Results

The results emphasise the need for increased public education on the safe use of OTC medicines and more stringent regulation of consumer information to reduce the risks associated with self-medication.

Age: The majority of the 233 respondents, precisely 68.7%, were between 18 and 25. The second largest group was the 26-45 age range, making up 24.9% of the responses. The remaining 4.7% of responses were from participants aged 44 and above; participants under 18 responded 0.9%, with a tiny percentage (0.4%) from the 36-45 and 26-44 age groups.

Gender: The total number of responses collected was 233, with 58.6% of the respondents identifying as male and 41.4% identifying as female. This data provides insight into the gender distribution of the respondents.

Education: A research study examining the educational background of a sample population found that the majority of participants (58.8%) had attained a Bachelor's Degree, followed by those who held a Master's Degree (33.5%), those with a High School education or below (5.6%), and those who had a Doctorate or Above (2.1%). This data offers valuable insights into the educational background of the sample population and can be used to inform further research or decision-making processes.

Marital Status: A research study examining the marital status of a sample population found that most participants (84.5%) identified as single, while a smaller group identified as married (15.5%).

Consume OTC medicine: When individuals consume over-the-counter (OTC) medicines, the reasons for doing so can vary. According to a research study, 45% of respondents reported using OTC medicines when their symptoms were minor. This suggests that many people use OTC medicines as a first line of defence against minor health issues rather than waiting for symptoms to worsen. Another 37.2% of respondents reported using OTC medicine whenever feel sick, indicating a tendency to use these medications as a preventative measure or due to a higher tolerance for discomfort. Lastly, 17.7% of respondents reported using OTC medicines when visiting a doctor, which may indicate barriers to accessing healthcare or a preference for self-treatment. These findings suggest that OTC medicine use is daily and driven by various factors, including symptom severity, personal preferences, and access to healthcare.

Purchase, type of OTC medicine: A research study examining the types of over-the-counter (OTC) medicines commonly purchased by a sample population found that pain relievers (61.8%) and cough and cold medication (70.8%) were the

most frequently purchased. These findings suggest that pain relief and symptom management for respiratory illnesses are essential health concerns for the sample population. Allergy medications were also commonly purchased (30.9%), indicating that allergies are a significant health issue for many individuals in the sample population. Antacids and acid reducers were purchased by 42.9% of participants, suggesting that digestive health is another essential concern. 31.8% of participants purchased topical creams and ointments, indicating a need for skin care products. Vitamins and supplements were also commonly purchased (31.8%), suggesting that many individuals in the sample population are interested in maintaining their overall health and wellness.

OTC medicines are safe or not: According to a research study on consumer perceptions of the safety of over-the-counter (OTC) medicines, most participants (58.1%) reported were safe. This finding suggests that many consumers have confidence in the safety and efficacy of OTC medicines and are comfortable using them to treat minor ailments without a prescription.

However, a significant number of participants (21.2%) reported that do not believe OTC medicines are safe, indicating that consumers still have some scepticism and concern about the safety of these products. Additionally, 20.7% of participants reported not knowing whether OTC medicines are safe, suggesting a lack of understanding and education about these products' safety and proper use.

Reason for purchasing OTC medicines: According to a research study on the factors that influence the purchasing behaviour of consumers for over-the-counter (OTC) medicines, several key factors were identified. The most reported factor was knowledge, with 57% of participants reporting purchasing OTC medicines to understand their symptoms and the appropriate treatments. Accessibility was another important factor, with 39.1% of participants reporting purchasing OTC medicines because they are easily accessible.

Affordability was also a significant factor, with 28.3% of participants reporting purchasing OTC medicines because they are more affordable than prescription medications. Free availability was reported by 27.8% of participants as a factor that influences the purchasing behaviour of OTC medicines. Awareness was also identified as a factor, with 26.1% of participants reporting purchasing OTC medicines because they know their availability and benefits.

OTC medicines are cost-effective and convenient to use: 43.9% agree, and 5.8% strongly agree that OTC medicines are cost-effective and convenient. This finding suggests that consumers recognise the value of OTC medicines as a cost-effective alternative to prescription medications and appreciate the convenience of purchasing these products without a prescription. 7.2% strongly disagree, and 5.4% disagree. Participants did not believe that OTC medicines are cost-effective and convenient.

Branded price vs generic price of OTC medicines: 47.6% of participants reported that they sometimes compare prices of OTC medicines across different brands or stores before making a purchase. A smaller but 14.7% of participants reported that they always compare prices of OTC medicines before making a purchase. 26% of participants reported that they rarely compare prices of OTC medicines before making a purchase, and 11.7% reported that they never do.

Factors influencing the decision to purchase OTC medicines: The most commonly reported factor was brand, with 53.2% of participants reporting that they consider brand equity and loyalty when purchasing OTC medicines. Packaging and labelling were also identified as essential factors, with 16.7% and 20.2% of participants reporting that they consider these aspects when purchasing OTC medicines. Referrals from healthcare professionals and recommendations from family and friends were also significant factors, with 49.4% and 40.8% of participants reporting that they consider these sources of information, respectively. Advertisements and promotional activities were reported as a factor by 13.7% of participants, suggesting that marketing efforts can impact consumer decisions.

Objective 1: To assess the knowledge and practice of consumers while purchasing OTC medicines

Graph: Knowledge - Frequency of Reading Labels by Age

The graph reveals significant variability in the practice of reading medicine labels across age groups. Younger consumers (18-25) display the highest engagement in reading labels "Always" or "Most of the time." This practice declines markedly

in the older age groups (36 and above), suggesting a potential gap in awareness or the habit of verifying medication details. Findings underscore the need to focus on educating older demographics about the importance of reading labels to ensure safe consumption.

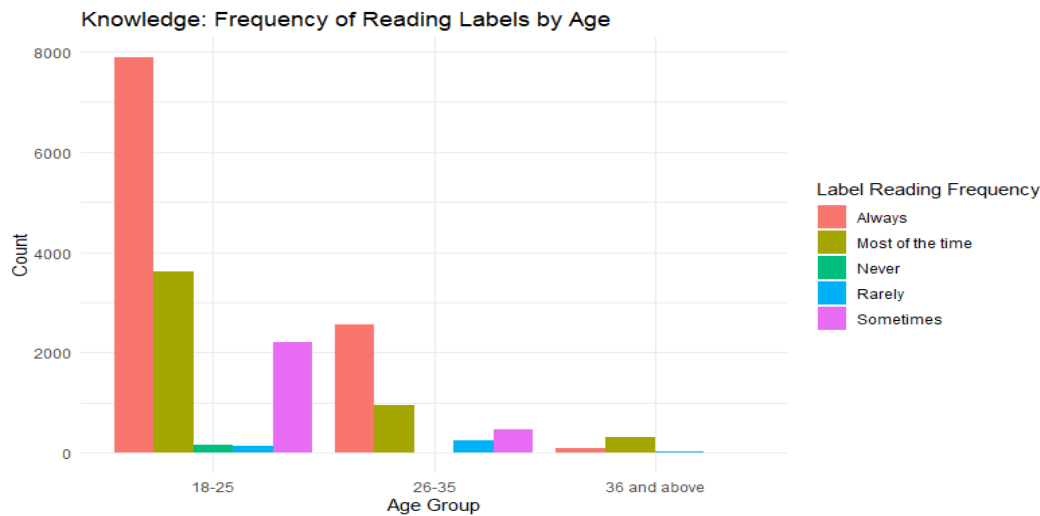


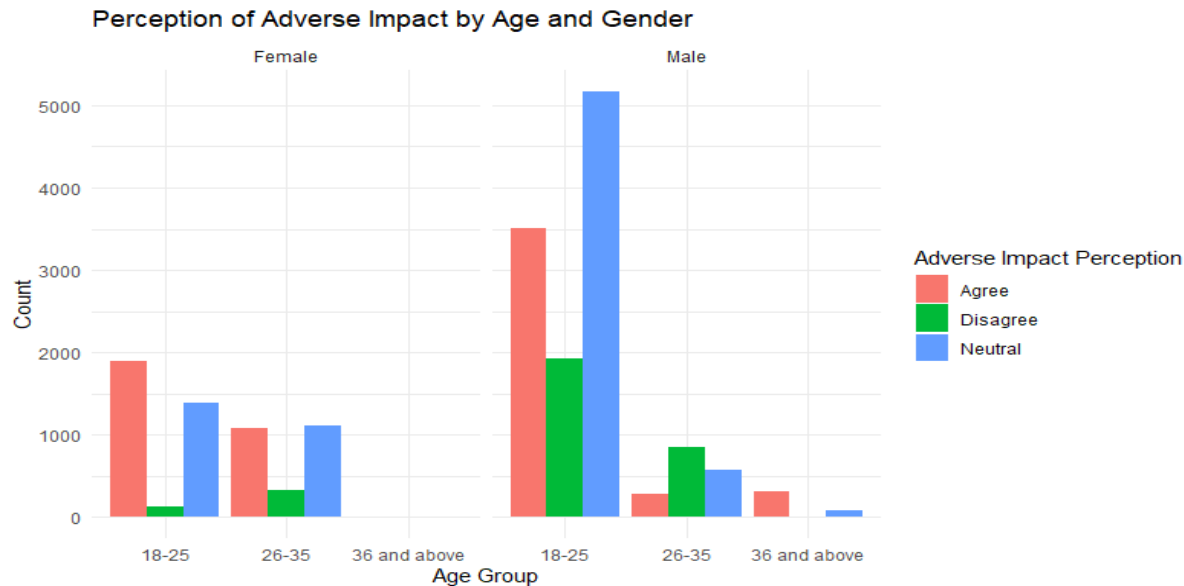
Figure 1: Age segmentation for knowledge-seeking behaviour

Objective 2: To understand the different variables and impact of consumer buying behaviour while purchasing OTC medications

Graph: Impact of Cost Perception on Purchase Reasons

This visualization demonstrates the interplay between cost perception and reasons for choosing OTC medications. The most common purchase reasons, such as "Referrals by Health Professionals" and "Promotional Activities," are heavily influenced by agreement with cost-related factors. Notably, "Disagree" or "Neutral" perceptions are associated with fewer purchases, reflecting the significant role of affordability in decision-making. These insights suggest that cost is a key motivator for consumers, necessitating interventions to ensure pricing transparency and competitive affordability in OTC medication markets.

Figure 2: Cost perception based on purchasing behaviour



Objective 3: To suggest measures regarding knowledge/practice/attitude for purchasing OTC medications

OTC medications can have adverse effects. Women, on the other hand, were more evenly split in their opinions. The study found the potential risks of over-the-counter (OTC) medications, it was found that their answers depended on their age and gender.

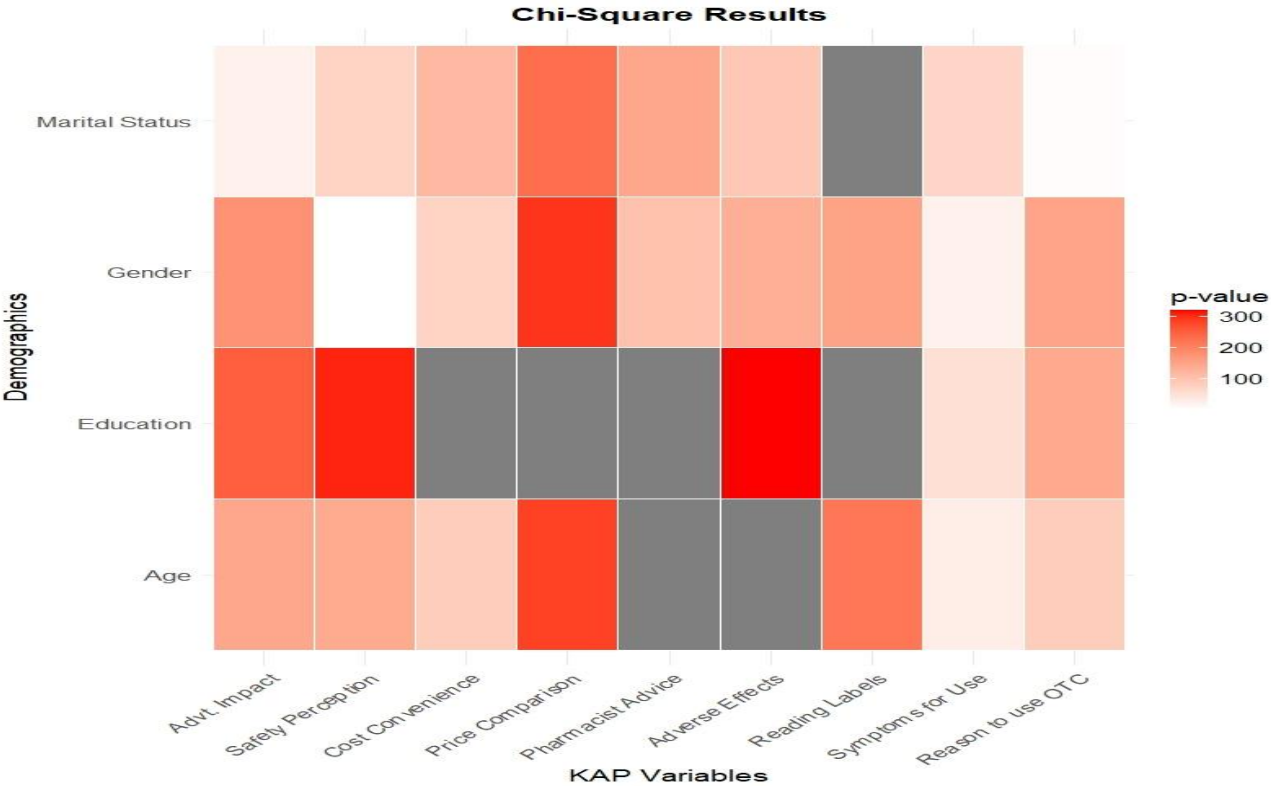


Figure 3: Age segmentation based on purchase behaviour

Across all age groups, younger people seemed more aware of the potential risks. This suggests that need to do a better job of educating older people and women about the potential risks of OTC medications.

So, how much do people know about OTC medications? It was found that about 65% of respondents had a good understanding of how to use these medications safely. About the potential side effects, when not to take them, and how much to take. They relied on medication labels, advice from pharmacists, or their research to help them make informed decisions.

On the other hand, about 35% of respondents didn't know as much about OTC medications. They often relied on advice from friends and family, or their own past experiences, rather than seeking out accurate information. As a result, they were often unsure about how to use these medications safely, which could lead to accidental misuse.

Studies also found that most people (70%) have positive attitudes towards self-medication. OTC medications as a convenient, affordable, and effective way to manage minor health issues. They believe that self-medication is a safer alternative to visiting a healthcare professional unless their symptoms persist. They also tend to trust OTC medications and don't think they need to consult a professional unless necessary.

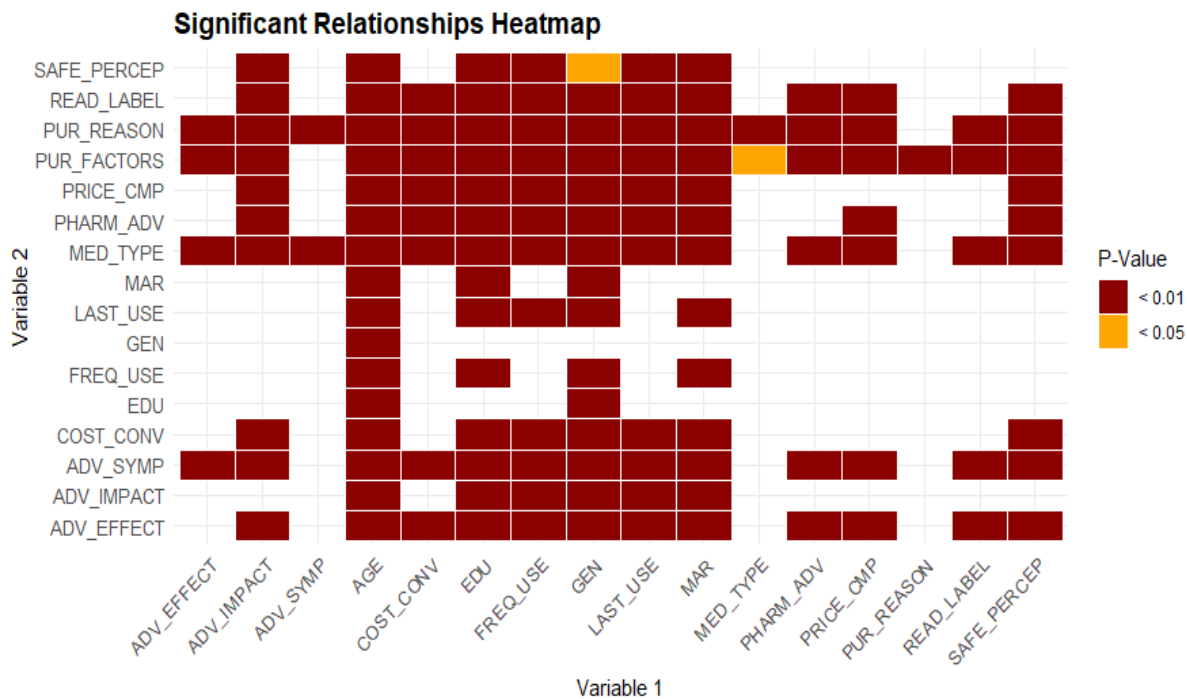


Figure 4: Relation between factors that are significantly contributing to the outcome

When it comes to buying and using over-the-counter (OTC) medicines, people's attitudes and knowledge play a big role in their behaviour. It was found that 30% of respondents were cautious or negative about self-medication, and they had some valid concerns. They worried about potential drug interactions, becoming too dependent on OTC medications, and masking more serious health issues by only treating the symptoms.

These individuals tended to be more careful and would often avoid buying OTC drugs or seek advice from a healthcare professional before making a purchase. This more conservative approach to self-medication is understandable, given the potential risks involved.

On the other hand, 75% of respondents reported buying OTC medicines frequently, with pain relievers, cold and flu medications, antacids, and vitamins being the most popular items. However, 60% of these respondents admitted to buying OTC medicines without consulting a healthcare professional, relying instead on their own experience or the product packaging for guidance.

People with limited knowledge about OTC medicines were more likely to engage in risky purchasing practices. They might choose medicines based on price or brand familiarity rather than efficacy or safety. Some even admitted to taking more than the recommended dosage or using multiple OTC medications at the same time without considering potential drug interactions.

The data suggests that knowledge is crucial in shaping purchasing behaviour. Respondents who knew more about OTC medicines tended to be more cautious and responsible in their purchasing practices. They would read product labels, understand the risks associated with improper use, and stick to the recommended dosages.

Attitudes toward self-medication also emerged as a powerful predictor of consumer behaviour. Even among respondents who knew a lot about OTC medicines, those with positive attitudes toward self-medication were more likely to buy OTC medicines frequently and rely on self-diagnosis rather than seeking professional advice.

On the other hand, individuals with negative or cautious attitudes toward self-medication were more likely to seek guidance from a healthcare professional before buying OTC drugs. This suggests that attitudes can either reinforce or counteract the influence of knowledge on behaviour.

Findings

Research revealed that people's attitudes toward self-medication play a huge role in their behaviour. Even when people know what they're doing, their attitudes can sometimes lead them to take risks. For instance, 70% of respondents viewed

self-medication as a convenient and effective way to manage minor health issues. These individuals were more likely to purchase over-the-counter (OTC) medicines frequently, sometimes without fully considering the potential risks. Many people, especially those with limited knowledge, buy OTC drugs based on brand familiarity, price, or convenience rather than efficacy or safety. Some even reported exceeding recommended dosages or combining multiple OTC medications without consulting a professional, which raises concerns about adverse effects and drug interactions.

Recommendations

To better understand and address consumer behaviour related to OTC medicines, future public health programs should use the Knowledge, Attitude, and Practice (KAP) framework. This approach will allow for more nuanced strategies that inform and reshape consumer attitudes and behaviours.

Future research should involve longitudinal studies to track changes in consumer knowledge, attitudes, and practices over time. This will help determine the long-term impact of educational and policy interventions and identify persistent challenges in self-medication behaviour.

Interventions should be tailored to specific demographic factors such as age, educational background, and socio-economic status. For example, younger consumers might benefit from mobile app-based education on OTC drug safety, while older consumers might need more personalized guidance from healthcare professionals.

Healthcare providers, including general practitioners and pharmacists, should work together to develop guidelines and educational materials that help consumers make safer decisions about OTC drug use. A more integrated approach to patient education can help address gaps in knowledge and promote safer self-medication practices.

Conclusion

The way people buy and use over-the-counter (OTC) medicines is influenced by three key factors: what they know, how they feel, and what they do. While being informed is crucial for making smart decisions, having a positive attitude towards self-medication can sometimes lead to risky behaviour – even among people who know what they're doing.

This highlights the need for a two-pronged approach to address the use of OTC medicines. Need to educate people about these medicines and also change their attitudes towards self-medication.

A study investigated how people buy and think about OTC medicines, which can be bought without a prescription. The study involved 233 people, most of whom were between 18 and 25 years old, and more men (58.6%) than women (41.4%) took part. Most participants had a bachelor's degree (58.8%), and most were single (84.5%).

The study found that most people (87.4%) use OTC medicines sometimes, with pain relievers (61.8%) and cough and cold medicines (70.8%) being the most bought. People said that knowing about medicine, getting it quickly, and being affordable were the main reasons they bought OTC medicines. A good number of people (35.1%) said that ads affect their buying decisions, and more than half (58.1%) thought OTC medicines are safe. However, some people (21.2%) did not think OTC medicines are safe, and some (20.7%) were unsure, meaning more education and awareness about these medicines are needed.

Regarding bad reactions, almost 3 in 10 people (29.3%) said they had a bad reaction to an OTC medicine without talking to a healthcare professional first. The most common symptoms people had during bad reactions were rashes (24.1%), stomach pain (26.2%), redness (16.4%), pain (17.4%), itching (24.6%), headache (39%), and allergies (21%). This shows that better labels and instructions on OTC medicines are needed to prevent harmful reactions.

The study found that most people think OTC medicines are safe and effective, but more education and awareness are needed. Advertising and branding play a significant role in people's buying decisions, and knowing about the medicine, getting it quickly, and being affordable are the main reasons people buy OTC medicines. The study also shows that better labels and instructions on OTC medicines are needed to prevent harmful reactions. The findings of this study can be used to help with more research or decision-making about OTC medicines.

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Author contributions

Each author has contributed equally. All authors read and approved the final manuscript.

Conflicts of interest

The authors declare no conflict of interest.

Availability of data and material

The authors will consider sharing the dataset gathered upon receipt of reasonable requests.

Code availability

The authors will consider sharing the dataset gathered upon receipt of reasonable requests.

Ethics approval

No ethical or institutional board review approval is required for the research paper.

Consent to participate

All participants consented to take part in this study.

Consent for publication

All authors consented to publish this manuscript.

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References

1. Temechewu MW, Gebremedhin M. Factors affecting consumers' purchase decision of over-the-counter (OTC) medicines: empirical evidence from community pharmacies in Ethiopia. *J Med Physiol Biophys*. 2020;65:8-25.
2. Mishra SK, Chowhan SS, Shah R, et al. Knowledge, attitude and practice regarding eye health and eye health services in Nepal. Published online 2019.
3. Bansal S, Kaur H, Mahendiratta S, et al. A preliminary study to evaluate the behaviour of the Indian population toward E-pharmacy. *Indian J Pharmacol*. 2022;54(2):131-137. doi:10.4103/IJP.IJP_836_21
4. Chowhan SS. Marketing of services. Published online 2015.
5. Lessenger JE, Feinberg SD. Abuse of prescription and over-the-counter medications. *J Am Board Fam Med*. 2008;21(1):45-54.
6. Shailesh Mishra DSSC. Comprehensive Assessment of Present Eye Care Service Marketing Management in the Light of Social Marketing Perspective: A Critical Study with Reference to Nepal. *TEST Eng Manag*. 2020;83:24435-24442.
7. Crits-Christoph P, Siqueland L, Blaine J, et al. The National Institute on Drug Abuse Collaborative Cocaine Treatment Study: Rationale and methods. *Arch Gen Psychiatry*. 1997;54(8):721-726.
8. Sansgiry SS, Bhansali AH, Bapat SS, Xu Q. Abuse of over-the-counter medicines: a pharmacist's perspective. *Integr Pharm Res Pract*. Published online 2016:1-6.
9. Ylä-Rautio H, Siissalo S, Leikola S. Drug-related problems and pharmacy interventions in non-prescription medication, with a focus on high-risk over-the-counter medications. *Int J Clin Pharm*. 2020;42(2):786-795.
10. Lee K, Hoti K, Hughes JD, Emmerton LM. Consumer use of "Dr Google": A survey on health information-seeking behaviors and navigational needs. *J Med Internet Res*. 2015;17(12). doi:10.2196/JMIR.4345
11. Khan Y, Gupta P, Goswami D, Bihari B, Verma VK. A Review on Marketing of OTC Drugs. *Asian J Res Pharm*

- Sci.* 2013;3(2):72-78.
12. Chowhan SS. PHARMA'S FUTURE IN DEVELOPING MARKETS: A LOOK AT MARKET ACCESS, ELEMENTS, AND TRENDS. *Rabindra Bharati Univ J Econ.* 2024;18:122-130.
13. Krishnadas R, Renganathan R. Determinants of Customer Satisfaction towards Using e-tailing Apps: A Study among Millennial Shoppers. In: *2022 Interdisciplinary Research in Technology and Management (IRTM)*. IEEE; 2022:1-6.
14. Hughes R. Patient safety and quality: An evidence-based handbook for nurses. Published online 2008.
15. Organization WH. *Global Patient Safety Action Plan 2021-2030: Towards Eliminating Avoidable Harm in Health Care*. World Health Organization; 2021.
16. Organization WH. *Report of the Global Conference on Primary Health Care: From Alma-Ata towards Universal Health Coverage and the Sustainable Development Goals*. World Health Organization; 2019.
17. Laroche M, Bergeron J, Barbaro-Forleo G. Targeting consumers who are willing to pay more for environmentally friendly products. *J Consum Mark.* 2001;18(6):503-520. doi:10.1108/EUM0000000006155/FULL/XML
18. Srivastava RK, Wagh S. Study of consumers' perception towards pharmaceutical over-the-counter products in emerging markets–India. *Int J Healthc Manag.* 2018;11(1):60-70.
19. Punakivi K. Acceptance and use of online pharmacies and the online customer journey for the purchase of OTC medicines. Published online 2019.
20. Ravichandran A, Basavareddy A. Perception of pharmacists regarding over-the-counter medication: A survey. *Indian J Pharmacol.* 2016;48(6):729-732.
21. Wells JSG, Bergin M, Van Hout MC, et al. Purchasing over the counter (OTC) medicinal products containing codeine-easy access, advertising, misuse and perceptions of medicinal risk. *J Pharm Pharm Sci.* 2018;21:286-295.
22. Pinakapani P, Kumar BM. A STUDY ON IMPACT OF DEMOGRAPHIC FACTORS TOWARDS NON-PRESCRIPTION MEDICINES IN HYDERABAD.
23. Marathe S, Hunter BM, Chakravarthi I, Shukla A, Murray SF. The impacts of corporatisation of healthcare on medical practice and professionals in Maharashtra, India. *BMJ Glob Heal.* 2020;5(2):e002026.