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Research Article

Over-the-Counter NSAID: Understanding Pharmacist Knowledge and Dispensing Trends in Kerala

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ABSTRACT

Nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen and paracetamol, are widely used over-the-counter (OTC) medications for pain and inflammation. However, their accessibility raises concerns about misuse and adverse effects. This cross-sectional study evaluated pharmacists' knowledge, dispensing practices, and challenges regarding OTC NSAIDs in Kerala, India. A structured questionnaire was administered to 100 registered pharmacists. Results revealed that only 47% were aware of OTC NSAID guidelines, while 56% provided patient counselling. Paracetamol was the most frequently dispensed NSAID. Statistical analysis (chi-square, regression) showed no significant association between knowledge and factors like age, experience, or pharmacy type. Key challenges included customer misuse (37%) and insufficient regulatory enforcement. The study highlights critical gaps in pharmacists' awareness and inconsistent counselling practices, underscoring the need for enhanced training, standardized guidelines, and stricter OTC regulations. These measures could mitigate risks associated with self-medication and improve public health outcomes in Kerala.

Keywords: OTC NSAIDs, Pharmacists' knowledge, Dispensing practices, Kerala, Self-medication, Counselling.

INTRODUCTION

Nonsteroidal anti-inflammatory drugs represent a cornerstone in the symptomatic management of pain and inflammation, and their widespread availability as over-the-counter medications has made them readily accessible to the general public.[1] The history of NSAIDs dates back centuries, with the utilization of natural sources for pain relief, and the discovery of aspirin marked a pivotal moment in modern medicine, paving the way for the development of numerous NSAIDs with varying potencies, selectivity profiles, and pharmacokinetic properties.[2]

NSAID exerts therapeutic effects primarily through the inhibition of cyclooxygenase enzymes, which are responsible for the synthesis of prostaglandins, key mediators of inflammation, pain, and fever.[3] However, this mechanism of action also underlies the potential for adverse effects, particularly within the gastrointestinal tract, kidneys, and cardiovascular system.[4]

Adverse effects are a matter of concern in developing countries like India, where self-medication is common[5] and access to healthcare may be limited, making appropriate guidance from pharmacists crucial. Given the accessibility of NSAIDs, it is paramount that pharmacists should be well-informed and equipped to counsel patients appropriately on their use.[6]

Kerala, a state in India known for its high literacy rate and healthcare awareness, provides an interesting case study to examine the dynamics of over-the-counter NSAID dispensing and the knowledge base of pharmacists who play a crucial role in guiding consumers' medication choices. Pharmacists are positioned as frontline healthcare professionals, capable of influencing patient behaviour and ensuring the safe and effective utilization of medications.[7]

This is especially true for medications like NSAIDs, where a proper understanding of dosage, potential side effects, and contraindications is essential for safe and effective use. Given the accessibility of NSAIDs, it becomes paramount to evaluate the extent to which pharmacists are equipped with the knowledge and skills necessary to counsel patients appropriately on their use.[8]

MATERIALS AND METHODS

The study employed a cross-sectional survey design, conducted among pharmacists working in retail pharmacies across Kerala, India. A sample size of 100 pharmacists was recruited through a convenient sampling method. Inclusion criteria included registered pharmacists currently employed in retail pharmacies. Data were collected using a structured questionnaire. The study was conducted over a period of six months. The collected data were analysed using descriptive statistics and Inferential statistics on SPSS software.

Ethical Considerations

The study received ethical approval from the Institutional Ethics Committee of SUT Academy of Medical Sciences (Approval No: 28/IEC/SUTAMS/2024).

RESULTS

Demographics

- The age distribution of pharmacists ranges from 25 to 60 years, with the majority falling between 30 and 50 years. This indicates a well-experienced group of participants.
- Gender distribution: The majority who participated were females.
- Years of experience: Most participants have 5 to 15 years of pharmacy experience, with an average of approximately 8 years.
- A majority of pharmacists work in community pharmacies (36 out of 100), followed by other types, such as hospital pharmacies.

Knowledge of OTC NSAIDs

- 53% of pharmacists reported not knowing OTC guidelines, while 47% were familiar with them.

Dispensing Practices

- The most common NSAIDs dispensed are paracetamol.
- Counselling on NSAID use is provided by 56% of pharmacists, while the rest (44%) do not offer this service.

Challenges and Suggestions

- A large proportion of pharmacists (37%) are unsure about the need for stricter regulations regarding OTC NSAIDs. Additionally, a significant challenge faced by pharmacists is the misuse or overuse of NSAIDs by customers.
- Regarding suggestions, 29 pharmacists suggested more regulation on OTC NSAIDs as a way to improve practices.

Inferential Analysis

Knowledge of OTC guidelines and type of pharmacy

The Chi-square statistic is 2.52 with a p-value of 0.47. This indicates that there is no statistically significant relationship between pharmacists' knowledge of OTC guidelines and the type of pharmacy they work in, suggesting that pharmacy type does not significantly influence their familiarity with these guidelines (Fig 1).

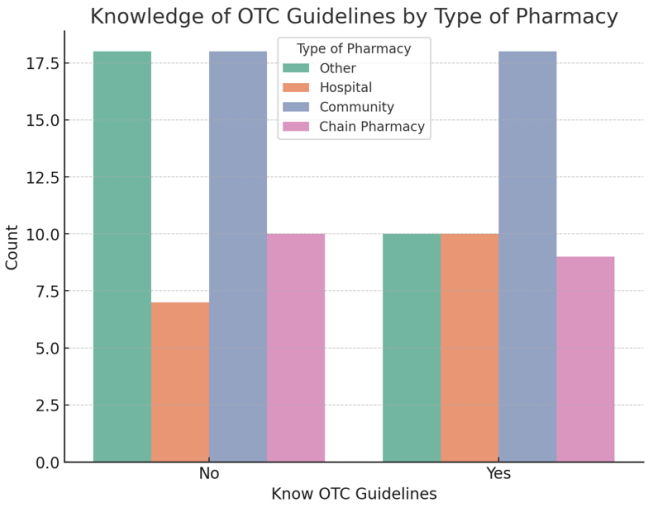

Fig 1: Relationship between pharmacy type and knowledge of OTC guidelines (p = 0.47)

Provide counselling and frequency of OTC NSAID Requests

The Chi-square statistic is 2.19 with a p-value of 0.53. This result suggests that there is no significant relationship between the frequency of OTC NSAID requests and whether pharmacists provide counselling, meaning that the frequency of OTC NSAID requests does not strongly influence dispensing practices (in terms of counselling) (Fig. 2).

The results from the multiple linear regression analysis suggest that none of the independent variables significantly predict the knowledge of OTC guidelines among pharmacists. Here's a summary of the findings:

R-squared value

The model has an R-squared value of 0.098, indicating that only about 9.8% of the variance in pharmacists' knowledge of OTC guidelines is explained by the independent variables in the model. This is quite low, suggesting that other factors not included in the model may be influencing pharmacists' knowledge.

P-values

All the individual p-values for the predictors (e.g., age, gender, years of experience, pharmacy type, and frequency of OTC NSAID requests) are greater than 0.05, indicating that none of these factors have a statistically significant impact on the likelihood of a pharmacist knowing the OTC guidelines. This suggests that the factors considered in this model do not strongly influence pharmacists' knowledge of OTC NSAIDs.

Coefficients

The coefficients are small, and none are statistically significant, reinforcing the finding that the predictors in this model do not strongly correlate with the knowledge of OTC guidelines.

Years of experience vs knowledge of OTC guidelines

This plot visualizes the relationship between years of experience and the likelihood of pharmacists knowing OTC guidelines. Similar to the age plot, it shows how years of experience influence the probability of knowledge, with the red line indicating the logistic regression model's predictions.

In conclusion, based on this analysis, it appears that the knowledge of OTC guidelines among pharmacists is not significantly influenced by the demographic and dispensing-related factors included in this model. Other factors, such as education, training, or organizational policies, may play a more substantial role (Fig 3).

DISCUSSION

This study assessed the knowledge and dispensing practices of pharmacists in Kerala regarding over-the-counter (OTC) NSAIDs, addressing concerns over self-medication and the misuse of these medications. The study aimed to evaluate pharmacists' understanding of OTC NSAID indications, contraindications, and side effects and to assess their dispensing practices and factors influencing them. The findings revealed that 47% of pharmacists were familiar with current OTC guidelines for NSAID dispensing, highlighting a significant knowledge gap. This lack of awareness may lead to inappropriate dispensing, potentially harming patients. Despite Kerala's high

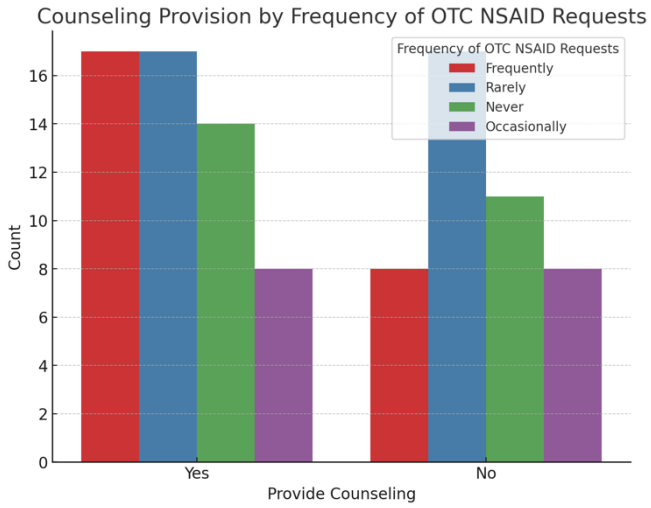

Fig 2: Association between OTC NSAID request frequency and counselling practices (p = 0.53)

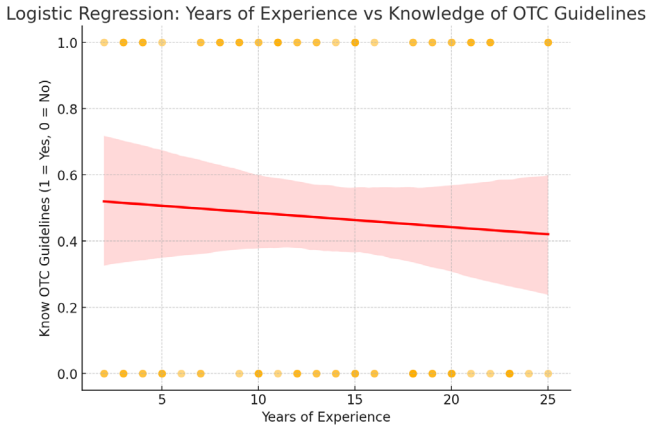

Fig 3: Logistic regression model predicting knowledge of OTC guidelines based on experience

literacy rate, continued professional education is needed to address this gap.[9]

Regarding dispensing practices, paracetamol was the most commonly dispensed NSAID, followed by ibuprofen and diclofenac. Notably, only 56% of pharmacists provided counselling on NSAID use, whereas 44% did not, emphasising the need for more consistent patient education to reduce misuse and ensure safe usage. Challenges such as NSAID misuse and overuse by customers were identified, underscoring the need for improved patient education and regulatory oversight.[10]

Factors such as years of experience and pharmacy type did not significantly influence pharmacists' knowledge of OTC guidelines, suggesting that additional factors like institutional support, training opportunities, or regulatory pressures may play a more substantial role. The study suggests that there should be specific actions, like regular training on safely giving out NSAIDs, consistent advice procedures, and tougher rules to reduce the misuse of OTC NSAIDs, which would improve public health safety in Kerala.

LIMITATIONS

This study has a cross-sectional design (no causality), a modest sample (100 pharmacists), possibly not fully representing Kerala, and potential self-reporting bias. External factors like institutional policies weren't considered.

Future Directions

Larger, more diverse samples and longitudinal studies could improve generalizability and track knowledge changes over time. Examining institutional support, regulations, and patient feedback may optimize dispensing practices. Qualitative research could further explore pharmacists' challenges.

CONCLUSION

This study provides valuable insights into the current state of knowledge and dispensing practices of pharmacists in Kerala concerning OTC NSAIDs. The findings suggest that, while there is a reasonable understanding of OTC medications, substantial gaps remain in knowledge and practice, especially in relation to counselling and awareness of the latest guidelines. It is evident that further educational initiatives, regulatory interventions, and continuous professional development are required to ensure the safe and effective use of OTC NSAIDs by the public. Pharmacists play a crucial role in preventing self-medication-related complications, and it is crucial to address these gaps to enhance public health outcomes in Kerala.

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