

# Assessment of Knowledge, Attitude and Practice among Community Pharmacists on Non-Prescription Drugs in Tamil Nadu

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## ABSTRACT

**Background:** Self-medication is a concept where people can get medication directly from the pharmacists for their basic illness. Pharmacists, being the last line of direct contact with the patients, are responsible for educating the patients regarding the effects of self-medication. This study focuses on assessing the knowledge, attitude and practice among community pharmacists regarding non-prescription drugs in Tamil Nadu. **Materials and Methods:** A descriptive cross-sectional study was done. In our study, 383 responses were collected during the survey, which was executed for a period of 6 months. All responses obtained were analyzed and assessed using SPSS software and Microsoft Excel. **Results:** Knowledge percentage regarding the community pharmacists were found to be lesser which in turn affected their attitude and practice of dispensing prescription drugs. Pharmacists were barely involved in counselling the patients regarding the medication dispensed. **Conclusion:** Community pharmacists had an overall knowledge percentage of 55.35%, their attitude towards dispensing of prescription and non-prescription drugs were found to be better (75.97%). Community pharmacists had a good overall practice regarding non-prescription drugs.

**Keywords:** Knowledge, Attitude, Practice, Pharmacists, Non-prescription, Drugs.

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## INTRODUCTION

Over-the-Counter (OTC) drugs, or non-prescription medications, are available for direct purchase by consumers without the need for a prescription, unlike prescription medicines which require a valid prescription from a Registered Medical Practitioner (RMP) and can only be dispensed under the supervision of a registered pharmacist. According to the World Health Organization (WHO), self-medication refers to the selection and use of medications by individuals to address self-recognized health issues or symptoms. In India, drugs listed under Schedule H and Schedule H1 must be dispensed on the written prescription of an RMP, who must sign, date the prescription, specify the patient's name and address and indicate the total amount and dosage of the medication.<sup>1</sup> While India does not officially recognize OTC as a distinct category, medications not included in Schedules H, G and X are considered non-prescription.<sup>2,3</sup> Research globally indicates a rising trend in self-medication and its expanding

scope.<sup>4</sup> Given that pharmacists often serve as the final point of contact between patients and medications, they play a crucial role in influencing patient behavior concerning self-medication.<sup>5</sup> The International Pharmaceutical Federation has published guidelines on good pharmacy practice, which are also endorsed by WHO.<sup>6</sup> The Indian Pharmaceutical Association (IPA) has developed its own good pharmacy practice guidelines, stressing the importance of pharmacists being well-informed to effectively counsel patients.<sup>7</sup> In light of these considerations and the global issue of antimicrobial resistance, this study aims to evaluate the knowledge, attitudes and practices of community pharmacists in Tamil Nadu.

## MATERIALS AND METHODS

### Study settings and Study population

This cross-sectional observational study was conducted across 38 districts of Tamil Nadu over a six-month period, from February to July 2023. A stratified random sampling technique was employed to select participants. The study population comprised 383 individuals, inclusive of both male and female participants, provided they were able to respond effectively to the study questionnaire. The sample size of 383 was determined using Rao Soft software, with the formula  $n = z^2 p(1-p) / d^2$  considering a total



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population of 40,000, a confidence interval of 95% and a margin of error of 5%. Each response was collected from individual participants, ensuring that no multiple responses were provided by the same individual.

### Inclusion and Exclusion criteria

All registered community pharmacists between the age of 21 and 80 (except vulnerable population) were considered eligible to participate in our study, provided they are willing to participate. All community pharmacists are required to hold at least one pharmacy degree (either D Pharm, B. Pharm or Pharm D). Any forms that were collected incomplete will be excluded from the study.

### Data Collection

Data was collected using a self-administered questionnaire form. The questionnaire was created to ensure the comprehensive inclusion of all required patient demographics. The questionnaire contained 16 questions grouped into 3 categories namely knowledge, attitude and practice related questions. The questions were designed in such a way that it challenges the community pharmacists' knowledge, attitude and practice of non-prescription medicines.

### Statistical Analysis

The data was analyzed using Microsoft Excel. Categorical data was presented as frequency and percentage using Statistical Package for Social Sciences (SPSS). Compilation of data was done. Data were classified as different independent variables. Data were tabulated using Microsoft Excel. Data analysis was done by using Descriptive analysis in SPSS software.

## RESULTS

Out of 463 samples 10 samples from each of the 35 districts and 11 samples from each of the 3 districts (to comply with sample size) were considered.

As of 2023, Tamil Nadu comprises of 38 districts (Ariyalur, Chengalpattu, Chennai, Coimbatore, Cuddalore, Dharmapuri, Dindigul, Erode, Kallakurichi, Kanchipuram, Kanyakumari, Karur, Krishnagiri, Madurai, Mayiladuthurai, Nagapattinam, Namakkal, Nilgiris, Perambalur, Pudukottai, Ramanathapuram, Ranipet, Salem, Sivagangai, Thenkasi, Thanjavur, Theni, Tiruvannamalai, Thoothukudi, Tirunelveli, Tirupattur, Tirupur, Tiruvallur, Tiruvarur, Trichy, Vellore, Villupuram, Virudhunagar).

All the 383 responses were categorized based on their socio demographic characteristics. Majority of our participants (40.2%) belonged within the age group of 41 and 50, while the least number of participants (0.8%) were found between 71 and 80. 79.9% of our participants were male while the rest 20.1% were found to be female participants and majority of our participants (79.9%) held Diploma degree in pharmacy while only few (0.8%) held Doctorate degree in pharmacy. Table 1 depicts the Age, Gender, Educational Qualification and Location wise distribution of our study participants.

Knowledge related outcomes resulted in a mean of 55.27% which theoretically means that only 212 participants could provide correct answers to our questions, only few (38.4%) of our participants could provide correct answer when asked about the legal recognition of the word over the counter in India, only three fourth (71.5%) of our participants could say that Schedule H and H1 drugs are to be sold only under a prescription. When twisted the question and asked about the antibiotics that could be dispensed without a prescription, only one fourth of our

**Table 1: Distribution of responses according to Socio-demographic Characteristics**

Socio-Demographics	Variables	Frequency (n)	Percent (%)
Age	21-30	56	14.6
	31-40	90	23.5
	41-50	154	40.2
	51-60	66	17.2
	61-70	14	3.7
	71-80	3	0.8
Gender	Male	306	79.9
	Female	77	20.1
Educational Qualification	B.Pharm	63	16.4
	D.Pharm	306	79.9
	Pharm.D	3	0.8
	M.Pharm	11	2.9
Location	Rural	205	53.5
	Urban	178	46.5

participants could provide correct response (26.1%) which is shown in Table 2.

Attitude and practice related outcomes (Tables 3 and 4) showed a mean of 76.01% and 67.04%, showing fairly better outcome than the knowledge related questions. However, many participants (39.9% provided correct response) couldn't answer when it is best to take anti-cholesterol medications.

Though Overall Knowledge, Attitude and practice were found to be statistically insignificant ( $p>0.05$ ) when compared with their socio demographic variables, certain individual questions proved to be statistically significant with certain variables. With lesser experience, they couldn't say what is the meaning of OTC and if it's legally registered in India. Their educational qualification was found to matter as the participants were unable to decide what to do when a particular brand of drug is not available ( $p=0.036$ ) and what to do when particular antibiotic is not available ( $p=0.018$ ) which is depicted in Table 5.

## DISCUSSION

Developing countries' including India is beset with problems in healthcare delivery system. Lack of acceptable doctors has been a major interference in furnishing quality healthcare to all people. Most of the people still depend on pharmacists or other confederated health workers for their primary healthcare need. Pharmacists working in community pharmacy have always played an important part in healthcare system.<sup>8</sup> However, A similar study from Tamil Nadu adds on to the statement where 61% prevalence were found on non-prescription drug use.<sup>9</sup>

In our study, 47% of community pharmacists were from urban areas, while 53% were from rural regions. Regarding knowledge-related aspects, only 55% of community pharmacists provided an overall positive response. A study conducted in Guntur, Andhra Pradesh, found that despite community pharmacists being aware of the prohibition against selling antibiotics without a prescription, nearly half of antibiotics were still dispensed without one.<sup>10</sup> Similarly, in our study, a significant proportion of community pharmacists (74% or 283 individuals) identified Amoxicillin as an antibiotic that could be sold without a prescription.

Given the significant burden of Antimicrobial Resistance (AMR) on healthcare and public health, addressing bacterial resistance has become particularly urgent. The World Health Organization (WHO) emphasizes the necessity for a coordinated global effort to combat AMR.<sup>11</sup> Community pharmacists play a critical role in both contributing to and preventing antimicrobial resistance, as they are often more accessible and trusted by the public compared to medical practitioners. However, our study reveals a concerning trend where an average of 40% of responses related to antibiotic questions were incorrect, indicating a gap in knowledge

and practice among community pharmacists that needs to be addressed.

In India, the term "OTC" (over-the-counter) does not have judicial recognition and the classification of drugs is limited to prescription and non-prescription categories.<sup>12</sup> Despite this, educational resources and literature from other countries have influenced Indian pharmacists to adopt the term "OTC." Our study found that approximately 62% (236 pharmacists) were unaware of this distinction, highlighting a significant gap in understanding regarding drug classification in the Indian context.

Under the Drugs and Cosmetics Act of 1945, drugs and related resources are categorized into various schedules.<sup>13</sup> In our study, when asked about the specific schedule encompassing all prescription drugs, 72% of community pharmacists provided the correct response. However, 29% of community pharmacists were not aware of this classification, indicating a need for improved understanding of the regulatory framework.

**Table 2: Responses to knowledge related questions.**

Sl. No.	Questions	Correct response (%)
1	What is OTC? Is the name OTC legally registered in INDIA? (ANS: Over the counter medicines. No, the name OTC is not legally registered in INDIA).	38.4
2	Drugs, which cannot be sold without a prescription falls under which schedule of drugs as per Drugs and Cosmetics Act, 1945? (ANS: Option 3, Schedule H, H1).	71.5
3	Name any 2 drugs that are commonly dispensed at your pharmacy without a prescription. (ANS: any 2 non-prescription medicines).	75.5
4	Is prescription required to dispense AZITHROMYCIN? (ANS: Option 1, Yes).	85.4
5	Choose the correct drug that can be dispensed without a prescription (ANS: Option 5, None).	30.5
6	Can you dispense diclofenac ointment without a prescription? (ANS: Option 1, Yes).	59.5
7	Name any antibiotic that can be dispensed without a prescription. (ANS: None).	26.1

**Table 3: Responses to Attitude related questions.**

Sl. No.	Questions	Correct Response (%)
1	What is your opinion about patients receiving all the drugs without a prescription? (ANS: Option 2, No, it must not be implemented because it causes wrong drug usage).	74.4
2	What is your concern about children receiving drugs without a prescription? (ANS: Option 1, Drugs must not be dispensed to children).	74.7
3	How do you deal with patients asking for a particular drug without a prescription? (ANS: Option 1, Advise the patient to consult a doctor).	79.1

**Table 4: Responses to Practice related questions**

Sl. No.	Questions	Correct Response (%)
1	What do you do when a particular brand of drug is not available? (ANS: Option 3, Suggest them the same drug of different brand).	80.4
2	Is it correct to suggest a different antibiotic if the required one is not available? (ANS: Option 2, No).	67.4
3	Is it ok to dispense narcotic drugs without a prescription? (ANS: Option 3, Never).	85.6
4	Do you suggest Corticosteroids when there is a lack of other NSAIDs like IBUPROFEN and PARACETAMOL? (ANS: Option 3, Never).	61.9
5	What do you counsel a patient when dispensing an anti-cholesterol/ anti hyperlipidemic drug? (ANS: Option 3, Take it at bedtime).	39.9

Pharmacists, as the final point of direct contact with patients, are crucial in providing accurate counseling on prescribed medications. A study conducted by A.M. Alkhawajah in Saudi Arabia found that pharmacists were more effective in

**Table 5: Significance between the questions and the comparing variables**

Sl. No.	Questions with their comparing variables	Significance (p value)
1	What is OTC? Is the name OTC legally registered in INDIA against AGE.	0.001
2	What do you do when a particular brand of drug is not available? against AGE.	0.036
3	Is it correct to suggest a different antibiotic if the required one is not available? against AGE.	0.018
4	Name any 2 drugs that are Commonly dispensed at your Pharmacy without a prescription against EDUCATIONAL QUALIFICATION.	0.006
5	What do you do when a particular brand of drug is not available? against EDUCATIONAL QUALIFICATION.	0.012
6	Is it correct to suggest a different antibiotic if the required one is not available? against EDUCATIONAL QUALIFICATION.	0.008
7	What is your counselling point when dispensing cetirizine? against EDUCATIONAL QUALIFICATION.	0.045
8	Is it ok to dispense narcotic drugs without a prescription? against LOCATION.	0.006
9	Do you suggest Corticosteroids When there is a lack of other NSAIDs like IBUPROFEN and PARACETAMOL? against LOCATION.	0.033

Significance level is  $p$  value < 0.05.

explaining medication use, with 20% clarity, compared to 11% for physicians.<sup>14</sup> In our study, however, only approximately 40% of pharmacists were able to provide a positive response regarding key counseling points for anti-cholesterol medications. For instance, statins, a class of anti-cholesterol drugs, are particularly effective when taken at night due to the peak of cholesterol synthesis occurring from midnight to 5 a.m.<sup>15</sup> This underscores the need for enhanced training and knowledge in medication counseling among pharmacists.

Second-generation antihistamines, such as Cetirizine, are recognized for their effectiveness and reduced side effects compared to first-generation antihistamines. Cetirizine, an FDA-approved drug since 2007, is available for sale without a prescription and is primarily indicated for allergic rhinitis and

urticaria.<sup>16</sup> Despite their generally favorable safety profile, there are concerns about sedation associated with antihistamines. A study from Southampton, examining sedation with "non-sedating" antihistamines through prescription event monitoring, found that Cetirizine is 3.5 times more likely to be reported for sedation compared to other antihistamines such as acrivastine, loratadine and fexofenadine.<sup>17</sup> In our study, 86% of community pharmacists demonstrated a positive response when asked about counseling points related to Cetirizine, indicating a strong awareness of its potential side effects and appropriate counseling practices.

Possessing knowledge about medications is crucial, but it is equally important to understand how to interact effectively with patients and the public. Studies indicate that in India, many community pharmacists view pharmacies primarily as commercial enterprises rather than as a means of providing healthcare services.<sup>18</sup> This perspective is reflected in issues related to polypharmacy, such as drug duplication, under dosing, overdosing and potential drug interactions, with India being a significant contributor to these problems.<sup>19</sup> Furthermore, a study from Karnataka revealed that over 50% of community pharmacists were unaware of their professional responsibilities.<sup>20</sup> In our study, however, 76% of community pharmacists demonstrated a positive attitude towards their patients in various situations, suggesting a commendable level of professionalism and patient care.

Corticosteroids are hormone mediators produced by the adrenal glands and are primarily indicated for serious conditions such as chemotherapy, Systemic Lupus Erythematosus (SLE), Rheumatoid Arthritis (RA) and osteoarthritis, owing to their anti-inflammatory and immunosuppressive effects. Despite their efficacy, corticosteroids are associated with potential adverse effects, including steroid-induced osteoarthritis and the risk of drug dependence, which can impact patient well-being.<sup>21</sup> In our study, when asked whether corticosteroids could be used as a replacement for Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) such as ibuprofen and paracetamol, 62% of community pharmacists correctly rejected the use of corticosteroids as an alternative to NSAIDs, while 38% still considered them as a potential option.

## CONCLUSION

Our findings indicate that community pharmacists are generally aware of their roles and responsibilities. Their positive attitude towards the study reflects a willingness to evaluate and enhance their professional practices. Knowledge regarding non-prescription drugs among community pharmacists was found to be adequate but has potential for further improvement through Continuing Medical Education (CME) and educational awareness programs. To provide optimal patient care, it is essential for pharmacists to stay updated with current trends and advancements.

The Pharmacy Practice Regulations 2015 (latest amendment 2021) outline the various functions of pharmacists and provide guidelines for performing these functions efficiently. According to these regulations, pharmacists are now permitted to train students and disseminate knowledge about pharmacy practice. Therefore, it is crucial for pharmacists to maintain current knowledge to effectively educate their trainees. Updating regulatory practices is vital for enhancing pharmacists' overall knowledge, attitudes and practices across all aspects of pharmacy practice.

## LIMITATIONS

Since our study is a cross-sectional study, the study results depend on the responses of our study participants and so chances of responder bias are likely as respondents might not reveal their genuine behavior to some of the questions.

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## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

## CONSENT TO PARTICIPATE

Oral informed consent was obtained from the study participants.

## ETHICAL CONSIDERATIONS

Throughout the study period, no ethical conflicts were observed. As a result, it was determined that formal ethical clearance was not deemed necessary.

## ABBREVIATIONS

**WHO:** World Health Organization; **OTC:** Over the Counter; **FDA:** Food and Drug Administration; **AMR:** Antimicrobial Resistance; **SLE:** Systemic Lupus Erythematosus; **RA:** Rheumatoid Arthritis; **NSAIDs:** Non-steroidal Anti-inflammatory Drugs; **CME:** Continuing Medical Education.

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