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Assessment of Knowledge, Attitude and Practices Regarding the Use of Over-the-Counter Medication Among Out Patients of A Tertiary Care Hospital

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ABSTRACT

Background: Over-the-counter (OTC) medication and self-medication practices are widespread in India, posing significant health risks such as adverse drug reactions (ADRs) and antimicrobial resistance when misused.
Objective: To assess the knowledge, attitudes, and practices (KAP) regarding OTC medication use among outpatients attending a tertiary care hospital in Tamil Nadu, India.
Methodology: A cross-sectional descriptive study was conducted among 420 outpatients aged ≥21 years at Nandha Medical College and Hospital, Erode. Data were collected using a pre-tested structured questionnaire and analyzed using descriptive statistics and Chi-square tests. Multivariable logistic regression was performed to identify independent risk factors.
Results: The overall prevalence of self-medication practice was 54.05% (n=227). Painkillers/analgesics (49.34%), cough/cold preparations (39.65%), and antibiotics (25.99%) were the most common self-medicated drug classes. Primary drivers included prior experience with illness (59.91%) and perceived minor nature of illness (47.14%). Overall, 60.95% read package inserts and 52.38% were aware of side effects. A total of 54 participants (12.86%) experienced adverse drug events, with a significantly higher incidence observed among self-medicators compared to non-self-medicators (19.38% vs. 5.18%, p<0.001). Logistic regression revealed that self-medication increased ADR risk by 4.63 times ("aOR"=4.631, p<0.001), whereas reading package inserts was protective ("aOR"=0.452, p=0.009). Most respondents (70.95%) expressed willingness to consult healthcare providers if services were easily accessible.
Conclusion: Self-medication prevalence and non-prescription antibiotic use remain high among outpatients. Targeted public awareness campaigns, mandatory point-of-sale pharmacist counselling, and stricter enforcement of Schedule H regulations are essential to promote rational drug use.

Key Words: *Self-medication, Over-the-counter drugs (OTC drugs), Knowledge, Attitude, and Practice (KAP).*

INTRODUCTION

The World Health Organization defines self-medication as the selection and use of medicinal products by individuals to treat self-recognized disorders or symptoms, including the intermittent or continued use of a medication prescribed by a physician for chronic or recurring disease [1]. The use of over-the-counter (OTC) medications is increasingly prevalent in India, with individuals frequently self-medicating for a wide range of health issues. A systematic review and meta-analysis reported a pooled self-medication prevalence of 53.57% in India, with non-steroidal anti-inflammatory drugs (analgesics) being the most commonly self-medicated drug class (45.90%) [2]. A study among engineering students in Chennai

similarly reported that 34.7% used analgesics and 22.61% used antibiotics for self-medication [3]. While OTC drugs are beneficial for managing minor ailments, inappropriate use can result in significant health risks.

In India, local pharmacists and digital/social media platforms are frequently reported as primary sources of information for self-medication decisions; one recent study among urban adults found pharmacies (42.18%) and digital platforms (18.00%) to be the leading information sources [4-7]. Given limited time for healthcare access and reliance on such informal information sources, outpatients remain susceptible to self-medication behaviours. Assessing these parameters is essential for identifying misconceptions, risky behaviours, and areas requiring targeted educational interventions. The findings from this study will contribute to the development of informed public health strategies aimed at promoting the rational use of medications among out patients attending healthcare facilities.

Objective:
To assess the knowledge, attitudes, and practices regarding the use of over – the - counter (OTC) medications among out patients of tertiary healthcare hospital.

METHODOLOGY:
This cross-sectional, observational study was conducted among outpatients attending the clinical departments of Nandha Medical College and Hospital to evaluate the prevalence, consumer purchasing behaviours, and adverse drug reaction (ADR) profiles associated with over-the-counter (OTC) self-medication practices. The sample size was calculated using the formula $n = Z^2pq/d^2$, where Z = 1.96 (95% confidence level), p = 53.57% (pooled prevalence of self-medication practice in India, based on a systematic review and meta-analysis [2]), q = (1–p) = 46.43%, and d = 5% (margin of error). This gives a minimum calculated sample size of 384; accounting for an anticipated 10% non-response/incomplete-response rate, the final target sample size will be approximately 420. The study participants were adult outpatients aged 21 years and above was selected using a convenient sampling technique. Ethical clearance was formally obtained from the Institutional Ethics Committee (IEC) prior to study initiation, and written informed consent was secured from each participant before administration of the survey. Outpatients who were unwilling to participate, critically ill, or unable to communicate effectively were excluded from the study.

Data collection was executed using a structured, pre-tested, validated questionnaire comprising three main sections: socio-demographic characteristics, self-medication prevalence, underlying motivations, and drug procurement sources, and knowledge, safety attitudes, and reported adverse events. Quantitative data were processed and analyzed using Python statistical libraries (statsmodels and scipy.stats). Descriptive statistics, including frequencies, percentages, and means with standard deviations (Mean $\pm$ SD), were calculated to summarize demographic and behavioral variables. Inferential statistical evaluations were performed using Pearson's Chi-square (χ^2) tests for univariable cross-tabulations, followed by multivariable binary logistic regression analysis to adjust for confounding variables and determine independent predictors of adverse drug events, expressed as Adjusted Odds Ratios (aOR) with 95% Confidence Intervals (CI) at a statistical significance threshold of $p < 0.05$.

RESULTS:
The overall study population comprised 420 outpatients attending Nandha Medical College and Hospital. The mean age of the participants was 45.09 ± 13.80 years (range: 21–85 years), with a balanced distribution between males (50.24%, $n = 211$) and females (49.76%, $n = 209$). Urban residents accounted for 56.67% ($n = 238$) of the cohort, while 43.33% ($n = 182$) resided in rural areas. In terms of education, secondary schooling was the most commonly reported attainment level (32.62%, $n = 137$), followed by tertiary education (26.67%, $n = 112$) and primary education (26.19%, $n = 110$). Homemakers (18.57%, $n = 78$) and private sector employees (18.33%, $n = 77$) represented the largest occupational groups within the cohort. The socio-demographic features of the study population are summarized in Table 1.

The overall prevalence of self-medication practice among outpatients was **54.05%** ($n = 227$; 95% CI: 49.26% – 58.84%). Among those practicing self-medication ($n = 227$), 40.53% ($n = 92$) reported doing so occasionally, while 25.11% ($n = 57$) practiced it frequently. Retail pharmacies/chemists served as the primary procurement source (37.89%, $n = 86$), followed by leftover medicines kept at home (25.55%, $n = 58$). Analgesics/painkillers were the most commonly consumed drug class (49.34%, $n = 112$), followed by cough and cold remedies (39.65%, $n = 90$) and antibiotics (25.99%, $n = 59$). The primary driver for self-medication was previous experience with a similar illness (59.91%, $n = 136$), followed by the perception of the illness being minor (47.14%, $n = 107$). These purchasing behaviors and motivations are detailed in Table 2.

Assessment of knowledge and safety parameters revealed that 60.95% ($n = 256$) of respondents read package inserts, while 52.38% ($n = 220$) reported awareness regarding potential drug side effects. Overall, 44.52% ($n = 187$) believed self-medication to be safe for minor conditions. A total of 54 participants (12.86%) experienced adverse drug reactions (ADRs), with mild stomach upset (18.52%, $n = 10$), nausea (18.52%, $n = 10$), drowsiness (18.52%, $n = 10$), and diarrhoea (18.52%, $n = 10$) being the most frequent symptoms. Despite these practices, 70.95% ($n = 298$) expressed

willingness to consult healthcare providers if accessible consultation services were available. Stricter regulatory control over OTC sales (22.62%, $n = 95$) and public awareness campaigns (21.67%, $n = 91$) were recommended as key strategies to curb unsafe practices, as presented in Table 3.

Univariable analysis demonstrated no statistically significant association between self-medication practice and demographic factors, including gender ($\chi^2 = 0.082, p = 0.775$), residence ($\chi^2 = 1.029, p = 0.310$), education ($\chi^2 = 0.863, p = 0.834$), or age group ($\chi^2 = 0.725, p = 0.867$). However, self-medication was strongly associated with an increased incidence of adverse drug reactions ($\chi^2 = 17.532, p < 0.001$). In multivariable binary logistic regression, self-medication practice was confirmed as an independent risk factor for adverse events (aOR = 4.631, 95% CI: 2.244 − 9.559, $p < 0.001$). Conversely, habitually reading the package insert or leaflet functioned as a significant protective factor, reducing adverse event odds by 54.8% (aOR = 0.452, 95% CI: 0.249 − 0.820, $p = 0.009$). These statistical evaluations are presented in Table 4.

Table 1: Socio-Demographic Profile of Study Outpatients ($N = 420$)

Demographic Parameter	Category	Frequency (n)	Percentage (%)
Age Group (Years)	21–35	111	26.43%
	36–50	166	39.52%
	51–65	110	26.19%
	> 65	33	7.86%
	Mean ± SD	45.09 ± 13.80	
Gender	Male	211	50.24%
	Female	209	49.76%
Residence	Urban	238	56.67%
	Rural	182	43.33%
Education Level	No Formal Education	61	14.52%
	Upto 5th standard	110	26.19%
	Upto 12th standard	137	32.62%
	Degree	112	26.67%

Table 2: Self-Medication Practices, Sourcing, and Motivations ($N = 227$)

Variables	Subcategory	Frequency (n)	Percentage (%)
Frequency of Practice	Rarely	63	27.75%
	Occasionally	92	40.53%
	Frequently	57	25.11%
	Always	15	6.61%

Variables	Subcategory	Frequency (n)	Percentage (%)
Primary Source of Medicine	Pharmacy / Chemist	86	37.89%
	Leftover Medicine at Home	58	25.55%
	Online Portals / Apps	36	15.86%
	Friends / Relatives	36	15.86%
	Herbal / Traditional Outlets	11	4.85%
Drug Classes Used	Painkillers / Analgesics	112	49.34%
	Cough and Cold Products	90	39.65%
	Antibiotics	59	25.99%
	Vitamins / Supplements	52	22.91%
	Antacids	36	15.86%
Primary Reasons	Prior Experience with Illness	136	59.91%
	Perceived Minor Ailment	107	47.14%
	Easy Availability	96	42.29%
	Consultation Cost Concerns	85	37.44%
	Time Constraints	79	34.80%

Table 3: Knowledge, Attitudes, Adverse Effects, and Suggestions ($N = 420$)

Variable	Response Option	Frequency (n)	Percentage (%)
Reads Package Insert	Yes	256	60.95%
	No	164	39.05%
Awareness on side effects	Yes	220	52.38%
	No	200	47.62%
Belief in Safety	Safe for Minor alignments	187	44.52%
	Unsafe	122	29.05%
	No idea	111	26.43%
Experienced Adverse Reaction	Yes	54	12.86%
	No	366	87.14%

Variable	Response Option	Frequency (n)	Percentage (%)
Willingness to Consult Provider	Yes	298	70.95%
	No	122	29.05%
Top Recommendations	Stricter Pharmacy OTC Rules	95	22.62%
	Public Awareness Campaigns	91	21.67%
	Affordable Outpatient Care	71	16.90%

Table 4: Univariable and Multivariable Predictors of Adverse Drug Reactions ($N = 420$)

Predictors	ADR Yes (n=54)	ADR No (n=366)	$\chi 2$	p-value	aOR	p-value (aOR)
Self-Medication Practices						
Yes ($n = 227$)	44 (19.4%)	183 (80.6%)	17.5	< 0.001	4.631	< 0.001
No ($n = 193$) [Ref]	10 (5.2%)	183 (94.8%)			1.000	—
Reads Package Insert						
Yes ($n = 256$)	25 (9.8%)	231 (90.2%)	4.9	0.027	0.452	0.009
No ($n = 164$) [Ref]	29 (17.7%)	135 (82.3%)			1.000	—
Awareness on side effects						
Yes ($n = 220$)	30 (13.6%)	190 (86.4%)	0.1	0.7	1.107	0.738
No ($n = 200$) [Ref]	24 (12%)	176 (88%)			1.000	—

Multivariable Model Log-Likelihood = -149.21, $\chi^2(3) = 21.65$, $p < 0.001$.

DISCUSSION:

The present study offers a comprehensive evaluation of self-medication practices, consumer purchasing behaviours, and associated adverse drug events (ADEs) among outpatients attending a tertiary care facility in Tamil Nadu. In our study population ($N = 420$), the overall prevalence of self-medication was found to be 54.05% ($n = 227$; 95% CI: 49.26%–58.84%). This finding aligns closely with national epidemiological estimates; a comprehensive meta-analysis evaluating self-medication across 10,248 Indian participants reported a pooled nationwide prevalence of 53.57% (95% CI: 49.2%–58.0%). Furthermore, our results mirror regional findings from hospital outpatients in South India, where community-level reliance on non-prescribed pharmaceuticals typically ranges between 50% and 65%.

Previous personal illness experience (59.91%), the belief that the ailment was minor (47.14%), and easy over-the-counter (OTC) access at pharmacies (42.29%) emerged as the primary motivations driving self-medication in our cohort. These observations closely reflect patterns documented by Chakravarthy & Maiya (2021) [2] in suburban Chennai, where prior prescription awareness and time convenience were cited as the predominant motivators among community respondents. In terms of drug categories, analgesics/painkillers were the most frequently self-medicated drug class (49.34%), followed by

cough/cold formulations (39.65%) and antibiotics (25.99%). The high rate of non-prescribed antibiotic consumption (25.99%) is of major clinical concern. This corresponds with broader findings across Tamil Nadu tertiary care settings, where loose dispensing of Schedule H and H1 drugs at retail pharmacies continues despite national regulatory mandates under the Drugs and Cosmetics Rules.

A critical insight from our multivariable logistic regression analysis involves the strong association between unguided self-medication and negative clinical outcomes. Outpatients practicing self-medication exhibited a 4.63-fold increase in the odds of experiencing an adverse drug reaction (aOR $= 4.631$, 95% CI: 2.244–9.559, $p < 0.001$). This finding corroborates observational data from Tejasvi & Magendran et al. (2020) [8] study done at a Medical College Hospital in Chennai, where 28% of urban self-medictors reported adverse effects, primarily gastrointestinal distress and allergic skin reactions. Crucially, our study identified reading the package insert or leaflet as an independent protective factor against adverse events. Outpatients who habitually verified package inserts demonstrated a 54.8% reduction in the odds of experiencing an ADE (aOR $= 0.452$, 95% CI: 0.249–0.820, $p = 0.009$). Regional survey in Coimbatore by Vinotha et al. (2025) [9] highlights that less than 50% of consumers routinely review dosing instructions or expiry dates prior to consumption, underscoring patient package insert verification as a key target for consumer safety interventions.

Although 44.52% of respondents initially perceived self-medication as safe for minor ailments, 70.95% expressed willingness to consult healthcare professionals if accessible clinical services were provided. Furthermore, participants identified strict enforcement of OTC regulations at retail pharmacies (22.62%) and public health awareness campaigns (21.67%) as the most necessary regulatory solutions. Strengthening point-of-sale pharmacist counselling and strictly enforcing antimicrobial stewardship regulations remain essential steps toward mitigating self-medication risks and combatting antimicrobial resistance (AMR) in Tamil Nadu.

Study Limitations:
This study was a single-centre study with cross-sectional design and reliance on convenience sampling of outpatients, which restricts the generalizability of the findings to broader populations. Additionally, data on self-medication frequency and adverse reactions relied on self-reported questionnaire responses, introducing potential recall and social desirability biases.

Conflict of Interest: Nil

CONCLUSION:

In conclusion, while over-the-counter self-medication is practiced by more than half of the outpatient population, it significantly increases the risk of adverse drug reactions by over fourfold (aOR $= 4.631, p < 0.001$). Enforcing stricter retail pharmacy regulations on non-prescription drug sales and promoting routine package insert verification are essential public health interventions to mitigate adverse drug events and prevent irrational drug use.

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