International Journal of Medical and Pharmaceutical Sciences
Open access peer-reviewed Journal
Volume 2, Issue 6, Page 220-228.
https://doi.org/10.5281/zenodo.20719706

Research Article

Knowledge, Attitude, And Practice Regarding Over-The-Counter Analgesic Use Among the General Population: A Cross-Sectional Study

Padige Srivarsha*[1], Perne Venkata Adithya[2], Shirley Angelina Kothur[2], Anugu Sai Shanthi[2], Deekshith Duvvaka[2]

[1]*Assistant professor, Department of Pharmacy Practice, Malla Reddy College of Pharmacy*
[2]*Doctor of Pharmacy, Department of Pharmacy Practice, Malla Reddy College of pharmacy*

Background: Over-the-counter (OTC) analgesics, particularly paracetamol, are widely used, and inappropriate self-medication may increase the risk of adverse effects and toxicity. **Objective:** To assess knowledge, attitude, and practices (KAP) regarding OTC analgesic use among the general population and identify factors associated with safer use. **Methods:** A cross-sectional, questionnaire-based survey was conducted online among adults using a structured KAP instrument hosted on Google Forms. Sociodemographic data, utilization patterns, and KAP items were collected; knowledge was scored dichotomously, attitude using Likert-type items, and practice from self-reported behaviors. Data were analyzed in jamovi using descriptive statistics, Cronbach's alpha, chi-square tests, Welch ANOVA, and Spearman/partial Spearman correlations. **Results:** A total of 121 respondents were analyzed, predominantly students and females. Paracetamol was the most frequently used OTC analgesic (68.6%), and most participants reported using OTC painkillers less than once per month (80.2%). The mean knowledge, attitude, and practice scores were 4.17, 8.97, and 9.10, respectively. Overall, 52.9% had good knowledge, whereas only 12.4% had good attitude and 47.1% had good practice. The refined two-item attitude scale showed acceptable internal consistency (Cronbach's $\alpha = 0.632$). Sex and age were not significantly associated with KAP outcomes, while occupation was significantly associated with practice categories ($\chi^2 = 21.81$, $p = 0.016$). Attitude was positively correlated with practice ($\rho = 0.248$, $p = 0.003$), whereas knowledge showed no significant correlation with attitude or practice. **Conclusion:** Despite generally good knowledge, attitudes towards OTC analgesic safety were suboptimal, and practices were only moderate, with behavior more strongly driven by attitudes than knowledge. Targeted, attitude-focused educational interventions and pharmacist-led counseling are warranted to promote safer OTC analgesic use.

Keywords: Over-the-counter (OTC) analgesics, knowledge, attitude, and practice scores.

INTRODUCTION

Pain is one of the most frequent health concerns globally, affecting people of all ages. Headache, fever, musculoskeletal pain, low back pain, dysmenorrhea, and tooth pain are among the most commonly reported painful conditions. Low back pain is the greatest cause of disability worldwide, accounting for about 149 million disability-adjusted life years (DALYs) every year, whereas tension-type headache affects approximately 42% of the world's adult population [1,2]. Pain negatively impacts quality of life by lowering physical function, interrupting sleep, limiting social involvement, and affecting psychological well-being. It also causes huge economic losses due to absenteeism and low working productivity. [3] Notably, a large proportion of people estimated at 40-60% of adults manage pain symptoms without seeking medical attention, primarily by using over-the-counter (OTC)

analgesics. Self-medication is described as the use of medicinal goods to address self-diagnosed diseases or symptoms rather than seeking medical guidance. OTC analgesics are non-prescription pharmacological medicines that are approved for the short-term treatment of mild to moderate pain and fevers. Common over-the-counter painkillers include: Acetaminophen (Paracetamol) is a centrally acting analgesic and antipyretic used as a first-line treatment for mild to moderate pain, Ibuprofen is an NSAID with analgesic, antipyretic, and anti-inflammatory effects, Aspirin, an older NSAID with antiplatelet properties, is less popular due to its gastrointestinal adverse effects, Naproxen is a long-acting NSAID frequently used to treat musculoskeletal disorders and dysmenorrhea. People choose over-the-counter drugs for their ease of availability, low cost, time-saving convenience, and autonomy in managing minor ailments without having to navigate the healthcare system [4]. When taken correctly, OTC analgesics provide quick relief for mild symptoms, decrease the pressure on healthcare facilities, and are a cost-effective therapeutic alternative. They also encourage patient autonomy and active self-care, as recommended by the World Health Organization [5]. Irrational usage of OTC analgesics poses considerable hazards. Incorrect dose, drug interactions, and the masking of serious underlying diseases are all well-known risks. Key undesirable effects include: Paracetamol overdose is a leading cause of acute liver failure, especially for chronic alcohol users and those with pre-existing liver impairment, NSAIDs can cause gastrointestinal toxicity by inhibiting mucosal-protective prostaglandins, increasing the risk of peptic ulcer disease and bleeding, Prolonged NSAID use can reduce renal prostaglandin synthesis, potentially leading to acute kidney injury or worsening chronic kidney disease. Reading product labels and rigorously following stated dosage directions is crucial for reducing these hazards. However, studies show that a large number of OTC consumers do not read or comprehend package information leaflets [6,7].

NSAIDs are among the most extensively consumed drug classes worldwide, with over 36 million Americans consuming over-the-counter formulations each year, a trend that is paralleled in South Asian communities, including India [8]. Current NSAID exposure has a pooled odds ratio of 1.73 for AKI in the general population, rising to 2.51 in the elderly and up to 5.25 in those with pre-existing CKD, with AKI accounting for about 1.7 million fatalities globally each year [9]. In India, NSAIDs account for 21% of all drug-induced AKI patients, making them the second most common pharmacological cause, with a reported increase in NSAID-induced CKD reports via the national pharmacovigilance system [10,11]. In terms of hepatotoxicity, NSAIDs account for approximately 10% of all drug-induced liver injury (DILI) cases worldwide, with an incidence of 0.29 to 9 per 100,000 patients per year; up to 15% of users exhibit subclinical liver enzyme elevations, and fatal outcomes such as fulminant hepatitis have been documented, particularly with diclofenac and sulindac, both widely available OTC in India. The combination of unregulated OTC availability, widespread self-medication, low pharmacovigilance awareness, and a high burden of comorbidities such as hypertension and diabetes create a particularly vulnerable epidemiological context in the Indian setting, necessitating immediate regulatory and clinical attention [12,13]. Several studies have looked at OTC analgesic use in diverse populations. Globally, self-medication prevalence rates range from 12.7% to 95%, with paracetamol and ibuprofen constantly ranking as the most often used medications [14]. Studies have also found that the top indications are headache, fever, and musculoskeletal pain, with simple availability and prior pleasant experience being the most important motivators. Across populations, knowledge of side effects and dose limitations is inadequate. Fosnocht et al. discovered that fewer than 30% of participants correctly recognized the maximum recommended daily dose of paracetamol, and that using numerous paracetamol-containing items concurrently increases the risk of substantial overdose, which is prevalent and largely unrecognised. Irrational usage patterns, including as dose escalation, polypharmacy, and medication sharing, have been regularly recorded in low-, middle, and high-income contexts [15]. Although various studies have assessed self-medication behaviors, the majority have focused on university students or hospital outpatients in high-income nations, limiting the generalizability of the findings. [15] There is currently limited data available on OTC painkiller using trends, knowledge, and safety awareness among individuals in our study group. Furthermore, few

studies have examined usage behavior, pharmacological knowledge, and awareness of adverse consequences in the same population an integrated approach required for creating successful therapies. This research is justified by a number of public health concerns. The global consumption of over-the-counter analgesics has expanded significantly, owing to population expansion and the widespread availability of non-prescription medications [16]. Irrational usage can cause considerable injury, such as liver failure, gastrointestinal hemorrhage, and renal impairment, which is clinically significant but underappreciated by users. Pharmacist-led education has been demonstrated to improve consumer understanding and reduce harmful practices; however, such initiatives must be based on locally relevant data [17].

MATERIALS AND METHODS

The purpose of this cross-sectional, questionnaire-based survey was to investigate the general population's knowledge, attitude, and behaviors (KAP) about over-the-counter (OTC) painkiller use. The survey was conducted online using Google Forms and took place in Hyderabad, Telangana, India, in May 2026. The study included persons aged ≥18 who could read and understand English and agreed to participate. A convenience sample strategy was utilized, with the survey link sent via social media platforms and messaging apps, allowing members of the broader population to participate. The final analysis includes 121 respondents who completed all of the core KAP items. The questionnaire has six sections: participant consent, demographics, OTC consumption trends, knowledge, attitude, and practices. For the knowledge domain, each correct response was worth one point, while incorrect or "don't know" responses were worth zero, resulting in a total knowledge score of 0-6. Respondents were classified as having poor, moderate, or good knowledge based on their overall score using specified cut offs (poor: 0-3, moderate: 4, good: 5-6). Attitude was measured using three Likert-scale items ranging from 1 (strongly disagree) to 5 (strongly agree). Prior to analysis, the negatively phrased item (A3) was reverse-coded, resulting in higher scores indicating more favorable sentiments regarding safe OTC analgesic use. The item scores were then added together to yield a total attitude score, with higher values indicating more favorable attitudes. Respondents were grouped into bad, moderate, and good attitude groups based on Bloom's cut-off, with good scores ranging from 80-100%, moderate scores ranging from 60-79%, and poor scores below 60%. The practice was evaluated using measures that assessed the frequency of OTC analgesic use as well as self-reported behaviors such as label reading, adherence to suggested doses, and other safe-use practices. Composite practice scores were generated and classified into low, moderate, and good practice levels using predetermined grading criteria. The attitude scale's internal consistency was evaluated using Cronbach's alpha. The initial three-item attitude scale had a Cronbach's alpha of 0.452, and item total data were used to identify underperforming items; after removing one item (A3), the two-item scale exhibited increased internal consistency (Cronbach's alpha = 0.632). Jamovi version 2.7.12 was used for reliability analysis. Responses were automatically gathered in Google Forms and saved to Microsoft Excel before being integrated into Jamovi. Data were reviewed for completeness and consistency, and records with missing core KAP items were removed from the final analysis set. Statistical analyses were carried out using jamovi (version 2.7.12). Descriptive statistics were used to characterize participant characteristics and KAP variables, with continuous variables provided as mean and standard deviation (SD) and categorical data as frequencies and percentages. As previously indicated, Cronbach's alpha was used to examine the attitude scale's internal consistency. The associations between categorical factors (sex and occupation) and KAP outcome categories (poor, moderate, good) were investigated using chi square tests of independence, and Cramer's V was used to calculate effect size. To account for potential variable heterogeneity, differences in mean age across knowledge, attitude, and practice outcome categories were analyzed using Welch one-way analysis of variance (ANOVA). We used Spearman's rank correlation to investigate the link between age and total KAP scores. Partial Spearman correlation was utilized to investigate correlations between knowledge, attitude, and practice scores, with the alternative hypothesis predicting a positive relationship. A one-way Welch ANOVA was also used to compare attitude scores across practice result

categories, followed by Games-Howell post hoc tests for pairwise comparisons as needed. A p-value < 0.05 was considered statistically significant. Participation was voluntary, and all respondents provided electronic informed consent before accessing the questionnaire. No personally identifiable information was gathered, and data were evaluated in aggregate to protect anonymity.

RESULTS

A total of 121 respondents completed the survey on knowledge, attitude, and practice (KAP) regarding over-the-counter (OTC) analgesic use. Most participants were female (66.9%, n=81), followed by males (32.2%, n=39), with one respondent preferring not to disclose sex (0.8%). Students constituted the largest occupational group (62.8%, n=76), followed by those employed in non-healthcare sectors (16.5%, n=20) and healthcare professionals (10.7%, n=13), with smaller proportions of homemakers, retired individuals, and unemployed respondents. (Table 1) Regarding utilization frequency, the majority of participants reported using OTC painkillers less than once a month (80.2%, n=97), whereas 18.2% (n=22) used them 1–3 times per month and 1.7% (n=2) reported use 3–6 times per week. Paracetamol was the most commonly used OTC analgesic (68.6%, n=83), followed by ibuprofen (9.9%, n=12), diclofenac (9.1%, n=11), and naproxen (3.3%, n=4), while 9.1% (n=11) were unsure which OTC painkiller they used. (table 2)

KAP scores and outcomes

The mean knowledge score was 4.17 (SD 1.76; range 0–6), the mean attitude score was 8.97 (SD 2.08; range 3–15), and the mean practice score was 9.10 (SD 1.81; range 3–12) across the sample. Based on predefined cut-offs, 26.4% of respondents (n=32) had poor knowledge, 20.7% (n=25) had moderate knowledge, and 52.9% (n=64) demonstrated good knowledge regarding OTC analgesic use. For attitude, 40.5% (n=49) were classified as having poor attitude, 47.1% (n=57) moderate attitude, and 12.4% (n=15) good attitude. In terms of practice, 9.9% (n=12) showed poor practice, 43.0% (n=52) moderate practice, and 47.1% (n=57) good practice related to OTC analgesic use. (table 3)

Reliability of the attitude scale

The three-item attitude scale demonstrated an initial Cronbach's alpha of 0.452, indicating suboptimal internal consistency. Item-level analysis showed that item A3 had a low item–rest correlation (0.0831), and removal of A3 increased the overall Cronbach's alpha to 0.6318, with item–rest correlations of approximately 0.47 for the remaining items (A1 and A2), indicating an improvement in internal consistency after item reduction. (table 4)

Associations between sex and KAP outcomes

Chi-square tests revealed no statistically significant association between sex and knowledge outcome categories (χ^2=4.50, p=0.343), although good knowledge was more frequent than poor or moderate knowledge in both sexes. Similarly, there was no significant association between sex and attitude outcomes (χ^2=1.48, p=0.830) or between sex and practice outcomes (χ^2=3.20, p=0.525), suggesting that KAP levels did not differ meaningfully by sex in this sample. (table 5)

Associations between occupation and KAP outcomes

Occupation was not significantly associated with knowledge outcome categories (χ^2=8.46, p=0.584) or attitude outcome categories (χ^2=4.90, p=0.898). In contrast, a statistically significant association was observed between occupation and practice outcomes (χ^2=21.81, p=0.016), with the distribution of poor, moderate, and good practice varying across occupational groups such as healthcare workers, non-healthcare employees, students, homemakers, retired, and unemployed participants. (table 5)

Age and KAP outcomes

One-way Welch ANOVA indicated no significant differences in mean age across knowledge outcome categories (F=0.34, p=0.713); participants with poor, moderate, and good knowledge had mean ages of 26.7, 25.4, and 24.9 years, respectively. Likewise, no significant age differences were found across attitude outcome categories (F=0.77, p=0.469), with mean ages of 26.6, 24.9, and 23.7 years among those with poor, moderate, and good attitudes, respectively.

Practice outcomes also did not differ significantly by age (F=1.60, p=0.220), although the poor-practice group tended to be slightly older on average than the moderate- and good-practice groups. (table 5)

Consistent with the ANOVA findings, Spearman correlation analysis showed no significant correlations between age and total knowledge score (ρ=−0.028, p=0.762), age and total attitude score (ρ=−0.130, p=0.155), or age and total practice score (ρ=−0.057, p=0.531), indicating that KAP scores were largely independent of age in this sample. (table 5)

Correlations among KAP domains

Partial Spearman correlation analysis between K, A, and P totals revealed that knowledge was not significantly correlated with attitude (ρ=0.064, p=0.241) or with practice (ρ=0.086, p=0.173). In contrast, attitude showed a statistically significant positive correlation with practice (ρ=0.248, p=0.003), suggesting that more favourable attitudes towards OTC analgesic use were associated with better reported practices. (table 5) To further explore this association, a one-way Welch ANOVA was conducted with practice outcome (poor, moderate, good) as the grouping variable and total attitude score as the dependent variable, which demonstrated a significant effect (F=6.06, p=0.006). Participants classified as having good practice had the highest mean attitude score (mean 9.61, SD 2.16), compared with those with moderate practice (mean 8.29, SD 1.76) and poor practice (mean 8.83, SD 2.17), and Games–Howell post-hoc tests indicated a significant difference in attitude scores between the moderate- and good-practice groups (p=0.002). (table 5)

Table 1: Sociodemographic characteristics of respondents (n = 121)

Variable	Category	n (%)
Sex	Female	81 (66.9)
	Male	39 (32.2)
	Prefer not to say	1 (0.8)
Occupation	Employed (healthcare)	13 (10.7)
	Employed (non-healthcare)	20 (16.5)
	Homemaker	6 (5.0)
	Retired	3 (2.5)
	Student	76 (62.8)
	Unemployed	3 (2.5)

Table 2: Utilization patterns of over-the-counter (OTC) analgesics (n = 121)

Frequency of use	n (%)
Less than once a month	97 (80.2)
1–3 times per month	22 (18.2)
3–6 times per week	2 (1.7)

Table 2a: Frequency of OTC painkiller use

Analgesic used most often	n (%)
Paracetamol	83 (68.6)
Ibuprofen	12 (9.9)
Diclofenac	11 (9.1)
Naproxen	4 (3.3)
I do not know	11 (9.1)

Table 2b: OTC analgesic most often used

Domain	Outcome category	n (%)
Knowledge	Poor	32 (26.4)
	Moderate	25 (20.7)
	Good	64 (52.9)
Attitude	Poor	49 (40.5)
	Moderate	57 (47.1)
	Good	15 (12.4)
Practice	Poor	12 (9.9)
	Moderate	52 (43.0)
	Good	57 (47.1)

Table 3: Knowledge, attitude, and practice outcome categories (n = 121)

Scale version	Items included	Cronbach's α	Item–rest correlations
Original 3-item attitude scale	A1, A2, A3	0.452	A1: 0.407; A2: 0.373; A3: 0.083
After removal of item A3	A1, A2	0.632	A1: 0.465; A2: 0.465

Table 4: Internal consistency of the attitude scale

Predictor	Outcome	Test (model)	Statistic (df)	p-value
Sex	Knowledge	χ^2 test of independence	$\chi^2 = 4.50$ (df = 4)	0.343
Sex	Attitude	χ^2 test of independence	$\chi^2 = 1.48$ (df = 4)	0.830
Sex	Practice	χ^2 test of independence	$\chi^2 = 3.20$ (df = 4)	0.525
Occupation	Knowledge	χ^2 test of independence	$\chi^2 = 8.46$ (df = 10)	0.584
Occupation	Attitude	χ^2 test of independence	$\chi^2 = 4.90$ (df = 10)	0.898
Occupation	**Practice**	**χ^2 test of independence**	**$\chi^2 = 21.81$ (df = 10)**	**0.016**
Age (years)	Knowledge	Welch one-way ANOVA (by K cat.)	$F = 0.34$ ($df_1 = 2$, $df_2 = 49.8$)	0.713
Age (years)	Attitude	Welch one-way ANOVA (by A cat.)	$F = 0.77$ ($df_1 = 2$, $df_2 = 44.9$)	0.469
Age (years)	Practice	Welch one-way ANOVA (by P cat.)	$F = 1.60$ ($df_1 = 2$, $df_2 = 28.3$)	0.220
Age (years)	Knowledge	Spearman correlation	$\rho = -0.028$	0.762
Age (years)	Attitude	Spearman correlation	$\rho = -0.130$	0.155
Age (years)	Practice	Spearman correlation	$\rho = -0.057$	0.531
Knowledge total	Attitude total	Partial Spearman correlation	$\rho = 0.064$	0.241
Knowledge total	Practice total	Partial Spearman correlation	$\rho = 0.086$	0.173
Attitude total	Practice total	Partial Spearman correlation	$\rho = 0.248$	0.003
Practice category	Attitude total	Welch one-way ANOVA	$F = 6.06$ ($df_1 = 2$, $df_2 = 30.4$)	0.006

Table 5: Inferential tests (associations/ correlations)

DISSCUSSIONS

The current cross-sectional survey of 121 respondents gives an overview of knowledge, attitudes, and practices about OTC analgesic usage in a largely student community. Overall, more than half of participants had strong knowledge, but fewer had positive attitudes, and behaviors were only modest, with attitudes appearing as the primary driver of safer reported usage. Paracetamol was the most often used over-the-counter analgesic, and the majority of respondents reported infrequent usage (less than once per month), indicating that, while exposure is ubiquitous, regular or heavy use was unusual in this sample. According to studies conducted in a variety of settings, paracetamol is the preferred non-prescription painkiller, particularly for mild to

moderate pain and among medical or young adult groups. At the same time, worldwide literature consistently exposes gaps in public knowledge about optimal dose, paracetamol recognition in combination products, and the risk of hepatotoxicity, even when overall "awareness" levels appear to be adequate [18-21]. In this context, our findings that more than half of our respondents had "good" knowledge but only moderate practice are comparable with publications from [18,19] and other locations, where knowledge regarding paracetamol or OTC drugs does not always convert into sensible, guideline-concordant use. In our study, attitudes toward OTC analgesics were comparatively weaker than knowledge, with a large proportion of respondents classified as having poor or only moderate attitudes, and attitudes showed a clear positive association with practice, whereas knowledge did not. This pattern is consistent with KAP models and with other surveys of analgesic self-medication where permissive or careless attitudes (e.g., beliefs that paracetamol is completely harmless or that label instructions can be ignored) are more predictive of risky use than factual knowledge alone. The significant correlation between attitude and practice, and the higher attitude scores among those with good practice in this survey, reinforces the importance of targeting beliefs, risk perception, and perceived seriousness of adverse effects rather than focusing solely on factual information when designing educational interventions. The high dependence on paracetamol in our sample is especially significant given evidence that, while paracetamol is often considered as safe, it is a primary cause of preventable liver injury and a common source of unintended overdose worldwide. Studies among parents and the general population have found that a significant proportion of people exceed recommended daily doses, misinterpret weight-based dosing in children, or fail to identify that paracetamol is present in various products. Given that nearly one in ten respondents in our study reported using an analgesic without knowing which drug they were taking, and that attitudes were suboptimal, there is an obvious need for targeted counseling on reading labels, recognizing paracetamol-containing products, and adhering to maximum daily doses, even in populations with relatively good overall knowledge. There were no significant relationships found between sex or age and KAP outcomes, and only practice, not knowledge or attitude, differed significantly by employment, with occupational groups reporting different proportions of good practice. This is broadly consistent with previous research, which found that demographic factors such as gender and age are often poor predictors of paracetamol-related knowledge and behaviors, whereas contextual factors such as health-related training, exposure to health information, or professional role can influence how people use OTC analgesics. The prevalence of students in our sample may also account for the lack of substantial demographic gradients, as the group is generally uniform in age and education level. This study's findings have practical consequences for both pharmaceutical practice and public health. Pharmacists and other healthcare professionals are well-positioned to deliver brief, targeted advice at the point of sale, highlighting safe dose limits, indicators of toxicity, and the significance of avoiding duplicate paracetamol-containing medicines. Educational interventions that explicitly address attitudes, such as challenging the belief that over-the-counter analgesics are inherently harmless and reinforcing the potential consequences of misuse, may be more effective in improving practice than knowledge-only campaigns, particularly in young and student populations with moderate to high baseline awareness. This study has various limitations that must be addressed when evaluating the results. First, the cross-sectional design makes it difficult to demonstrate causal links between knowledge, attitudes, and actions about OTC analgesic usage. Second, because all data were self-reported, the findings are sensitive to recall and social desirability bias, particularly in terms of analgesic consumption habits, dosage, and frequency of usage. Third, the study sample was primarily made up of students from a single geographic region, which may limit the generalizability of the findings to the larger population, which includes older adults, people with chronic pain, and people from various socioeconomic or educational levels. Furthermore, while the questionnaire indicated adequate internal consistency after revision of the attitude scale, thorough psychometric validation was beyond the scope of the current study. Future studies with bigger and more diverse populations are required to further assess the instrument's reliability and validity, as well as to confirm the reported connections. Despite these

limitations, the study contributes to the growing literature on over-the-counter analgesic use by highlighting that attitudes and practices regarding paracetamol and other painkillers are not fully aligned with safe use, and that attitudinal factors are more tightly linked to behavior than knowledge.

CONCLUSION

A cross-sectional survey of 121 participants found that while more than half demonstrated good knowledge regarding OTC analgesic use, attitudes were less favorable and reported practices were only moderate. A significant proportion did not fully align with safe use recommendations. Although most respondents reported infrequent use, a non-trivial minority either used analgesics more frequently or were unsure which specific drug they consumed, highlighting the potential risk of inappropriate or unintentional exposure. Paracetamol emerged as the most commonly used OTC analgesic. Demographic factors such as gender and age were not significantly associated with KAP levels, and only practice not knowledge or attitude varies by occupation, implying that unsafe or suboptimal patterns of OTC analgesic use may be prevalent across demographic groups rather than limited to specific subpopulations. Attitudes positively correlated with practice, while knowledge did not. This suggests that beliefs, risk perception, and self-medication perspectives may have a greater impact on behavior than factual knowledge alone in this setting. The findings highlight the need for targeted educational strategies that address attitudes and behaviors related to self-medication with OTC analgesics. This includes safe paracetamol use, label reading, and recognizing potential harms. Future research should improve and validate KAP instruments for OTC analgesics, and assess the effectiveness of pharmacist-led and community-based interventions in altering attitudes and real-world usage patterns.

ACKNOWLEDGEMENT

The authors would like to express their sincere gratitude to all participants who voluntarily took part in this study and provides valuable responses.

REFERENCES

1. GBD 2021 Low Back Pain Collaborators. (2023). Global, regional, and national burden of low back pain, 1990–2020, its attributable risk factors, and projections to 2050: A systematic analysis of the Global Burden of Disease Study 2021. The Lancet Rheumatology, 5(6), e316–e329. https://doi.org/10.1016/S2665-9913(23)00098-X
2. Robbins, M. S., & Lipton, R. B. (2010). The epidemiology of primary headache disorders. Seminars in Neurology, 30(2), 107–119. https://doi.org/10.1055/s-0030-1249220
3. Breivik, H., Collett, B., Ventafridda, V., Cohen, R., & Gallacher, D. (2006). Survey of chronic pain in Europe: Prevalence, impact on daily life, and treatment. European Journal of Pain, 10(4), 287–333. https://doi.org/10.1016/j.ejpain.2005.06.009
4. World Health Organization. (2000). Guidelines for the regulatory assessment of medicinal products for use in self-medication. https://iris.who.int/items/468d79f6-9788-4296-9bc9-68014166373d
5. World Health Organization. (1998). The role of the pharmacist in self-care and self-medication. https://iris.who.int/items/6aa0ec86-90c2-45d1-9423-d5604b2c0635
6. Fosnocht, D., Taylor, J. R., & Caravati, E. M. (2008). Emergency department patient knowledge concerning acetaminophen (paracetamol) in over-the-counter and prescription analgesics. Emergency Medicine Journal, 25(4), 213–216. https://doi.org/10.1136/emj.2007.053850
7. Wood, D. M., English, E., Butt, S., Ovaska, H., Garnham, F., & Dargan, P. I. (2010). Patient knowledge of the paracetamol content of over-the-counter (OTC) analgesics, cough/cold remedies and prescription medications. Emergency Medicine Journal, 27(11), 829–833. https://doi.org/10.1136/emj.2009.085027
8. Kaufman, D. W., Kelly, J. P., Rosenberg, L., Anderson, T. E., & Mitchell, A. A. (2002). Recent patterns of medication use in the ambulatory adult population of the United States: The Slone Survey. JAMA, 287(3), 337–344. https://doi.org/10.1001/jama.287.3.337

9. Ungprasert, P., Cheungpasitporn, W., Crowson, C. S., & Matteson, E. L. (2015). Individual non-steroidal anti-inflammatory drugs and risk of acute kidney injury: A systematic review and meta-analysis of observational studies. European Journal of Internal Medicine, 26(4), 285–291. https://doi.org/10.1016/j.ejim.2015.03.008
10. Pazhayattil, G. S., & Shirali, A. C. (2014). Drug-induced impairment of renal function. International Journal of Nephrology and Renovascular Disease, 7, 457–468. https://doi.org/10.2147/IJNRD.S39747
11. Prakash, J., Singh, V. P., Kumar, S., Srivastva, P. K., & Tripathi, K. (2021). Retrospective pharmacovigilance analysis of nonsteroidal anti-inflammatory drugs-induced chronic kidney disease. Journal of Pharmacology & Pharmacotherapeutics, 12(2), 77–84. https://doi.org/10.1177/0976500X211013899
12. Traversa, G., Bianchi, C., Da Cas, R., Abraha, I., Menniti-Ippolito, F., & Vitali, E. (2003). Cohort study of hepatotoxicity associated with nimesulide and other non-steroidal anti-inflammatory drugs. BMJ, 327(7405), 18–22. https://doi.org/10.1136/bmj.327.7405.18
13. Schmeltzer, P. A., Kosinski, A. S., Kleiner, D. E., Hoofnagle, J. H., Stolz, A., Fontana, R. J., & Russo, M. W. (2016). Liver injury from nonsteroidal anti-inflammatory drugs in the United States. Liver International, 36(4), 603–609. https://doi.org/10.1111/liv.13032
14. Bennadi, D. (2014). Self-medication: A current challenge. Journal of Basic and Clinical Pharmacy, 5(1), 19–23. https://doi.org/10.4103/0976-0105.128253
15. Kawuma R, Chimukuche RS, Francis SC, Seeley J, Weiss HA. Knowledge, use (misuse) and perceptions of over-the-counter analgesics in sub-Saharan Africa: a scoping review. Global Health Action [Internet]. 2021 Jan 1;14(1):1955476. Available from: https://doi.org/10.1080/16549716.2021.1955476
16. Gupta S, Chakraborty A. Pattern and practice of self-medication among adults in an urban community of West Bengal. Journal of Family Medicine and Primary Care [Internet]. 2022 May 1;11(5):1858–62. Available from: https://doi.org/10.4103/jfmpc.jfmpc_1823_20
17. Jaam, M., Naseralallah, L. M., Hussain, T. A., & Pawluk, S. A. (2021). Pharmacist-led educational interventions provided to healthcare providers to reduce medication errors: A systematic review and meta-analysis. PLOS ONE, 16(6), e0253588. https://doi.org/10.1371/journal.pone.0253588
18. Abdel Shaheed, C., Ferreira, G.E., Dmitritchenko, A., McLachlan, A.J., Day, R.O., Saragiotto, B., Lin, C., Langendyk, V., Stanaway, F., Latimer, J., Kamper, S., McLachlan, H., Ahedi, H. and Maher, C.G. (2021), The efficacy and safety of paracetamol for pain relief: an overview of systematic reviews. Med J Aust, 214: 324-331. https://doi.org/10.5694/mja2.50992
19. Kumari, K., Toppo, M. S., & Priyanki. (2019). Self-medication practices of over the counter analgesic drugs among medical students in a tertiary care hospital in Jharkhand, India. International Journal of Basic & Clinical Pharmacology, 8(5), 903. https://doi.org/10.18203/2319-2003.ijbcp20191573
20. Marsh, S., Kumpula, E. K., Hetrick, S., & Fortune, S. (2025). Paracetamol-associated knowledge, attitudes and practices of the New Zealand public: an online survey. Journal of primary health care, 10.1071/HC25060. Advance online publication. https://doi.org/10.1071/HC25060
21. Nithisha, T., & Sharma, S. K. (2018). Extent and pattern of paracetamol usage for children and knowledge and attitude towards its usage among parents attending an outpatient clinic in Warangal district of Telangana. International Journal of Community Medicine and Public Health, 5(6), 2394. https://doi.org/10.18203/2394-6040.ijcmph20182165.

Cite: Padige Srivarsha*, Perne Venkata Adithya, Shirley Angelina Kothur, Anugu Sai Shanthi, Deekshith Duvvaka, Knowledge, Attitude, And Practice Regarding Over-The-Counter Analgesic Use Among the General Population: A Cross-Sectional Study, Int. J. Med. Pharm. Sci., 2026, 2 (6), 220-228. https://doi.org/10.5281/zenodo.20719706