J Compr Ped. 2026 May; 17(2): e170245 https://doi.org/10.5812/jcp-170245

Published Online: 2026 May 30 **Research Article**

# Assessment of Community Pharmacists' Performance in Managing Pediatric Fever and Pain: A Simulated Patient Study in Tehran

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**Received:** 9 February, 2026; **Revised:** 16 May, 2026; **Accepted:** 18 May, 2026

## Abstract

**Background:** Community pharmacists are often the first line of defense in managing pediatric fever and pain; however, their ability to conduct a thorough clinical assessment in busy retail environments is rarely evaluated.

**Objectives:** This study aimed to evaluate the real-world performance of pharmacists in Tehran and identify specific gaps in pediatric care.

**Methods:** This descriptive-analytical, cross-sectional study used a simulated patient (SP) approach. A trained researcher visited 333 randomly selected pharmacies across all 22 districts of Tehran, while portraying the parent of a 2-year-old child weighing 12 kg with fever and ear pain. The researcher assessed spontaneous history-taking, the safety of drug recommendations, dosing accuracy, and the quality of advice using a validated 100-point scoring system.

**Results:** Of the 295 evaluable pharmacists, most (51.2%) demonstrated moderate performance. A marked disparity was observed between technical skills and clinical communication. Although 97.3% recommended an appropriate first-line analgesic (ibuprofen or acetaminophen), the overall rate of appropriate management was 83.8% because 13.5% (40 pharmacists) inappropriately added diclofenac. In addition, 75.3% calculated the weight-based dose; however, initial clinical screening was often neglected. For example, pain intensity was assessed in only 20.6% of cases, and only 9.8% of pharmacists provided non-pharmacological advice. Urban community pharmacies significantly outperformed hospital-based pharmacies (P = 0.031), whereas age and gender had no significant effect on performance.

**Conclusions:** The findings indicate that although pharmacists in Tehran possess strong technical pharmaceutical knowledge, they have substantial deficiencies in clinical assessment and patient-centered counseling. The frequent omission of non-pharmacological advice and the inappropriate use of second-line agents such as diclofenac highlight an urgent need for targeted clinical training to improve pediatric medication safety.

*Keywords:* Pediatric Pain, Fever Management, Community Pharmacists, Medication Safety, Tehran

## 1. Background

Pain and fever are among the most prevalent symptoms of illness in children and cause substantial distress and anxiety for parents (1). When fever presents without an identifiable focus, the clinical challenge increases, and community pharmacists are often the first point of healthcare contact in such cases (2). Pain is recognized as a complex, multidimensional subjective experience that is difficult to diagnose and manage, particularly in pediatric populations (3). Statistics indicate that 30% to 40% of children complain of pain at least once a week (1). If left unmanaged, acute pain can lead to negative long-term sensory experiences, increased sensitivity to stimuli, and heightened anxiety about future painful encounters (4).

Within the healthcare system, pharmacists are among the most accessible members of the medical team, and pharmacies often serve as the first and most frequent point of contact for pain and fever control (5). In Iran, this role is particularly vital because community



**How to Cite:** Hosseini Siyanaki A, Sarahroodi S. Assessment of Community Pharmacists' Performance in Managing Pediatric Fever and Pain: A Simulated Patient Study in Tehran. J Compr Ped. 2026;17(2):e170245. doi: https://doi.org/10.5812/jcp-170245

pharmacies serve as the primary gatekeepers of the healthcare system (6). Owing to a cultural tendency to seek over-the-counter solutions before visiting a pediatrician, the pharmacist's role in clinical screening is a matter of public safety. If a pharmacist fails to identify red flags in a 2-year-old child, such as symptoms of acute otitis media or meningitis, delayed treatment and catastrophic health outcomes may occur (7). This study is essential for the Iranian system because it identifies a specific educational gap through which theoretical knowledge fails to translate into effective clinical triage. Although common medications such as acetaminophen and ibuprofen are effective tools for symptom reduction, they must be used correctly to avoid complications (8). Effective pain relief is an essential component of high-quality healthcare and requires pharmacists to be well versed in pain mechanisms, assessment, and management (9).

However, global studies have identified gaps in this area. Research in Ethiopia showed that pharmacists may lack sufficient knowledge and appropriate attitudes toward pediatric pain management (5). Similarly, studies in Nigeria (10) and Saudi Arabia (11) have highlighted the need for intensive professional education for healthcare providers to bridge knowledge gaps.

These concerns are echoed by research in other parts of Iran, suggesting a nationwide systemic issue. For instance, a previous simulated patient study in Mashhad, Isfahan, and Qom found that although pharmacists were technically knowledgeable, only a small fraction provided adequate patient counseling (12). Similarly, research in Tehran, Isfahan, Mashhad, and Shiraz on pediatric diarrhea and respiratory infections showed that pharmacists often prioritize medication dispensing over thorough history taking (13). These studies suggest that community pharmacies in Iran are currently underused clinical resources (14), thereby increasing the burden on already overcrowded hospital emergency departments.

In Iran, assessing pharmacists' knowledge and attitudes toward pediatric pain management is a relatively new and necessary field of study. Inadequate management can delay a child's recovery or lead to the development of chronic conditions (3). Major barriers to optimal care include insufficient knowledge, lack of assessment skills, and misconceptions among healthcare staff (15).

## 2. Objectives

This study was designed to evaluate the professional performance of pharmacists in Tehran in managing pediatric fever and pain using a simulated patient approach, thereby providing a realistic assessment of counseling provided in local pharmacies.

## 3. Methods

To evaluate the clinical performance of community pharmacists in a real-world setting, this descriptive-analytical study was conducted across the 22 municipal districts of Tehran. A stratified random sampling approach was used, and 333 pharmacies were selected from the official database of the Iranian Food and Drug Administration to ensure that the findings reflected the city's diverse geographical and socioeconomic landscape. Rather than using self-reported surveys, which are often prone to bias, the study used a simulated patient (SP) methodology. A single, highly trained researcher visited each pharmacy while portraying a parent seeking help for a 2-year-old child weighing 12 kg with moderate fever and ear pain.

To ensure authentic interactions and minimize the Hawthorne effect, whereby practitioners may improve their performance when aware of being evaluated, the SP followed a standardized script and disclosed specific details, such as the child's weight or symptom duration, only when directly requested by the pharmacist. Immediately after leaving the pharmacy, the researcher completed a standardized assessment form to minimize recall bias. To ensure consistency across all 333 pharmacy visits, the same standardized script was used. The clinical parameters and fixed responses provided by the SP to the pharmacists' inquiries are presented in Table 1.

Each interaction was documented using an assessment form that had been prevalidated by a panel of pediatric pharmacology experts. Four main areas of practice were evaluated: The thoroughness of the pharmacist's history-taking, the appropriateness of the medication recommended, the accuracy of the dose calculated for the child's weight, and the quality of safety advice and education provided to the parent.

To standardize the evaluation, a weighted 100-point scoring algorithm was implemented. The weighting reflected clinical priorities as follows: history-taking, 30 points, covering age/weight, fever duration, and symptom localization; medication appropriateness, 30 points, with first-line agents receiving full marks and irrational choices such as diclofenac or aspirin receiving zero; dosing accuracy, 20 points, based on the 12-kg weight; and counseling/referral, 20 points, for which medical referral for ear pain was mandatory for a satisfactory score. Final scores were calculated as percentages and categorized into 5 levels: excellent (>

**Table 1.** Standardized Simulated Patient Scenario and Scripted Responses

| Pharmacist Question | Fixed Response from Simulated Patient |
|---|---|
| **Child's age?** | 2 years old |
| **Child's weight?** | 12 kg |
| **Initial complaint** | "My son has a fever and seems to be in pain." |
| **How high is the fever?** | Moderate, measured at 38.5°C |
| **How long has it lasted?** | About 6 hours |
| **Any other symptoms?** | He is tugging at his ear and seems to have ear pain. |
| **Any allergies/medications?** | No known allergies; no other medications. |
| **Any red flags?** | No vomiting, no rash, and no stiff neck. He is alert. |
| **Standardized outcome** | Medical referral required (suspicion of acute otitis media). |

90%), good (75% - 89%), moderate (50% - 74%), weak (25% - 49%), and very weak (< 25%).

All data were processed using SPSS version 26.0. Chi-square and Fisher exact tests were used for bivariate comparisons. To quantify the strength of associations, crude odds ratios (ORs) with 95% confidence intervals (CIs) were calculated for the binary outcome of high performance (good/excellent) versus suboptimal performance (moderate/weak/very weak). Because individual-level raw data were not retained, multivariable logistic regression could not be performed; therefore, all reported ORs are unadjusted.

In this study, non-pharmacological advice was defined as supportive care instructions intended to manage fever and improve patient comfort without medication. To receive credit for this category, pharmacists were required to recommend at least 2 of the following evidence-based strategies: 1) fluid replacement/hydration, instructing the parent to increase the child's intake of water or oral rehydration solutions to prevent dehydration; 2) environmental cooling, advising the use of light, breathable clothing to facilitate heat loss; or 3) physical cooling, explaining the proper technique for tepid sponging using lukewarm water while explicitly cautioning against the use of ice-cold water or alcohol rubs.

The study protocol received formal approval from the Research Ethics Committees of Islamic Azad Tehran Medical Sciences University, Pharmacy and Pharmaceutical Branches Faculty (ethical code: IR.IAU.PS.REC.1403.539). Strict measures were implemented to ensure that all data remained anonymous and that the privacy of participating pharmacies was protected.

## 4. Results

This study evaluated pharmacists' knowledge and practices in Tehran regarding the management of fever and pain in children. A total of 333 pharmacies were selected from the 22 districts of Tehran using Cochran's formula. Of these, 301 (90.4%) were urban pharmacies and 32 (9.6%) were hospital pharmacies. During the simulated patient visit, a pharmacist was present in 296 pharmacies (88.9%), whereas in 37 cases (11.1%), the pharmacist was absent. One of the 296 interactions had incomplete data and was excluded from the final scoring, leaving 295 evaluable pharmacists. Demographic analysis of the active pharmacists showed that 153 (51.7%) were female and 143 (48.3%) were male. Regarding age distribution, the workforce was predominantly young: 180 pharmacists (60.8%) were younger than 30 years, whereas 116 (39.2%) were older than 30 years (Table 2).

In terms of history-taking and clinical assessment, performance varied substantially across indicators. Pharmacists frequently asked about the child's demographics: 243 (82.1%) inquired about age, and 223 (75.3%) inquired about weight. However, inquiries regarding the specific nature of the condition were less frequent. For fever management, 210 pharmacists (70.9%) asked about the duration of fever, but only 114 (38.5%) asked about its intensity. Pain assessment was notably poor; only 92 pharmacists (31.1%) asked about pain duration, and only 61 (20.6%) inquired about pain intensity. Furthermore, only 49 pharmacists (16.6%) assessed signs of restlessness in the child (Table 3).

Regarding management and counseling practices, the vast majority of pharmacists (288, 97.3%) recommended appropriate first-line analgesics, such as ibuprofen or acetaminophen, and 223 (75.3%) correctly calculated the dosage based on the child's weight. Education on proper medication administration was provided by 218 pharmacists (73.6%). However, proactive safety counseling was limited; only 83 pharmacists (28.0%) explicitly warned against the use of inappropriate medications, and only 29 (9.8%) offered

**Table 2.** Demographic Distribution of the Participating Pharmacists by Gender and Age Group

| Variables | Frequency (N) | Percentage (%) |
|---|---|---|
| **Pharmacy type** [a] | | |
| Urban | 301 | 90.4 |
| Hospital | 32 | 9.6 |
| **Shift time** [a] | | |
| Morning (09:00 - 13:00) | 90 | 27.0 |
| Afternoon (13:00 - 17:00) | 102 | 30.6 |
| Evening (17:00 - 21:00) | 86 | 25.8 |
| Night (21:00 - 09:00) | 55 | 16.5 |
| **Pharmacist gender** [b] | | |
| Female | 153 | 51.7 |
| Male | 143 | 48.3% |
| **Pharmacist age (y)** [b] | | |
| Younger (< 30) | 180 | 60.8 |
| Older (> 30) | 116 | 39.2 |
| **Total pharmacies visited** | 333 | 100 |

[a] Percentages were calculated based on all pharmacies visited (N = 333).

[b] Percentages were calculated based on the number of present pharmacists (N = 296). In 37 cases, no pharmacist was present.

**Table 3.** Frequency of History-Taking Questions Asked by Pharmacists Regarding Fever and Pain [a]

| History-Taking Question | Asked | Not Asked |
|---|---|---|
| **Child's age** | 243 (82.1) | 53 (17.9) |
| **Child's weight** | 223 (75.3) | 73 (24.7) |
| **Duration of fever** | 210 (70.9) | 86 (29.1) |
| **Intensity of fever** | 114 (38.5) | 182 (61.5) |
| **Duration of pain** | 92 (31.1) | 204 (68.9) |
| **Intensity of pain** | 61 (20.6) | 235 (79.4) |
| **Child's restlessness** | 49 (16.6) | 247 (83.4) |

[a] Values are expressed as No. (%).

non-pharmacological management strategies. Notably, 40 pharmacists (13.5%) inappropriately recommended diclofenac suppositories for the child, whereas 42 (14.2%) advised referral to a physician (Table 4).

Overall pharmacist performance was categorized based on the cumulative score for assessment and management choices. The results showed that the largest proportion of pharmacists, 151 individuals (51.2%), demonstrated moderate performance. Only 24 (8.1%) achieved an excellent rating, and 33 (11.2%) were rated as good, whereas a substantial proportion fell into the lower categories, with 47 (15.9%) rated as weak and 40 (13.6%) as very weak (Table 5).

Inferential statistical analysis revealed significant relationships between performance and specific variables. A significant association was found between pharmacy type and pharmacist performance (P = 0.031), with urban pharmacies generally performing better than hospital pharmacies (Table 6).

To further quantify these associations, crude ORs were calculated. In unadjusted analyses (Table 7), the association between pharmacy type and high performance was not statistically significant (crude OR = 1.56; 95% CI, 0.52 - 4.66; P = 0.421). Female gender showed a borderline, non-significant positive association (crude OR = 1.98; 95% CI, 0.96 - 4.09; P = 0.061), whereas age was not associated with performance (P = 0.961). Because these analyses are unadjusted and bivariate, they should be viewed as exploratory and do not identify independent predictors of performance.

**Table 4.** Pharmacists' Practices Regarding Medication Recommendation, Education, and Safety Counseling [a]

| Management/Counseling Action | Performed | Not Performed |
|---|---|---|
| Recommended ibuprofen/acetaminophen | 288 (97.3) | 8 (2.7) |
| Calculated dosage based on weight | 223 (75.3) | 73 (24.7) |
| Educated on correct administration | 218 (73.6) | 78 (26.4) |
| Warned against inappropriate medications | 83 (28.0) | 213 (72.0) |
| Referred patient to physician | 42 (14.2) | 254 (85.8) |
| Recommended diclofenac (inappropriate) | 40 (13.5) | 256 (86.5) |
| Provided non-pharmacological advice | 29 (9.8) | 267 (90.2) |

[a] Values are expressed as No. (%).

**Table 5.** Distribution of Overall Pharmacist Performance Levels

| Performance Level | Frequency (N) | Percentage (%) |
|---|---|---|
| Excellent | 24 | 8.1 |
| Good | 33 | 11.2 |
| Moderate | 151 | 51.2 |
| Weak | 47 | 15.9 |
| Very weak | 40 | 13.6 |
| Total | 295 [a] | 100 |

[a] One valid response was excluded from the final scoring because of incomplete data, resulting in 295 evaluated pharmacists.

## 5. Discussion

Community pharmacists are often the first point of contact for managing pediatric conditions, shifting their role from mere dispensers to key providers of public health services (5). This study aimed to evaluate pharmacists' knowledge and practice in Tehran regarding the management of fever and pain in children. The results indicated that most pharmacists (51.2%) demonstrated a moderate level of performance, with a substantial proportion in the weak or very weak categories and only 19.3% achieving good or excellent ratings. These findings of suboptimal performance align with several international studies, suggesting that pediatric pain management remains a neglected area globally. For instance, a study by Ogunyinka et al. (2021) in Nigeria found that a significant proportion of pharmacists answered fewer than 50% of pediatric pain management questions correctly, indicating an alarming knowledge gap (10). Similarly, studies conducted in Ethiopia by Yabeyu et al. (5) and in Canada by Patel et al. (2016) (16) also highlighted insufficient knowledge regarding pediatric pain among community pharmacists.

To provide a balanced perspective, it is essential to distinguish between knowledge-based studies and behavioral evaluations. Previous survey-based research often reports that pharmacists have high knowledge and positive attitudes toward counseling. However, this study, which used an SP methodology, revealed a knowledge-to-action gap. Although participants demonstrated the technical ability to calculate doses (75.3%), their behavioral performance in spontaneous history-taking and counseling was substantially lower. This suggests that, although a theoretical foundation exists, it does not always translate into clinical practice in a high-pressure retail environment.

A critical aspect of the pharmacist's role is ensuring medication safety. In the present study, the net appropriate management rate, defined as the rate of recommending a first-line analgesic without also recommending diclofenac, was 83.8%, and only 28.0% of pharmacists provided specific safety warnings against inappropriate medication use. This is consistent with the findings of Alorfi et al. (2022) in Saudi Arabia, where 39.1% of pharmacists failed to communicate appropriate risk factors associated with nonsteroidal anti-inflammatory drugs (11). However, a positive finding in this study was that only 13.5% of pharmacists inappropriately recommended diclofenac suppositories for the child. This suggests better adherence to safety guidelines for specific contraindications than for

**Table 6.** Comparison of Pharmacist Performance Levels Between Urban and Hospital Pharmacies [a]

| Variables | Excellent | Good | Moderate | Weak | Very Weak | P-Value |
|---|---|---|---|---|---|---|
| **Pharmacy type** | | | | | | 0.031 [b] |
| Urban (n = 266) | 23 (8.6) | 30 (11.3) | 135 (50.8) | 38 (14.3) | 40 (15.0) | |
| Hospital (n = 29) | 1 (3.4) | 3 (10.3) | 16 (55.2) | 9 (31.0) | 0 (0.0) | |
| **Gender** | | | | | | 0.060 |
| Female (n = 152) | 16 (10.5) | 21 (13.8) | 73 (48.0) | 25 (16.4) | 17 (11.2) | |
| Male (n = 143) | 8 (5.6) | 12 (8.4) | 78 (54.5) | 22 (15.4) | 23 (16.1) | |
| **Age (y)** | | | | | | 0.961 |
| < 30 (n = 180) | 14 (7.8) | 19 (10.6) | 92 (51.1) | 30 (16.7) | 25 (13.9) | |
| > 30 (n = 115) | 10 (8.7) | 14 (12.2) | 59 (51.3) | 17 (14.8) | 15 (13.0) | |

[a] Values are expressed as No. (%).

[b] P < 0.05 was considered statistically significant.

**Table 7.** Unadjusted Associations Between Pharmacy/Pharmacist Characteristics and High Performance (Good/Excellent vs. Suboptimal) [a]

| Variables | High Performance (n) | Suboptimal Performance (n) | Crude OR (95% CI) | P-Value [b] |
|---|---|---|---|---|
| **Pharmacy type** | | | | 0.421 |
| Urban | 53 | 213 | 1.56 (0.52 - 4.66) | |
| Hospital (ref.) | 4 | 25 | 1.00 | |
| **Gender** | | | | 0.061 |
| Female | 37 | 115 | 1.98 (0.96 - 4.09) | |
| Male (ref.) | 20 | 123 | 1.00 | |
| **Age group (y)** | | | | 0.961 |
| < 30 | 33 | 147 | 0.85 (0.47 - 1.53) | |
| ≥ 30 (ref.) | 24 | 91 | 1.00 | |

[a] High performance: Good/Excellent; suboptimal performance: Moderate/Weak/Very Weak. Abbreviations: CI, confidence interval; OR, odds ratio; ref., reference category.

[b] P values are from Fisher exact test (pharmacy type) or chi-square test (gender and age).

general safety counseling, which is particularly important given that general knowledge of nonsteroidal anti-inflammatory drug safety is often low.

One of the most encouraging findings of this study was the high proficiency in dosing. Approximately 75.3% of pharmacists in Tehran correctly calculated the dose based on the child's weight. This finding contrasts with several other studies. For example, Keewan et al. (2021) in Jordan found that most community pharmacists lacked sufficient knowledge regarding appropriate pediatric antibiotic dosing (17). Similarly, Brown et al. (2019) reported that community pharmacists frequently failed to identify proper doses (18). The superior performance of pharmacists in Tehran in this domain may be attributed to the strong emphasis on dosage calculation in the local pharmacy curriculum. Conversely, the study revealed a substantial gap in non-pharmacological care, with only 9.8% of pharmacists providing non-drug advice. This rate is much lower than that reported in a study by Jairoun et al. (2022) in the United Arab Emirates, in which most pharmacists demonstrated adequate knowledge of non-pharmacological pain management (19). Structured psychoeducational interventions for caregivers have been shown to improve non-pharmacological pain management practices in children, highlighting a potential strategy that could be adapted for community pharmacist-led counseling (20).

Regarding demographic factors, this study found no significant association between pharmacist gender and performance (P = 0.060). This contrasts with a study by Zahreddine et al. (2018) in Lebanon, which found that female pharmacists had better knowledge regarding pediatric antibiotic use (21). No significant correlation was found between pharmacist age and performance (P = 0.961). This finding diverges from the literature in Saudi Arabia (11), which suggests that recent graduates have better knowledge, as well as studies in Canada (16)

and the United Arab Emirates (19), which reported that pharmacists with more experience perform better. However, a statistically significant difference was observed by setting, with urban pharmacies outperforming hospital pharmacies (P = 0.031). The superior performance of urban community pharmacies over hospital-based pharmacies was unexpected. This may be explained by the fact that, in Tehran, urban community pharmacists are often the first point of contact for minor pediatric ailments such as fever, leading to more frequent outpatient counseling. Conversely, hospital pharmacists may be more focused on inpatient medication systems and administrative tasks. However, given the smaller sample of hospital pharmacies, these results should be viewed as a preliminary trend that requires further study with a more balanced cohort. The corresponding crude OR of 1.56 (95% CI, 0.52 - 4.66) further illustrates this uncertainty, as the wide confidence interval reflects the small number of hospital pharmacies and precludes a definitive conclusion.

A major deficiency identified in this study was the lack of comprehensive history-taking. Although demographic questions regarding age and weight were common, clinical questions were rare; for instance, only 20.6% of pharmacists asked about pain intensity. This mirrors the findings of Alomar et al. (2011), in which the vast majority of pharmacists dispensed medications without adequate screening (22). However, the integration of clinical pharmacists into pediatric care has been shown to significantly reduce prescribing errors and improve treatment outcomes, as demonstrated by a comprehensive meta-analysis of 19 studies showing a 73% decrease in prescription mistakes (23) and recent randomized controlled trials confirming that pharmacist-led interventions significantly lower the proportion of drug-related problems in pediatric outpatients (24).

### 5.1. Conclusions and Recommendations

The findings indicate that pharmacists in Tehran are strong in the technical aspects of pediatric fever and pain management; most selected the correct drug (97.3%) and calculated the dosage accurately (75.3%). However, clinical assessment and patient-centered counseling were often incomplete. Most participants (51.2%) had moderate performance because they rarely asked about pain intensity (20.6%) or provided non-pharmacological advice (9.8%). The finding that 13.5% still recommended diclofenac indicates that safety counseling requires greater attention.

Training should therefore focus on communication with patients and caregivers, not only on memorizing doses. Because urban pharmacies outperformed hospital pharmacies, further studies are needed to determine whether the busy retail environment improves or impairs clinical skills. The health system should also consider using simulated patients more frequently to help pharmacies maintain high standards.

### 5.2. Study Limitations

This study had several limitations. The sample was imbalanced, with 266 urban pharmacies and 29 hospital pharmacies, and years of experience could not be tracked. In addition, although an SP is a useful assessment tool, it captures only one specific moment in a pharmacist's busy day. Finally, because individual-level raw data were not retained after the original study, multivariable logistic regression could not be conducted; therefore, the ORs presented are unadjusted and should be interpreted conservatively.

## Footnotes

**AI Use Disclosure:** The authors declare that no generative AI tools were used in the creation of this article.

**Authors' Contribution:** S.S. contributed to the study concept and design, analysis and interpretation of data, critical revision of the manuscript for important intellectual content, statistical analysis, administrative, technical, and material support, and study supervision. A.H.S. contributed to the acquisition of data and drafted the manuscript.

**Conflict of Interests Statement:** The authors declare no conflict of interest.

**Data Availability:** The dataset presented in the study is available on request from the corresponding author during submission or after publication. The data are not publicly available due to privacy concerns.

**Ethical Approval:** This study is approved under the ethical approval code of IR.IAU.PS.REC.1403.539.

**Funding/Support:** The study was not supported by any grant. All was by Dr. Arash Hosseini Sianaki's personal fund, as it is his PharmD Thesis in Islamic Azad University.

**Informed Consent:** Informed consent was obtained fromm all participants.

## References


1. Raffaeli G, Orenti A, Gambino M, Peves Rios W, Bosis S, Bianchini S, et al. Fever and Pain Management in Childhood: Healthcare Providers' and Parents' Adherence to Current Recommendations. *International Journal of Environmental Research and Public Health*. 2016;**13**(5):499. [PubMed ID: 27187436]. [PubMed Central ID: PMC4881124]. https://doi.org/10.3390/ijerph13050499.
2. Sadeghi E. Fever Without Focus (FWF) in Children: A Cross-Sectional Study. *J Compr Ped*. 2026;**17**(1). e165818. https://doi.org/10.5812/jcp-165818.
3. Zempsky W, Bell J, Mossali VM, Kachroo P, Siddiqui K. Common Selfcare Indications of Pain Medications in Children. *Paediatr Drugs*. 2023;**25**(3):321-41. [PubMed ID: 36928608]. [PubMed Central ID: PMC10019440]. https://doi.org/10.1007/s40272-023-00562-1.
4. Gai N, Naser B, Hanley J, Peliowski A, Hayes J, Aoyama K. A practical guide to acute pain management in children. *J Anesth*. 2020;**34**(3):421-33. [PubMed ID: 32236681]. [PubMed Central ID: PMC7256029]. https://doi.org/10.1007/s00540-020-02767-x.
5. Yabeyu AB, Haile KT, Molore S. Community Pharmacy Professional's Knowledge, Attitude, and Practice with Regard to Pediatric Pain Management. *Integr Pharm Res Pract*. 2023;**12**:1-9. [PubMed ID: 36688092]. [PubMed Central ID: PMC9850829]. https://doi.org/10.2147/IPRP.S391415.
6. Nasirian N, Ghasemzadeh P, Asgharian R, Koulaeinejad N, Sharif NV. Patient Knowledge, Attitudes, and Expectations Regarding Over-the-Counter Medications: A Survey-Based Study in Tehran Community Pharmacies. *J Pharm Care*. 2025;**13**(2):110-20. https://doi.org/10.18502/jpc.v13i2.19309.
7. Chamkhaleh MA, Noorbakhsh S, Vafaee-Shahi M, Riahi A, Hajinasab N, Gandomi-Mohammadabadi A, et al. The Epidemiology and Outcomes of Meningitis among Iranian Children in a Period of 10 Years. *The Open Neurology Journal*. 2021;**15**(1):37-42. https://doi.org/10.2174/1874205X02115010037.
8. Barbi E, Marzuillo P, Neri E, Naviglio S, Krauss B. Fever in Children: Pearls and Pitfalls. *Children (Basel)*. 2017;**4**(9):81. [PubMed ID: 28862659]. [PubMed Central ID: PMC5615271]. https://doi.org/10.3390/children4090081.
9. Tabeefar H, Chang F, Cooke M, Patel T. Community pharmacists and chronic pain: A qualitative study of experience, perception, and challenges. *Can J Pain*. 2020;**4**(3):29-39. [PubMed ID: 33987509]. [PubMed Central ID: PMC7942791]. https://doi.org/10.1080/24740527.2020.1749516.
10. Ogunyinka I, Yusuff K, Erah PO, Oshikoya K, Faponle F, Ungo-kore H, et al. Community Pharmacists' Knowledge and Attitudes Towards Pediatric Pain Management in Nigeria. *Risk Manag Healthc Policy*. 2021;**14**:4595-607. [PubMed ID: 34795543]. [PubMed Central ID: PMC8593593]. https://doi.org/10.2147/RMHP.S329387.
11. Alorfi NM, Ashour AM, Algarni AS, Alsolami FA, Alansari AM, Tobaiqy M. Assessment of the Community Pharmacists' Knowledge and Attitudes Toward Pain and Pain Management in Saudi Arabia. *Int J Gen Med*. 2022;**15**:8527-37. [PubMed ID: 36514744]. [PubMed Central ID: PMC9741852]. https://doi.org/10.2147/IJGM.S387066.
12. Banitaba Joshaghani F, Sarahroodi S. Pharmacists' counseling and benzodiazepines dispensing for sleep disorders in Iran. *J Res Pharm Pract*. 2024;**13**(1):1-6. [PubMed ID: 39483992]. [PubMed Central ID: PMC11524569]. https://doi.org/10.4103/jrpp.jrpp_24_24.
13. Vaseghi G, Eshraghi A, Eslami N, Masjedi M, Mehrpooya M, Eshraghi N. Management of Acute Diarrhea: A Study on Community Pharmacists Attitudes in Iran. *Reviews on Recent Clinical Trials*. 2015;**10**(2):155-60. [PubMed ID: 25880126]. https://doi.org/10.2174/1574887110666150416104745.
14. Mehralian G, Rangchian M, Javadi A, Peiravian F. Investigation on barriers to pharmaceutical care in community pharmacies: a structural equation model. *Int J Clin Pharm*. 2014;**36**(5):1087-94. [PubMed ID: 25168648]. https://doi.org/10.1007/s11096-014-9998-6.
15. Rababa M, Al-Sabbah S, Hayajneh AA. Nurses' Perceived Barriers to and Facilitators of Pain Assessment and Management in Critical Care Patients: A Systematic Review. *J Pain Res*. 2021;**14**:3475-91. [PubMed ID: 34764688]. [PubMed Central ID: PMC8577531]. https://doi.org/10.2147/JPR.S332423.
16. Patel T, Chang F, Mohammed HT, Raman-Wilms L, Jurcic J, Khan A, et al. Knowledge, Perceptions and Attitudes toward Chronic Pain and Its Management: A Cross-Sectional Survey of Frontline Pharmacists in Ontario, Canada. *PLoS One*. 2016;**11**(6). e0157151. [PubMed ID: 27270723]. [PubMed Central ID: PMC4896448]. https://doi.org/10.1371/journal.pone.0157151.
17. Keewan N, Al-Sawalha NA, Almomani BA. The knowledge of community pharmacists about appropriate dosing of antibiotics among paediatrics: A national study from Jordan. *Int J Clin Pract*. 2021;**75**(11). e14652. [PubMed ID: 34310826]. https://doi.org/10.1111/ijcp.14652.
18. Brown SW, Oliveri LM, Ohler KH, Briars L. Identification of Errors in Pediatric Prescriptions and Interventions to Prevent Errors: A Survey of Community Pharmacists. *J Pediatr Pharmacol Ther*. 2019;**24**(4):304-11. [PubMed ID: 31337993]. [PubMed Central ID: PMC6633280]. https://doi.org/10.5863/1551-6776-24.4.304.
19. Jairoun AA, Saleh Al-Hemyari S, Shahwan M, Jairoun M, Kurdi A, Godman B. Assessing knowledge, attitude and practice of community pharmacists on the pain management and implications in UAE children. *Pharm Pract (Granada)*. 2022;**20**(2):2664-10. [PubMed ID: 35919797]. [PubMed Central ID: PMC9296097]. https://doi.org/10.18549/PharmPract.2022.2.2664.
20. Alibakhshi H, Davoudi Z, Damirchi N, Kavian M, Siminghalam M. The Impact of Group Psychoeducation for Mothers of Children with Cerebral Palsy: A Randomized Controlled Trial. *Middle East J Rehabil Health Stud*. 2025;**12**(2). e146484. https://doi.org/10.5812/mejrh-146484.
21. Zahreddine L, Hallit S, Shakaroun S, Al-Hajje A, Awada S, Lahoud N. Knowledge of pharmacists and parents towards antibiotic use in pediatrics: a cross-sectional study in Lebanon. *Pharm Pract (Granada)*. 2018;**16**(3):1194. [PubMed ID: 30416621]. [PubMed Central ID: PMC6207355]. https://doi.org/10.18549/PharmPract.2018.03.1194.
22. Alomar MJ, Qandil S, Al-Hilwani HMA, Malkat DM, Caroline C. Evaluation of the community pharmacist's behavior towards a prescription of antidiabetic and antiasthma drugs. *Pharm Pract (Granada)*. 2011;**9**(1):37-43. [PubMed ID: 25132888]. [PubMed Central ID: PMC4132971]. https://doi.org/10.4321/S1886-36552011000100006.
23. Naseralallah LM, Hussain TA, Jaam M, Pawluk SA. Impact of pharmacist interventions on medication errors in hospitalized pediatric patients: a systematic review and meta-analysis. *Int J Clin Pharm*. 2020;**42**(4):979-94. [PubMed ID: 32328958]. https://doi.org/10.1007/s11096-020-01034-z.
24. Nguyen PM, Nguyen KT, Pham ST, Thanh Le VT, Thi Le TC, Diep HG, et al. Pharmacist-Led Interventions to Reduce Drug-Related Problems in Prescribing for Pediatric Outpatients in a Developing Country: A Randomized Controlled Trial. *J Pediatr Pharmacol Ther*. 2023;**28**(3):212-21. [PubMed ID: 37303771]. [PubMed Central ID: PMC10249979]. https://doi.org/10.5863/1551-6776-28.3.212.