



# Community Pharmacy Professional's Knowledge, Attitude, and Practice with Regard to Pediatric Pain Management

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**Background:** Effective pain relief is an essential component of high-quality healthcare delivery, and pharmacists must be well versed in pain mechanisms, assessment, and management. This study examined community pharmacy professional's (CPPs) knowledge and attitude towards pediatric pain management in Community pharmacies (CPs) and Drug Retail Outlets (DRO) of Ambo and Ginchi towns, west central Ethiopia.

**Methods:** A cross sectional study was conducted in Ambo and Ginchi towns, the western part of the nation's capital. All voluntary CPPs working by CPs and DRs in the towns of Ambo and Ginchi were included in the current study. SPSS version 25 was then used to process, analyze, and interpret the data.

**Results:** Among the 131 CPPs who were approached for the study, 104 agreed to participate and returned the questionnaire. CPPs mean knowledge score on pediatric pain management was  $6.69 \pm 1.92$ , with a minimum score of 2 and a maximum score of 17. The majority of CPPs 82 (87.2%) in the study did not correctly answer half of the questions. Most of CPPs, 98 (94.3%), admitted they had no training in pain management, and 102 (98.2%) of the respondents said the same about pediatric pain management. The finding indicated that CPPs work experience in CP or DROs had impact on their knowledge about pediatric pain management and similarly, the mean knowledge score of pharmacists was higher than that of pharmacy technicians.

**Conclusion:** This study revealed that CPPs have inadequate knowledge and attitude to provide effective pediatric pain management service. To bridge the knowledge gap and effectively control pediatric pain, pharmacists who are actively practicing their profession are advised to continue their medical education and training.

**Keywords:** community pharmacy professionals, pain, pediatrics

## Introduction

Pain is widely acknowledged as a complex multidimensional subjective experience that can be difficult to recognize, assess, or manage, especially in children and young adults.<sup>1</sup> It is defined as "an unpleasant sensory and emotional experience associated with, or resembling, actual or potential tissue damage."<sup>2</sup> It affects infants and children more than adults, and they can encounter it associated with illness, casual activities, trauma, and minor injuries (cuts, bumps, and burns). As a result, they frequently present to healthcare settings, with the global prevalence of chronic pain estimated to be 20–35%.<sup>3</sup>

Pain management in children requires a multimodal approach as their pain appears to have both physical and psychological component. In addition, children, particularly those of a younger age, may be unable to express their pain verbally. As a result, it requires a cautious approach in which the child, their parents, and healthcare professionals all play an important role in successfully managing their pain experience.<sup>4,5</sup> Both pharmacological and non-pharmacological interventions could help in the management of pain. It can be managed with a wide range of medications such as acetaminophen, non-steroidal anti-inflammatory drugs (NSAIDs), and opioids.<sup>6,7</sup>

Given that, pharmacy professionals are medication experts and amongst the most accessible healthcare professionals,<sup>8</sup> those that practice in the community are the most frequently visited places to seek pain management services.<sup>9,10</sup> They play an important role in pediatric pain management by dispensing Over the Counter analgesics, offering advice, suggestions, and medication reviews.<sup>10–12</sup> Effective pain relief is an essential component of high-quality healthcare delivery, and pharmacists must be well versed in pain mechanisms, assessment, and management.<sup>13</sup> However, there can be gaps in their knowledge which may adversely impact on patient outcome.<sup>14</sup> Various studies show that children's pain is widely underdiagnosed and undertreated, increasing the likelihood and severity of complications and causing suffering.<sup>15–17</sup> Consequently, negatively affecting the patient's quality of life and causing stress and anxiety in both the patient and the caregiver.<sup>18</sup>

Many studies conducted around the world revealed a lack of knowledge and a negative attitude toward pediatric pain management among healthcare professionals. The majority of the studies are carried out in hospital settings, with a focus on nurses, physicians, and medical students.<sup>5,9,10,12,19</sup> To date, few studies involved community pharmacists, and none have been conducted in Ethiopia. Community pharmacies are often the first places where advice on management of pediatric pain is sought. As a result, evaluating the knowledge of pharmacy professional is essential and may lead to the identification of gaps that require intervention for improvement. Therefore, this study examined community pharmacy professional's (CPPs) knowledge and attitude towards pediatric pain management in CPs and Drug Retail Outlets (DRO) of Ambo and Ginchi towns, West central Ethiopia.

## Methods

### Study Setting, Area and Period

A cross sectional study was conducted in Ambo and Ginchi towns, the western part of the nation's capital. They are located 119 KM and 88 KM away from Addis Ababa, respectively. In Ambo town, there are thirty DOSs and ten CPs available, but only seven DOSs are available in Ginchi town (Oromia Regional Health Bureau, 2022). The study was carried out from March to April 2022.

### Source and Study Population

All CPPs currently working in Ambo and Ginchi town DOSs and CPs were considered target populations. The study population consisted of pharmacy practitioners who were available during data collection and willing to participate in the study.

### Eligibility Criteria

All voluntary CPPs working under CPs and DROs in the towns of Ambo and Ginchi were included in the current study. However, professionals with less than a year of experience in CPs or DROs were excluded from the study (they work under supervision of the license holders, they hardly provide pharmaceutical services independently).

### Questioner Design and Procedure

The questioner was prepared after a thorough review of relevant literature on pediatric pain management.<sup>5,12,20–23</sup> The data collection instrument is divided into two sections: one for the sociodemographic characteristics of CPPs such as age, gender, experience working in CPs, educational qualifications, and so on, and the other for assessing their knowledge, attitudes, and practices on pediatric pain management. The knowledge and attitude questions cover four areas: the multidimensional nature of pain, pain assessment and measurement, pain treatment, and clinical conditions/pain syndromes. The practice questions covered topics like having received prior training in pain management, the number of such trainings, the location and perceived cause of pain experienced, painful conditions that had ever been referred, and what factors influenced the referral and interest in further training, whether one had already received it or not. On a 3-point Likert scale, 11 of the 23 knowledge items were graded (Yes, I agree; I am not sure and No, I disagree). The answers to the 11 items were used to assess knowledge and were graded as correct, incorrect, or unsure. The remaining 13 multiple-choice items were divided into three groups: accurate, incorrect, and uncertain. A pre-test was conducted to ensure the validity of the study instrument validity and questions that did not actually measure participant's perception

were omitted; the Cronbach's alpha score was 0.798. The data collection was carried out by three data collectors (three BPharm). The principal investigators trained the data collectors about the study instrument and ethical considerations over the duration of two days.

## Data Processing and Analysis

The data was entered into Epi-Info Version-7.2.1.0 and analyzed with SPSS version-25. Frequency, median, range, mean, and standard deviation were used to summarize the descriptive data. Skewness and Kurtosis, the Kolmogorov–Smirnov test and histograms were employed to check the normality of the data. To test the difference between the mean score of correct and incorrect responses among the different groups in the study, one-way ANOVA and an independent *t*-test were used. Statistical significance was determined if the *p*-value was less than 0.05.

## Results

### Socio Demographic Profiles of the Participants

Among the 131 CPPs who were recruited for the study, 104 agreed to participate and returned the questionnaire, giving the study a response rate of 79.4%. The majority of study participants 89 (85.6%) were males. Of the pharmacy professionals, 70 (67.3%) held bachelor's degrees in pharmacy as their highest level of education. More than two-thirds of the participants 76 (73.1%) had one to five years of experience working in CPs or drug DROs. Hospitals were the previous places of employment for the majority of respondents 85 (81.7%) (Table 1).

**Table 1** Sociodemographic Characteristics of the Participants Who Responded to Survey on Pediatric Pain Management in Ambo and Ginchi Towns

Characteristics	Frequency n (%)
<b>Gender</b>	
Male	89(85.6)
Female	15(14.4)
<b>Age in years</b>	
22–29	34(32.7)
30–39	41(39.4)
40–50	23(22.1)
>50	6(5.8)
<b>Year of experience in CP</b>	
1–5	76(73.1)
6–10	23(22.1)
11–15	5(4.8)
<b>Qualification</b>	
Pharmacy technician	29(27.9)
Pharmacist	70(67.3)
Masters and above	5(4.8)
<b>Areas previously practiced</b>	
Hospital	85(81.7)
Industrial	9(8.7)
Hospital plus industries	10(9.6)
<b>Ownership structure</b>	
Self-owned	45(43.3)
Co-owned	23(22.1)
Employed	36(34.6)

## Knowledge and Attitude of CPPs to Pediatric Pain Management

CPPs mean knowledge score on pediatric pain management was  $6.69 \pm 1.92$ , with a minimum score of 2 and a maximum score of 17. The majority of CPPs 82 (87.2%) in the study did not correctly answer half of the questions. About one-third of 39 (37.5%) respondents gave an accurate response to the statement that pain is one of the crucial symptoms in pediatric patients. When asked whether repeated painful procedures on children increase their pain tolerance, less than half of CPPs 47 (45.2%), were properly answered. 16 (15.4%) of them knew the correct answers about the recommended analgesic dose of paracetamol in children under 3 months of age. Additionally, only 9 (8.7%) of CPPs properly responded to the question about non-pharmacological methods of pediatric pain management (Table 2).

## CPPs Practice Towards Pediatric Pain Management

Most of CPPs, 98 (94.3%), admitted they had no training in pain management, and 102 (98.2%) of the respondents said the same about pediatric pain management. Regarding grounds for referral in pediatric pain management, the majority of CPPs 47 (45.2%) perceived disease-related factors as the primary cause of pain. Whereas, most of CPP 41 (39.4%) cited “for Better Care” as a primary reason for referral (Table 3).

**Table 2** CPPs Knowledge and Attitude to Pediatric Pain Management

Item	Correct Response (%)
1. Pain is considered as one of the vital signs in pediatric patients	39 (37.5)
2. Visual analogue scale is a pain intensity rating scale for children with pain	21 (20.2)
3. Pain intensity of a child with pain should be rated by the pharmacist	18 (17.3)
4. If the child with pain can be distracted that means he/she does not have a high intensity of pain	56 (53.8)
5. Repeated painful procedures on children increase their pain tolerance	47 (45.2)
6. Children may sleep in spite of being in severe pain	72 (69.2)
7. Infants feel less pain than adults in similar situation	35 (33.7)
8. Infants forget painful episodes more quickly than adults	31 (29.8)
9. Children with pain should be encouraged to endure as much pain as possible before resorting to pain relief measurements	36 (34.6)
10. Frequent request of analgesic by the child with pain means he/she is already addicted	13 (12.5)
11. A 10-year-old patient with a pain score of 5 can be effectively treated with codeine	23 (22.1)
12. Choice of analgesic recommended should depend on a. pain intensity b. patients age c. pain duration d. pain origin	26 (25.0)
13. WHO analgesic ladder for children does not include a. weak opioids b. adjuvant c. non opioids d. strong opioids	10 (9.6)
14. All are types of OTC analgesic except a. paracetamol b. ibuprofen c. diclofenac d. tramadol	83 (79.8)
15. All are examples of analgesic adjuvants except a. carbamazepine b. celecoxib c. amitriptyline d. dexamethasone	12 (11.5)
16. All are mechanisms of action of Paracetamol-induced analgesia except a. COX inhibition at its peroxide sites b. serotonin receptor activation c. NAPQI metabolite activity d. AM404 metabolite activity	33 (31.7)

(Continued)

**Table 2** (Continued).

Item	Correct Response (%)
17. The recommended analgesic dose of Paracetamol in children $\geq$ 3 months a. 5mg/kg/wt b. 7.5mg/kg/wt c. 10mg/kg/wt d. 15mg/kg/wt	16 (15.4)
18. The recommended analgesic dose of ibuprofen in children: a. 2.5mg/kg/wt b. 5mg/kg/wt c. 7.5mg/kg/wt d. 10mg/kg/wt	21 (20.2)
19. All are preferred for a 13-year-old with musculoskeletal pain except a. paracetamol b. ibuprofen c. aspirin d. diclofenac	30 (28.8)
20. OTC paracetamol use is contraindicated in children a. <3 months old b. with malnutrition c. with chicken pox d. none of the above	28 (26.9)
21. OTC paracetamol use is contraindicated in children a. dehydration b. asthma c. pneumonia d. none of the above	8 (7.7)
22. OTC ibuprofen use is contraindicated in children a. <3 months old b. with chicken pox c. dehydration d. pneumonia e. all of the above	13 (12.5)
23. All are non-pharmacological approaches to pediatric pain management except a. physical therapy b. hypnosis c. music therapy d. none of the above	9 (8.7)

**Table 3** CPPs Practice Towards Pediatric Pain Management

Variables	Frequency (%)
<b>Ever trained on pain management</b>	
Yes	4(3.8)
No	98(94.3)
Cannot remember	2(1.9)
<b>Ever trained on pediatric pain management</b>	
Yes	1 (0.9)
No	102 (98.2)
I don't remember	1 (0.9)
<b>Frequency of training on pediatric pain management</b>	
Zero	102(98.2)
Once	2(1.8)
Twice	0(0.0)
Thrice	0(0.0)
<b>Reasons for referral</b>	
Never	35(33.7)
Pain intensity	16(15.4)
Urgent care	4(3.8)
Better care	41(39.4)
Not responding to OTC analgesics	4(3.8)
Pain etiology determination	4(3.8)
<b>Perceived cause of pain</b>	
Disease related	47(45.2)
Social event related	6(5.8)
Menstruation	4(3.8)
Unknown	47(45.2)

**Table 4** Relationship Between Sociodemographic Characteristics and Mean Knowledge Score

Characteristics	Mean score (SD)	DF	F	p-value
<b>Gender</b>				
Male	6.47 (1.16)	190	0.49	0.754
Female	6.02 (0.91)			
<b>Year of experience in CP</b>				
1–5	4.48 (0.72)	3.00	36.89	0.000*
6–10	7.39 (2.14)			
11–15	6.47 (1.26)			
<b>Qualification</b>				
Pharmacy technician	4.17 (0.82)	3.00	53.42	0.001*
Pharmacist	7.18 (1.81)			
Masters and above	6.98 (0.93)			
<b>Areas previously practiced</b>				
Hospital	5.28 (1.82)	3.00	0.41	0.788
Industrial	4.67 (1.62)			
Hospital plus industries	5.57 (1.37)			
<b>Ownership structure</b>				
Self-owned	6.34 (1.52)	3.00	0.51	0.082
Co-owned	5.48 (0.83)			
Employed	5.81 (1.12)			
<b>Ever trained on pediatric pain management</b>				
Yes	6.27 (1.33)	3.00	0.63	0.076
No	4.93 (0.98)			
I don't remember	4.21 (0.79)			

Note: \*Variables showed statistically significant association.

## Relationship Between Sociodemographic Characteristics and CPPs Knowledge

A one-way ANOVA and independent *t*-test statistics was performed to determine whether there is a statistically significant relationship between sociodemographic variables and the mean knowledge score of CPPs. The finding indicated that CPPs work experience in CP or DROs had impact on their knowledge about pediatric pain management ( $p$ -value= 0.000). Similarly, the mean knowledge score of pharmacists was higher than that of pharmacy technicians ( $p$  value= 0.001), as well as an independent *t*-test statistics was performed but failed to show any association (Table 4).

## Discussion

The role of community pharmacists is expanding globally from merely dispensing medication to involving in different public health services and playing a key role in disease state management.<sup>24,25</sup> Studies showed that community pharmacists are a major primary healthcare provider that frequently attend to pediatric patients with various painful conditions.<sup>26</sup> Considering this, this study, which is the first of its kind, was conducted aimed at assessing CPPs knowledge, attitude and practice towards pediatric pain management in Ethiopia.

In this study, significant portion of the participants did not correctly answer half of the questions (mean=6.69  $\pm$  1.92, 87.2%) alarmingly showing the inadequacy of CPPs knowledge towards pediatric pain management. This finding is consistent with findings from studies conducted in Nigeria and Canada, both of which found inadequate knowledge of pediatric pain among community pharmacists.<sup>19,27</sup> Moreover, it is also in line with other studies conducted among other healthcare professionals and revealed lack of knowledge about management of pediatric pain. It is critical to have a strong knowledge base in pediatric pain management to ensure optimal pain treatment.<sup>28</sup> As a result, this study suggests

that a great effort should be made to regularly assess CPPs knowledge, identify appropriate interventions, and improve service delivery quality.

In the present study, less than ten percent of CPPs (8.7%) were familiar with non-pharmacological methods of pediatric pain management. In contrary to this study finding, majority of United Arab Emirates (UAE) community pharmacist had adequate knowledge about non-pharmacologic pain management.<sup>5</sup> The variation could be due to difference in source of information, and the availability of continuous and sustainable on-The-job training in the two countries. It is important to note that non-pharmacological approaches to pain management are more advantageous than pharmacological pain management because they are less expensive, easier to apply, have a high potential for pain relief, and can be used in conjunction with drugs or alone.<sup>18</sup>

This study found that CPPs have misbelief about pediatric pain and pain management. For example, the majority of participants believed that a child's frequent request for analgesic means he or she is already addicted (87.5%), that infants forget painful episodes faster than adults (71.2%), and that infants feel less pain than adults in similar situations (66.3%). Such erroneous beliefs are concerning and should be seriously considered and addressed through continuing professional development including targeted on job trainings that could help build pharmacist capacity in this area. In the long run, it is recommended that pain management trainings be included in pharmacy curricula to produce pharmacy professionals who are capable of providing appropriate care to pediatric patients.<sup>13</sup>

In general, CPPs with more than ten years of experience had the highest mean correct answer score. A similar finding was reported in Canada and the UAE, where experience has a significant effect on pain management knowledge.<sup>5,19</sup> The positive relationship observed may be because as the number of years of practice increases, professionals are more likely to be exposed to pain management on a regular basis; more experienced CPPs may have more opportunities to gain access to up-to-date information about pain management and gradually from their daily observations and practices.

In this study, the other factor that was significantly associated with CPPs knowledge of pediatric pain management was level of qualification. CPPs with BPharm degree were more likely to have a higher mean score for pediatric pain management than those with a diploma. This finding is consistent with a study conducted in Nigeria, which found that community pharmacists with additional qualifications such as Pharm D had better knowledge of pediatric pain management as compared to other participants in the survey.<sup>27</sup> This could be explained by the fact that pharmacists with higher educational levels have a greater opportunity to obtain current information by accessing and reviewing different literatures.

There are a few limitations to this study that should be considered when interpreting and generalizing the study findings. The research was carried out in two Ethiopian cities, in CP and DROs. As a result, when generalizing to CPPs working in other settings or across the country, caution should be taken. Second, because the study responses were primarily self-reported, the study may have been influenced by social desirability and recall bias.

## Conclusion

Overall this study showed CPPs have inadequate knowledge and negative attitude to provide effective pediatric pain management service. Educational qualification and years of experience were discovered to be significantly associated with CPPs knowledge, implying that pharmacists who are actively practicing their profession must continue their medical education and training to bridge the knowledge gap and provide better pediatric patient care.

## Abbreviations

CP, Community Pharmacy; CPP, Community Pharmacy Professional's; DOS, Drug Outlet Stores.

## Data sharing statement

The data will be obtained after requesting corresponding author.

## Ethical consideration

The ethics review committee of Ambo University's school of pharmacy has given its approval for the study. All participants gave their informed consent both verbally and in writing prior to the study's initiation. The current study complies with the Declaration of Helsinki.

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## Disclosure

The authors report no conflicts of interest in this work.

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