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Research Article

Knowledge of Pediatric Pain Assessment and Management between Pediatric Emergency Physician in Saudi Arabia: A Cross-Section-Quantitative Study

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ABSTRACT

Objective: The aim of this study is to get an insight into the knowledge and attitude of physicians working in the pediatric emergency department towards pain assessment and management.

Methodology: A cross-sectional, survey-based study was carried out. The questionnaire items were constructed into three domains: demographic and practice-related data, participants' knowledge and attitudes and beliefs towards pediatric pain assessment. The outcomes were reported for the whole sample and compared between four professional categories (residents, fellows, specialists, and consultants).

Results: The responses of 83 physicians were analyzed. The awareness about pediatric pain assessment tools/scales was significantly lower among residents (76.0%) than other professional categories (90.0-100.0%). The most frequent correct answers were related to the withdrawal symptoms following the sudden interruption of opioids (85.5%) Conversely, the most frequent errors were reported for the presence of a maximum dosage limit for morphine above which no additional pain relief benefits could be attained (70.9%). Most participants had correct beliefs regarding the importance of patients' self-reports to accurately judge the intensity of pain (95.0%) with no significant differences among the professional groups. However, the majority of participants (67.5%) have incorrectly believed that pain estimation by a nurse is a valid and comparable measure for pain assessment to a patient self-report. Residents had the higher percentage of incorrect answers (91.3%), which was significantly higher than other professional categories (p=0.012).

Conclusion: Physicians had good knowledge levels; yet there is a need to implement educational and awareness courses. The reliance on formal guidelines for pain management should be emphasized.

Keywords: Pediatrics; Pain management; Pain assessment; Emergency department; Pain scales

INTRODUCTION

Pain is an important public health problem and a common undertreated condition among children. It is a common entity causing unpleasant sensation that influences the nervous system. By definition, pain is an unpleasant emotional and sensory experience that can be associated with existing tissue damage or can be a consequence of such damage [1,2]. In general, approximately 40% of children and adolescents suffer from pain that occurs once per week, while 15-20% of children experience chronic pain [3,4]. Pain takes place due to a wide range of chronic conditions that involve the bone, joints, muscles, and abdomen. Pain management is a critical component of pediatric medicine, and it encompasses pharmacological and non-pharmacological options as well as invasive approaches [5]. Inadequate management causes long-term consequences due to pain experience, which would eventually impact the emotional and psychological health of patients throughout their lives. Therefore, pain assessment should be meticulously performed, and this practice is effectively applied *via* monitoring the pain intensity [5]. However, pain evaluation and management remain highly dependent on the unique challenges in pediatric patients, including the child's age, cognitive and communication skills, developmental levels, personal beliefs and previous pain experiences [6].

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In Saudi Arabia, there no formal guidelines or protocols for the management of pediatric pain [7,8]. Concomitantly, the implementation of official protocols improves the outcomes of pain management on the national level [9,10]. Indeed, misconception of pain knowledge, methods of pain assessment and the ideal managemental approaches by healthcare professionals may represent an important barrier in pain management [11]. Importantly, there is accumulated evidence regarding the lack of adequate knowledge about pediatric pain management, and the proportions of patients who suffer from avoidable pain continue to increase [12-14]. Therefore, there is an urgent need to address this under-treated condition by identifying the current gaps in clinical practice. The aim of the present study is to assess the levels of knowledge, attitudes and practice of physicians working in a Pediatric Emergency Department (PED) regarding pain assessment and management. The results of the current analysis would help understand the gap in knowledge from a clinical perspective, and this would reveal the reasons of why pain is an undertreated and under-recognized entity.

METHODOLOGY

Study design and population

A cross sectional, survey-based study was conducted in Riyadh, Kingdom of Saudi Arabia during the period between 01 June and 31 December 2020. Saudi Arabia lies in Western Asia, making up most of the Arabian Peninsula and is the second largest sovereign state in the Arab world, with a growing population of 34.14 million. Riyadh is the capital of the Kingdom, and it is the largest city in the Arabian Peninsula. This study was conducted by fourth year medical students of Almaarefa University under the supervision and guidance of senior PEM consultants at KAAUH. Eligible participants included physicians (consultants, specialists, fellows, and residents) working in PEDs across the Kingdom. Participants of any nationality and both genders were eligible. Non-physicians (nurses, respiratory therapists, general physicians) and pediatric physicians working in the pediatric department were excluded. All healthcare professionals working in the PED were included; therefore, no sampling technique was utilized.

Study instrument

A structured questionnaire was developed based on previous studies [15-18]. The survey was uploaded on a specifically designated online platform for data collection (SurveyMonkey). The research team shared the survey link with pediatric emergency physicians *via* social media platforms and email messages. The questionnaire consisted of three sections: 1) Demographic and practice-related data, such as gender, age, years of practice, participation in a formal courses and workshops for pain assessment, etc.; 2) knowledge regarding pediatric pain assessment: 12 true or false questions to assess participants' knowledge levels plus four items graded on a four-point Likert-scale (from strongly disagree to strongly agree); 3) attitudes and beliefs towards pediatric pain assessment: 12 items to assess participants' responses (from strongly disagree to strongly agree). More details about the included items are demonstrated in Annex 1.

Data analysis

Each item in the knowledge domain (for the items with a "true" or "false" response) was coded as 1 (correct) or 0 (incorrect). Regarding the items with a four-point Likert grade, true responses were considered as "strongly agree" or "agree", whereas false responses were considered as "strongly disagree" or "disagree". Knowledge scores were computed by summing up the correct responses of the 16 items in the knowledge domain. Therefore, the raw knowledge score ranged between 0 and 16, with higher scores indicating better knowledge. To be easily interpretable, raw scores were transformed to percentage score using the following formula: percentage score=(raw score*100)/16. These percentage scores were expressed as median and interquartile ranges, and they were integrated into the subsequent analysis. The difference in knowledge scores was assessed using an independent-samples Kruskal-Wallis test. Tests of pairwise comparisons were presented as the difference in knowledge between pairwise groups and significance values were adjusted by the Bonferroni correction for multiple tests. Besides, data regarding the correct responses of each individual item in the knowledge and beliefs domains were expressed as frequencies and percentages. Tests of probability were considered statistically significant at $p<0.05$.

Ethical considerations

The research group provided a verbal explanation of the study objectives and the collected data, a verbal consent to participate was obtained from each physician. Additionally, a written informed consent was collected. Data was kept confidential and no personal information was shared with a third party an IRB approval from local research committee of Almaarefa University

RESULTS

Demographic and practice-related characteristics

Initially, 139 responses were obtained on the online platform. The primary outcome variables were missing in the records of 56 participants. Therefore, the complete responses of 83 physicians were ultimately analyzed (accounting for a response rate of 59.7%). These included 25 residents (30.1%), 19 specialists (22.9%), 10 fellows (12.0%) and 29 consultants (34.9%). The majority of participants were males (62.7%) and aged 25-40 years (71.1%). Almost half of the participants had an experience of 1-5 years in the PED (42.2%). More than one-third (37.3%) of the respondents declared that they had participated in a formal course or workshop intended for pediatric pain assessment and management during training. The majority of healthcare professionals (90.4%) indicated that they are aware about pediatric pain assessment scales and tools. About 66% of the respondents mentioned that dedicated policies and guidelines on pediatric pain assessment and management were used by the hospital emergency department (Table 1).

Demographic and practice-related differences between the occupational groups

Higher proportions of residents and fellows had 1-5 years of experience (72.0% and 70.0%, respectively), while most specialists had 5-10 years of experience (42.1%) and most consultants had 10-20 years of experience (55.2%). Between-group differences in experience levels were statistically significant ($p<0.0001$). In addition, the difference in age was statistically significant ($p<0.0001$), where most residents and fellows aged 25-30 years (44.0% and 60.0%, respectively), most specialists aged 5-10 years (42.1%) and the majority of consultants aged 10-20 years (55.2%). Self-reported awareness about pediatric pain assessment scales and tools differed significantly ($p=0.024$), with the highest awareness among the consultants (100%), followed by specialists (94.7%), fellows (90.0%) and residents (76.0%, Table 1).

Table 1: Demographic and practice-related characteristics of participants.

Parameter	Category	General (N=83)	Residents (N=25)	Specialists (N=19)	Fellows (N=10)	Consultants (N=29)	p
Gender	Male	52 (62.7)	17 (68.0)	12 (63.2)	3 (30.0)	20 (69.0)	0.147
	Female	31 (37.3)	8 (32.0)	7 (36.8)	7 (70.0)	9 (31.0)	
Age	25-30	18 (21.7)	11 (44.0)	1 (5.3)	6 (60.0)	0 (0.0)	<0.0001
	31-35	21 (25.3)	7 (28.0)	5 (26.3)	4 (40.0)	5 (17.2)	
	36-40	20 (24.1)	2 (8.0)	6 (31.6)	0 (0.0)	12 (41.4)	
	41-45	14 (16.9)	3 (12.0)	5 (26.3)	0 (0.0)	6 (20.7)	
	46-50	10 (12.0)	2 (8.0)	2 (10.5)	0 (0.0)	6 (20.7)	
Years of practice as health professional in pediatric emergency department?	1-5 years	35 (42.2)	18 (72.0)	5 (26.3)	7 (70.0)	5 (17.2)	<0.0001
	5-10 years	19 (22.9)	2 (8.0)	8 (42.1)	3 (30.0)	6 (20.7)	
	10-20 years	25 (30.1)	3 (12.0)	6 (31.6)	0 (0.0)	16 (55.2)	
	More than 20 years	4 (4.8)	2 (8.0)	0 (0.0)	0 (0.0)	2 (6.9)	
Had you been participated in formal pediatric pain assessment and management course or workshop during your training?	Yes	31 (37.3)	10 (40.0)	8 (42.1)	1 (10.0)	12 (41.4)	0.301
	No	52 (62.7)	15 (60.0)	11 (57.9)	9 (90.0)	17 (58.6)	
Are you aware about pediatric pain assessment scales/tools?	Yes	75 (90.4)	19 (76.0)	18 (94.7)	9 (90.0)	29 (100.0)	0.024
	No	8 (9.6)	6 (24.0)	1 (5.3)	1 (10.0)	0 (0.0)	
Does your hospital emergency department have policies and guidelines on pediatric pain assessment and management?	Yes	55 (66.3)	18 (72.0)	12 (63.2)	6 (60.0)	19 (65.5)	0.889
	No	28 (33.7)	7 (28.0)	7 (36.8)	4 (40.0)	10 (34.5)	
What pePediatric pain assessment scales/ tools are used more in your institution by emergency triaging nurse in evaluating pediatric patient with acute pain?	Wong-Baker Faces Pain Scale	38 (45.8)	12 (48.0)	9 (47.4)	6 (60.0)	11 (37.9)	0.557
	FLACC Scale	19 (22.9)	5 (20.0)	4 (21.1)	3 (30.0)	7 (24.1)	
	Non-communicating Children's Pain Checklist	3 (3.6)	0 (0.0)	1 (5.3)	1 (10.0)	1 (3.4)	
	CHEOPS scale	3 (3.6)	1 (4.0)	1 (5.3)	0 (0.0)	1 (3.4)	
	The Numeric Pain Rating Scale Instructions	10 (12.0)	2 (8.0)	1 (5.3)	0 (0.0)	7 (24.1)	
	VAS scale	9 (10.8)	5 (20.0)	2 (10.5)	0 (0.0)	2 (6.9)	
	Other	1 (1.2)	0 (0.0)	1 (5.3)	0 (0.0)	0 (0.0)	

Note: CHEOPS: Children's Hospital of Eastern Ontario Pain Scale; FLACC: Face, Legs, Activity, Cry, and Consolability scale; VAS: Visual Analogue Scale

Participants' knowledge regarding pediatric pain assessment

The median (IQR) percentage score of respondents' knowledge was 62.5 (50.0-75.0). The median (IQR) knowledge score was 56.3 (37.5-68.8) for residents, 62.5 (56.3-68.8) for specialists, 62.5 (42.2-87.5) for fellows and 68.8 (62.5-75.0) for consultants (Figure 1). The difference in knowledge scores between these categories was statistically significant (p=0.046). The analysis of pairwise comparisons showed significantly lower knowledge scores among residents compared to consultants (difference=-18.12, p=0.033, (Table 2).

Regarding the outcomes of individual items, the detailed categorical responses of healthcare professionals regarding their knowledge are depicted in (Figures 2-4), and the percentages of correct answers in each occupational group are demonstrated in Table 3 and Table 4. The highest percentages of correct answers were reported for the withdrawal symptoms after sudden interruption of opioids (True, 85.5%) and the reliance of healthcare professionals on pain assessment by children's parents because children under 11 cannot reliably report pain (False, 81.9%, Table 3). The lowest percentages of correct answers were related to the statements indicating that morphine has a maximum dosage limit above which no additional pain relief could be attained (False, 30.1%) and patients who can be distracted from pain would not experience severe pain (False, 31.3%, Table 4). Statistical differences between the occupational groups existed in three statements. Consultants provided correct answers more frequently than other groups for the items concerning that pain distraction would not indicate severe pain (p=0.008), whereas fellows and consultants had correctly perceived that opioids may be used even if the cause of pain is unknown during the assessment (p=0.004). Additionally, 70.0% of fellows disagreed or strongly disagreed that about one-quarter of patients receiving narcotics around the clock become addicted (p=0.027, Table 4).

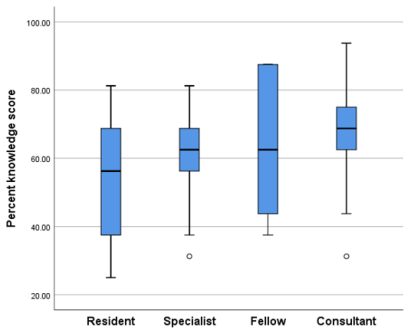

Figure 1: A boxplot depicting percent knowledge scores of the different categories of healthcare professionals.

Table 2: Pairwise comparisons of the occupational groups of healthcare professionals in terms of their knowledge scores about pediatric pain assessment.

Sample 1-Sample 2	Test Statistic	Std. Error	Adj. Sig.
Residents-Specialists	-6.91	7.27	0.999
Residents-Fellows	-12.01	8.94	0.999
Residents-Consultants	-18.12	6.52	0.033
Specialists-Fellows	-5.1	9.34	0.999
Specialists-Consultants	-11.21	7.05	0.673
Fellows-Consultants	-6.11	8.76	0.999

Note: Data is expressed as frequency (percentage). (T) correct answer is True; (F) correct answer is False; (A) correct answer is agree or strongly agree.

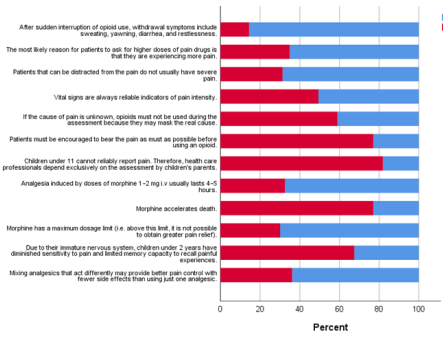

Figure 2: participants' responses to the "true or false" questions for the assessment of their knowledge regarding pediatric pain assessment. **Note:** (■) True, (■)False

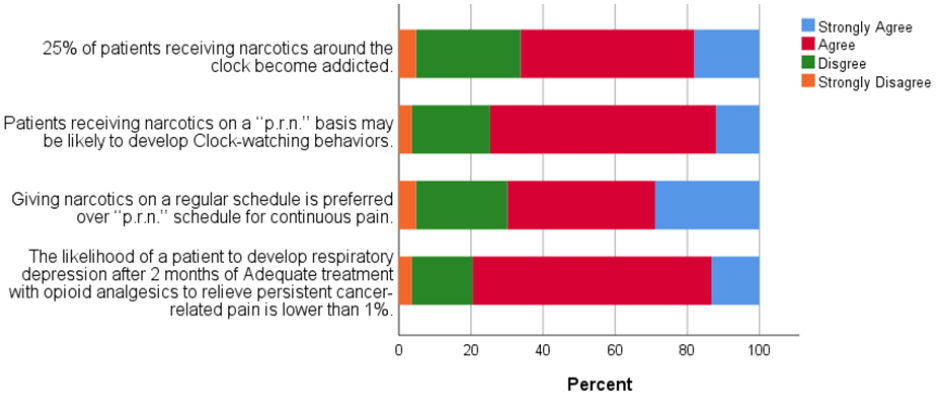

Figure 3: participants' responses to the Likert-graded questions for the assessment of their knowledge regarding pediatric pain assessment. **Note:** (■) Strongly Agree, (■)Agree, (■) Disgree, (■) Strongly Disgree.

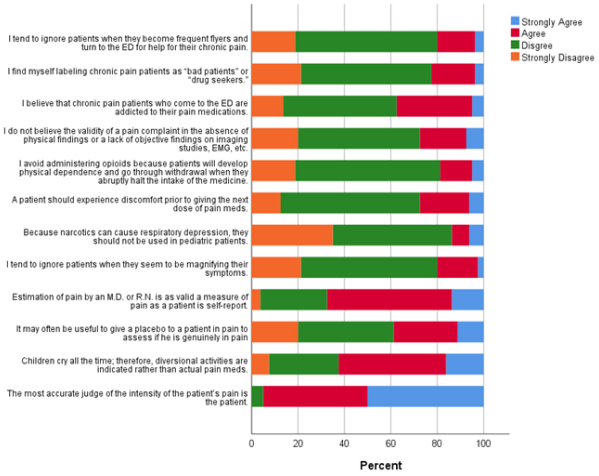

Figure 4: participants' responses to the Likert-graded questions for the assessment of their attitudes and beliefs regarding pediatric pain assessment.
Note: (■) Strongly Agree, (■)Agree, (■) Disgree, (■) Strongly Disgree.

Table 3: Highest percentages of correct answers to items that assess participants' knowledge regarding pediatric pain assessment and management.

Item	General (N=83)	Residents (N=25)	Specialists (N=19)	Fellows (N=10)	Consultants (N=29)	p
Q12. After sudden interruption of opioid use, withdrawal symptoms include sweating, yawning, diarrhea, and restlessness. (T)	71 (85.5)	20 (80.0)	18 (94.7)	8 (80.0)	25 (86.2)	0.536
Q6. Children under 11 cannot reliably report pain. Therefore, health care professionals depend exclusively on the assessment by children's parents. (F)	68 (81.9)	18 (72.0)	15 (78.9)	8 (80.0)	27 (93.1)	0.236
Q13. The likelihood of a patient to develop respiratory depression after 2 months of Adequate treatment with opioid analgesics to relieve persistent cancer-related pain is lower than 1%. (A)	66 (79.5)	18 (72.0)	17 (89.5)	9 (90.0)	22 (75.9)	0.402
Q4. Morphine accelerates death. (F)	64 (77.1)	19 (76.0)	16 (84.2)	8 (80.0)	21 (72.4)	0.809
Q7. Patients must be encouraged to bear the pain as must as possible before using an opioid. (F)	64 (77.1)	17 (68.0)	13 (68.4)	7 (70.0)	27 (93.1)	0.091
Q15. Patients receiving narcotics on a "p.r.n." basis may be likely to develop Clock-watching behaviors. (A)	62 (74.7)	18 (72.0)	16 (84.2)	8 (80.0)	20 (69.0)	0.646
Q14. Giving narcotics on a regular schedule is preferred over "p.r.n." schedule for continuous pain. (A)	58 (69.9)	17 (68.0)	14 (73.7)	8 (80.0)	19 (65.5)	0.82
Q2. Due to their immature nervous system, children under 2 years have diminished sensitivity to pain and limited memory capacity to recall painful experiences. (F)	56 (67.5)	15 (60.0)	13 (68.4)	6 (60.0)	22 (75.9)	0.609

Table 4: Lowest percentages of correct answers to items that assess participants' knowledge regarding pediatric pain assessment and management.

Item	General (N=83)	Residents (N=25)	Specialists (N=19)	Fellows (N=10)	Consultants (N=29)	p
Q3. Morphine has a maximum dosage limit (i.e., above this limit, it is not possible to obtain greater pain relief). (F)	25 (30.1)	6 (24.0)	3 (15.8)	2 (20.0)	14 (48.3)	0.062
Q10. Patients that can be distracted from the pain do not usually have severe pain. (F)	26 (31.3)	5 (20.0)	3 (15.8)	2 (20.0)	16 (55.2)	0.008
Q5. Analgesia induced by doses of morphine 1–2 mg i.v usually lasts 4–5 hours. (F)	27 (32.5)	6 (24.0)	6 (31.6)	4 (40.0)	11 (37.9)	0.688
Q16. 25% of patients receiving narcotics around the clock become addicted. (D)	28 (33.7)	7 (28.0)	3 (15.8)	7 (70.0)	11 (37.9)	0.027
Q9. Vital signs are always reliable indicators of pain intensity. (F)	41 (49.4)	7 (28.0)	12 (63.2)	5 (50.0)	17 (58.6)	0.072
Q8. If the cause of pain is unknown, opioids must not be used during the assessment because they may mask the real cause. (F)	49 (59.0)	11 (44.0)	7 (36.8)	7 (70.0)	24 (82.8)	0.004
Q1. Mixing analgesics that act differently may provide better pain control with fewer side effects than using just one analgesic. (T)	53 (63.9)	16 (64.0)	14 (73.7)	3 (30.0)	20 (69.0)	0.107
Q11. The most likely reason for patients to ask for higher doses of pain drugs is that they are experiencing more pain. (T)	54 (65.1)	16 (64.0)	14 (73.7)	9 (90.0)	15 (51.7)	0.131

Note: Data is expressed as frequency (percentage).
(T) Correct answer is True; (F) correct answer is False; (D) correct answer is disagree or strongly disagree.

Participants' attitudes and beliefs towards pediatric pain assessment

The majority of healthcare professionals agreed or strongly agreed that the most accurate judge of pain intensity comes from the patient (95.0%). Furthermore, 86.3% of them have correctly disagreed or strongly disagreed that narcotics should not be given to the pediatric population because they can cause respiratory depression (Table 5). As demonstrated in Table 6, the lowest percentage of correct answer was reported for the disagreement about pain estimation by a medical practitioner or a registered nurse as a valid measure of pain because the patient provides a self-reported measurement (32.5%). Residents (8.7%) and fellows (22.2%) reported the lowest percentages of correct answers for such an item, and the difference to other categories was statistically significant (p=0.012). Similarly, only 37.5% of the respondents disagreed or strongly disagreed that diversional activities are indicated rather than actual pain medications because children cry all the time. The majority of consultants (62.1%) provided correct responses, and this was significantly higher than those of other categories (p=0.006), (Table 6).

Table 5: Highest percentages of correct answers to items that assess participants' attitudes and beliefs towards pediatric pain assessment and management.

	General (N=83)	Residents (N=25)	Specialists (N=19)	Fellows (N=10)	Consultants (N=29)	p
Q1. The most accurate judge of the intensity of the patient's pain is the patient. (A)	76 (95.0)	22 (95.7)	19 (100.0)	8 (88.9)	27 (93.1)	0.583
Q6. Because narcotics can cause respiratory depression, they should not be used in pediatric patients. (D)	69 (86.3)	20 (87.0)	16 (84.2)	6 (66.7)	27 (93.1)	0.247
Q8. I avoid administering opioids because patients will develop physical dependence and go through withdrawal when they abruptly halt the intake of the medicine. (D)	65 (81.3)	16 (69.6)	14 (73.7)	8 (88.9)	27 (93.1)	0.122
Q5. I tend to ignore patients when they seem to be magnifying their symptoms. (D)	64 (80.0)	20 (87.0)	14 (73.7)	7 (77.8)	23 (79.3)	0.752
Q12. I tend to ignore patients when they become frequent flyers and turn to the ED for help for their chronic pain. (D)	64 (80.0)	19 (82.6)	15 (78.9)	7 (77.8)	23 (79.3)	0.986
Q11. I find myself labeling chronic pain patients as "bad patients" or "drug seekers." (D)	62 (77.5)	20 (87.0)	14 (73.7)	4 (44.4)	24 (82.8)	0.059
Q1. Mixing analgesics that act differently may provide better pain control with fewer side effects than using just one analgesic. (T)	53 (63.9)	16 (64.0)	14 (73.7)	3 (30.0)	20 (69.0)	0.107
Q11. The most likely reason for patients to ask for higher doses of pain drugs is that they are experiencing more pain. (T)	54 (65.1)	16 (64.0)	14 (73.7)	9 (90.0)	15 (51.7)	0.131

Note: Data is expressed as frequency (percentage).
(A) correct answer is agree or strongly agree; (D) correct answer is disagree or strongly disagree

Table 6: Lowest percentages of correct answers to items that assess participants' attitudes and beliefs towards pediatric pain assessment and management.

Item	General (N=83)	Residents (N=25)	Specialists (N=19)	Fellows (N=10)	Consultants (N=29)	p
Q4. Estimation of pain by an M.D. or R.N. is as valid a measure of pain as a patient is self-report. (D)	26 (32.5)	2 (8.7)	10 (52.6)	2 (22.2)	12 (41.4)	0.012
Q2. Children cry all the time; therefore, diversional activities are indicated rather than actual pain meds. (D)	30 (37.5)	4 (17.4)	6 (31.6)	2 (22.2)	18 (62.1)	0.006
Q3. It may often be useful to give a placebo to a patient in pain to assess if he is genuinely in pain (D)	49 (61.3)	9 (39.1)	12 (63.2)	7 (77.8)	21 (72.4)	0.062
Q10. I believe that chronic pain patients who come to the ED are addicted to their pain medications. (D)	50 (62.5)	15 (65.2)	12 (63.2)	5 (55.6)	18 (62.1)	0.967
Q7. A patient should experience discomfort prior to giving the next dose of pain meds. (D)	58 (72.5)	18 (78.3)	12 (63.2)	5 (55.6)	23 (79.3)	0.364
Q9. I do not believe the validity of a pain complaint in the absence of physical findings or a lack of objective findings on imaging studies, EMG, etc. (D)	58 (72.5)	17 (73.9)	14 (73.7)	5 (55.6)	22 (75.9)	0.683

DISCUSSION

The current study showed that the participating physicians had a knowledge score of 62.5. Our study results were relatively similar to the study of de Freitas et al. [15] who showed that the percentage of correct answer of professionals was above 70%, as it was expected this is due to higher education level. On the other hand, Dharmalingam et al. [19] showed that less than 60% of the answers were correct. Regarding the induction of analgesia by using morphine 1-2mg i.v., in our study 40.0% was the highest score gained by pediatric emergency fellows. This result is in contrast with Freitas et al. [15] which showed that the percentage of correct answers was 33.3%, and nurses have got the highest percent in this question. Concerning if morphine accelerate death, the responses were not statistically different, and the correct responses ranged between 72.4% to 84.2% among different occupational groups. When they were asked if mixing analgesics provides better pain control with fewer side effect, 69.0% of pediatric emergency consultants answered correctly. Likewise, 72.5% of pediatric consultants in the study of Freitas et al. [15] provided correct responses.

Ger et al. [19] Study showed that some physicians 26% didn't agree or have no opinion that the dosage of opioids received must be lower than the required dosage to prevent drug tolerance. In our study, 33.7% of the pediatric emergency physicians disagreed or strongly disagreed that 25% of patients receiving narcotics around the clock might become addicted. However, there was a statistically significant difference in the responses of participants' groups, where 70.0% of the fellow provided correct responses, while lower proportions of residents, specialists and consultants answered correctly (28.0%, 15.8% and 37.9%, respectively).

Concerning Ger et al. [20] study revealed that most physicians (73%) agreed that they were very careful when prescribing opioids in the control of dosage and frequency for the prevention of drug tolerance and addiction. Only 10% of physicians would not prescribe opioids because of their belief of respiratory depression being a severe side effect [20]. Regarding our study, 75.9% and 72.0% of pediatric emergency consultants and residents, respectively agreed with the fact that the likelihood of a patient to develop respiratory depression after 2 months of adequate treatment with opioids analgesics to relieve persistent cancer-related pain is less than 1%. Furthermore, only 13.7% of physicians in our analysis would not prescribe opioids due to their belief of respiratory depression being a severe side effect.

The questions assessing both belief and attitude were displayed according to the pediatric emergency department professionals in order to assess the similarities and differences in their beliefs and attitudes. Generally, respondents had appropriate and positive beliefs and attitudes towards pain management. The group with the lowest percentage of correct answers included the residents (Table 6). The highest percentage of correct answers was primarily related to the item indicating that 'the most accurate judge of the patient's pain is the patient', with 95.0% correct responses. This is relatively higher that the percentage of correct answers to the same item in the study of Nuseir et al. [17] who reported correct answers among 71.5% of the participants as well as the study of Elsayed et al. [2] who found correct answers among 64.1%. Interestingly, the importance of diversional activities compared to actual pain medications was not appreciated by the majority of consultants (62.1%), and this is in agreement with the previous studies [2, 17].

Collectively, we showed that the knowledge, attitudes and beliefs of physicians at our institution were comparable to those reported in the literature. However, we believe that there is still a need to develop national guidelines for the management and assessment of pain among pediatric patients presenting to emergency departments, particularly on the local level. This is because the results obtained in our study might be limited by some factors that hinder the generalizability of outcomes to other settings. Healthcare professionals' attitudes and knowledge were generally based on a singly institution at the PED; thus, data is not applicable to other departments and other hospitals across the Kingdom. Furthermore, although we provided important insights into the differences between physicians in terms of their occupational levels, we did not take other demographic characteristics into consideration. Another limitation is that we heavily focused on morphine in the survey items, which limits our understanding of participants' knowledge regarding other types of analgesics.

CONCLUSION

In conclusion, healthcare professionals working in our PED had good knowledge levels about the pediatric pain assessment tools which rely on the existence of policies and guidelines in different hospitals. These results underscore the importance of using analgesics medical reasons exclusively, ideally in suitable dosages. Professionals with higher education degrees were found to have higher levels of knowledge regarding pain and opioid mixing analgesics which provide better usage. In contrast, other studies showed that pediatric health care, had relatively little knowledge with analgesics, which is surprising because they offer direct care to patients. Physicians must be cautious when administering opioids to ensure proper dose management and avoid drug tolerance and addiction. Pediatric Pain management is a multidisciplinary effort that requires several approaches. Pain management education and training programs are needed and should be provided by hospitals and clinics as part of continuous medical education.

REFERENCES

1. Rutkowska A, Skotnicka-Klonowicz G. Prehospital pain management in children with traumatic injuries. Pediatr Emerg Care. 2015; 31: 317-320.
2. Elsayed AE, Alwosibei AA, Aldawsari AM, Alkhathlan MS, Al-Ghannam AK. Pain assessment and management for children hospitalized in the Pediatric Emergency Department, Military hospital, Al-Kharj, Saudi Arabia. Int J Med Dev Ctries. 2019;3: 764-769.
3. Fabricant PD, Heath MR, Schachne JM, Doyle SM, Green DW, Widmann RF. The epidemiology of back pain in American children and adolescents. Spine. 2020; 45(16):1135-1142.
4. Goodman JE, McGrath PJ. The epidemiology of pain in children and adolescents: a review. Pain. 1991 Sep 1;46(3):247-64.
5. GK E, PE O. Post-operative Paediatric Pain Assessment and Management at a Tertiary Health Facility, Southern Nigeria: Surgeons' Perspectives and Practice.
6. Srouji R, Ratnapalan S, Schneeweiss S. Pain in children: assessment and nonpharmacological management. Int J Pediatr. 2010.
7. Samarkandi OA. Knowledge and attitudes of nurses toward pain management. Saudi journal of anaesthesia. 2018;12(2):220.
8. Thienthong S, Sriraj W, Siripul P, Finley A, Boonyawattanangkool K, Kasetwetin S. A survey of postoperative pediatric pain management among seven hospitals in northeastern Thailand. Anaesthesia, Pain & Intensive Care. 2019:38-42.

9. Chang AK, Bijur PE, Holden L, Gallagher EJ. Efficacy of an acute pain titration protocol driven by patient response to a simple query: do you want more pain medication? Ann Emerg Med. 2016; 67(5):565-572.

10. Manocha S, Taneja N. Assessment of paediatric pain: a critical review. J Basic Clin Physiol Pharmacol. 2016;27(4):323-331.

11. Mazur A, Radziewicz Winnicki I, Szczepański T. Pain management in children. Ann Agric Environ Med. 2013; 1(1):28-34.

12. Pasero C, McCaffery M. Orthopaedic postoperative pain management. J Perianesth Nurs. 2007; 22(3):160-174.

13. Sloman R, Rosen G, Rom M, Shir Y. Nurses' assessment of pain in surgical patients. J Adv Nurs. 2005;52(2):125-32.

14. Al-Quliti KW, Alamri MS. Assessment of pain: Knowledge, attitudes, and practices of health care providers in Almadinah Almunawwarah, Saudi Arabia. Neurosciences Journal. 2015; 20(2):131-136.

15. de Freitas GR, de Castro Jr CG, Castro SM, Heineck I. Degree of knowledge of health care professionals about pain management and use of opioids in pediatrics. Pain Med. 2014; 15(5):807-819.

16. Zanolin ME, Visentin M, Trentin L, Saiani L, Brugnolli A, Grassi M. A questionnaire to evaluate the knowledge and attitudes of health care providers on pain. J Pain Symptom Manage. 2007;33(6):727-736.

17. Nuseir K, Kassab M, Almomani B. Healthcare providers' knowledge and current practice of pain assessment and management: how much progress have we made? Pain Res Manag. 2016; 2016.

18. Wilsey BL, Fishman SM, Ogden C, Tsodikov A, Bertakis KD. Chronic pain management in the emergency department: a survey of attitudes and beliefs. Pain Med. 2008;9(8):1073-1080.

19. Dharmalingam TK, Muniandy RK. Doctors' knowledge and attitudes on pain assessment and management in Queen Elizabeth Hospital, Kota Kinabalu, Sabah. Med J Malaysia. 2020;75(1):68-73.

20. Ger LP, Ho ST, Wang JJ. Physicians' knowledge and attitudes toward the use of analgesics for cancer pain management: a survey of two medical centers in Taiwan. J Pain Symptom Manage. 2000;20(5):335-344.