Factor that Associated with Knowledge and Attitude toward Pediatric Pain Management among Nurses in Hiowt Fana Specialized Referral Hospital, Harar, Ethiopia

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Abstract

Introduction: Thoughtful management Analgesia is essential for ill persons due of its physiologic and psychological benefits. So, the objective of this study is to determine the knowledge and attitude toward pediatric pain management among the nurses in Hiowt Fana Specialized Referral Hospital, Harar, Ethiopia.

Methods: An institutional-based cross-sectional study was conducted from 10 to 20 September 2023 among 198 participants. A simple random sampling technique was used to select the study subjects. The data were collected by using a structured, pretested, self-administered questionnaire. Data analyzed by using SPSS 24. Mono, bi and multivariate analyses were performed. Variables with a $p < 0.05$ in bi-variate analysis were entered into multiple logistic regression and variables with a $p < 0.05$ in multivariate analysis were considered statistically significant associations.

Result: A total of 122 (63%) respondents had good knowledge and 262 (66.7%) had a favorable attitude toward pediatric pain management. Educational status of respondents [AOR = 3.1; 5% CI: (1.52, 4.21)], working place (ward) [AOR = 3.27; 95% CI: (2.01, 5.89)] and in-service training [AOR = 5.29; 95% CI: (1.28, 10.34)] were significantly associated with knowledge on pediatric pain management and Service years (work experience) [(AOR = 3.42; 95% CI (1.23 - 7.35)] and Training [AOR = 2.17; 95% CI (1.13 - 3.59)], had significantly association with attitude on pediatric pain management.

Conclusion: Around two third of the participants and slightly greater than half of the respondents had good attitude and positive attitude toward pediatric pain management respectively. Educational status of respondents, working place and in-service training were significantly associated with knowledge on pediatric pain management and service years (work experience) and training had significantly association with attitude on pediatric pain management Therefore, for better pediatric pain management, it is recommended to provide continuous training for nurses.

Keywords: Knowledge; Attitude; Pediatric Pain Management; Ethiopia

Introduction

Pain is "an unpleasant sensory and emotional experience related to current or potential injury leading to long and short-term problems, according As the international association for the study of pain (IASP) [1,2].

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Judicious management Analgesia is essential for ill persons due of its physiologic and psychological benefits, Poor pain management can lead to higher rates of morbidity and death, and severe pain in newborns can alter their neural systems, cause behavioral problems, and extend their misery [3].

Previous studies have found that children receive less analgesia than adults in comparable situations, lack of knowledge about pain management and the myths that infants and children do not feel pain (suffer from it less than adults) were causes of children experiencing unacceptable levels of pain [4].

According to research, moderate to severe pain affects 20% to 35% of children and adolescents globally. [5]. Study done in in eight Canadian pediatric hospitals showed that only 28.3% of the 3,822 children who participated in the study get ant pain [6]. In North America, between 27 to 64% [7] in Kenya, Kenyatta National Hospital 78% [8] of hospitalized children have moderate to severe pain.

Lack of knowledge about the assessment and management of newborn pain, a lack of a pain management policy, a lack of uniform criteria, and the unavailability of analgesics in the neonatal intensive care unit are all obstacles to successful pain management [9,10]. According to the American Academy of Pediatrics, health care practitioners struggle to accurately diagnose and treat pain in newborns due to a high incidence of knowledge and practice gaps [11].

According to data, 65.6% of nurses are unaware of the name of the pain assessment scale [12]. Inadequate understanding and poor practice in treating children who were hospitalized for pain provided evidence for this [13]. Neonatal nurses don't utilize any techniques for measuring pain, and the most of them don't know anything about how to manage newborn pain [14].

A survey conducted in Jordan which evaluated nurses' knowledge and attitude regarding pain management showed that 52% nurses had poor knowledge and 52% of the nurses showed negative attitudes [15]. Study done at Kenya showed that significant knowledge deficiencies with mean score of 47.2% exist regarding pain assessment and management for children [16]. Study done in Western Ethiopia found that there was a knowledge gap 49.8% among medical professionals about how to handle children's pain [17] another study in Gondar, Ethiopia showed that 67.94% & 66.7% of nurses had good knowledge and had a favorable attitude respectively.

Research in the subject area is still scarce on nurses' understanding of how to measure and manage pain in children who are admitted. Exploring knowledge, attitudes and factor associated to pain management are crucial for enhancing both the quality of care and healthcare outcomes.

Goal of the Study

The goal of this paper is to identify nurses' knowledge, attitudes, and factor associated to pediatric pain management in Hiwot fana Specialized University Hospital, Harar, Ethiopia.

Methods

Study design, area, and period

A hospital-based cross-sectional study was carried out in Harar's Hiowt Fana Specialized Referral Hospital from September 10 to September 20, 2023. The hospital was initially built in Ethiopia in 1933 G.C., around 525 kilometers from Addis Ababa, the country's capital at the time of Italian colonialism. The hospital serves the local community and surrounding regions.

Inclusion and exclusion criteria

All nurses employed by Hiowt Fana Specialized Referral Hospital at the time of data collection were included in the study. Nurses with less than six months of work experience, those on yearly leave or maternity leave, and those unwilling to participate in the study were excluded.

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Sample size determination and procedure

Under the following suppositions, the sample size was determined using a single population proportion formula. The sample size was determined using the formula n = $(Z\alpha/2)^2 p (1-p)/d^2$, where n is the number of study participants, Z is the value of the standardized normal distribution curve for the 95% confidence interval (1.96), P is positive attitude about pediatric pain management in Gondar Comprehensive Specialized Hospital, Ethiopia, which was 0.667% [18] and d is the desired precision of the estimate (the margin of error between the sample and population, 5%) = 0.05 = $(1.96)^2(0.667)(0.333)/(0.05)^2 = 341$.

Since the total population (nurse working in the hospitals) was 379 nurses, which is less than 10,000 correction formula used nf = ni/1+ni/N. nf if final sample size, ni is initial sample and N is total population so the sample size was 179.5 which is 180, after adding 10% of non-respondent rate the total sample size was 198 and simple random sampling method was used to select participants.

Operational definition

- **Knowledge:** It means the nurses' understanding of pain management based on their experience.

- **Good knowledge:** It is the knowledge status of nurses when they scored mean and above.

- **Poor knowledge:** It is the knowledge status of nurses when they scored less than the mean.

- **Attitude:** It refers to the nurses' behavior and way of acting towards effective pain management.

- **Positive attitude:** It is the category of nurses when they scored mean and above value.

- **Negative attitude:** It is the category of nurses when they scored less than the mean value.

Data collection tools and techniques

A pretested, structured, self-administered questionnaire was used to gather the data. A review of relevant literature led to the adoption and modification of the questionnaire. The questionnaire has three sections: one for collecting socio-demographic information, one for assessing nurses' knowledge of pain treatment, and one for assessing nurses' attitudes about pain management. Four degree-holding nurses who gathered the data under the direction of a public health official.

Data processing and analysis

After data collection, the questionnaire was checked for completeness and coded. The data were entered into Epi-info version 3.5.3 and exported, cleaned and analyzed by using SPSS 24. Mono, bi and multivariate analyses were performed. Variables with a p < 0.05 in bi-variate analysis were entered into multiple logistic regression and variables with a p < 0.05 in multivariate analysis were considered statistically significant associations.

Ethical consideration

The Harar Health Science College Ethics and Research Committee's approval for the study (Ref. Number HHSC-136/2023) was acquired. The hospital's administrative team and the participants both gave their consent. Throughout the course of the study, data confidentiality has been maintained.

Results

Socio-demographic characteristics of the study

A total of 194 Nurses participated in the study with a response rate of 97.9%. The mean ages of the respondents were 24.51 (± 4.11 SD) with minimum and maximum ages of 21 and 59 years, respectively. Almost nearly half (48.97%) of the participants were male. More than third-fourth 151 (77.84%) of the participants were BSc holders. Only 37 (13.92%) of the participants attend training about pediatric pain management (Table 1).

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Variable	Category	Frequency	Percent
Age,	20 - 30	76	39.18
	31 - 40	65	33.51
	41 - 50	31	15.98
	51+	22	11.34
Sex	Male	95	48.97
	Female	99	51.03
Marital status	Married	117	60.31
	Not married	77	39.69
Level of education	Diploma	43	22.16
	BSc	151	77.84
Work experience,	< 2 years	62	31.96
	2 - 5 years	44	22.68
	> 5 years	88	45.36
Current working area or ward	Medical	54	27.84
	Surgical	47	24.23
	OR	17	8.76
	Emergency	11	5.67
	Pediatrics	19	9.79
	OPD	23	11.86
	ICU	17	8.76
	Others	6	3.09
Ever worked in the pediatric ward	Yes	32	16.49
	No	162	83.51
Formal education on pediatric pain management	Yes	111	57.22
	No	83	42.78
In-service training about pediatric pain management	Yes	27	13.92
	No	167	86.08

***Table 1:** Socio-demographic characteristics of the study participants.*

Knowledge of nurses towards pain management

Almost all 188 (96.91%) said that Paracetamol is well-suited for the treatment of pain in children. Two third 129 (66.49%) answered that Distraction, for example, by the use of music or relaxation, can decrease the feeling of pain. one hundred eighty three (94.33%) answered that Young infants, less than 6 months of age cannot tolerate opioids for pain relief. All over all 194 (100%) said that children need better attention for managing their pain. Around half 91 (46.91%) answered that recommended route of administration of Opioid analgesics to children with brief, severe pain of sudden onset (e.g. trauma or postoperative) pain is intravenous. All of the participants 194 (100%), knew existence of Paracetamol, Diclofenac, and Ibuprofen analgesics in their institution whereas only 103 (53.09%), 66 (34.02%), knew existence of morphine and codeine opioid analgesics in their institution respectively.

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Out of 194 participants, 122 (63%) respondents had good knowledge while the rest 72 (37%) participants had bad knowledge towards pain management for hospitalized children (Table 2).

Variable	Category	Frequency	Percent
Narcotic on regular schedule is preferred over "PRN" schedule for continuous pain.	Yes	103	53.09
	No	91	46.91
Paracetamol is well-suited for the treatment of pain in children.	Yes	188	96.91
	No	6	3.09
Anti-inflammatory drugs irritate children's digestive system in long-term use.	Yes	184	94.85
	No	10	5.15
Distraction, for example, by the use of music or relaxation, can decrease the feeling of pain	Yes	65	33.51
	No	129	66.49
Long-term continuing opioid medication almost always causes physiological dependence in child patients.	Yes	116	59.79
	No	78	40.2
Respiratory depression rarely occurs in children/adolescents who have been receiving opioids over a period of months.	Yes	78	40.21
	No	116	59.79%
Children need analgesic drugs before having a burns dressing changed	Yes	77	39.69
	No	117	60.31
Vital signs always is not reliable indicators of intensity of pain	Yes	88	45.36
	No	106	54.64
Young infants, less than 6 months of age cannot tolerate opioids for pain relief.	Yes	183	94.33
	No	11	5.67
Lack of pain expression does not necessarily mean absence of pain.	Yes	99	51.03
	No	95	48.97
Do you know children need better attention for managing their pain	Yes	194	100.00
	No	0	0.00
If a patient (and/or family member) reports that a narcotic is causing Euphoria, she should be given a lower dose of the analgesic	Yes	117	60.31
	No	77	39.69
The recommended route of administration of opioid analgesics to children with brief, severe pain of sudden onset (e.g. trauma or postoperative) pain is:	Intravenous	91	46.91
	Intra muscular	43	22.16
	Intra dermal	6	3.09
	Oral	54	27.84
Thick (√) for medications you know below that are mostly available in your institution for pain relief measures.	Paracetamol	194	100.00
	Diclofenac	194	100.00
	Ibuprofen	194	100.00
	Morphine	103	53.09
	Codeine	66	34.02

Table 2: *Knowledge of nurses toward pediatric pain management in in Hiowt Fana Specialized Referral Hospital, Harar, Ethiopia, 2023.*

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Attitude of nurses towards pain management

Two third 129 (66.49%) stated that children felt as much pain as adults. One hundred seventy six (90.72%) replied that Pain management and pain relief are of priority in children treatment. Slightly less than two third 124 (63.92%) answered that using pain assessment tools for determining child's pain lead to an appropriate method of pain relief and 105 (54.12%) said that measurement and control of pain in child leads to improved quality of child's life.

Out of 194 participants, 109 (56.2%) respondents showed positive attitude while the rest 85 (43.8%) participants had negative attitude towards pain management for hospitalized children (Table 3).

Variable	Category	Frequency	Percent
Infants and children experience pain equal to that experienced by adults	Agree	129	66.49
	Disagree	65	33.51
Parents should be present during painful procedures	Agree	172	88.66
	Disagree	22	11.34
Pain management and pain relief are of priority in children treatment	Agree	176	90.72
	Disagree	18	9.28
Children have the right to appropriate assessment and management of their pain	Agree	194	100.00
	Disagree	0	0.00
The most accurate judge of the intensity of the children's pain is her/his primary nurse	Agree	88	45.36
	Disagree	106	54.64
To better assess child pain, the nurse can discuss with her/his parents	Agree	94	48.45
	Disagree	100	51.55
Assessment and control of child pain lead to improved his/her parents satisfaction	Agree	108	55.67
	Disagree	86	44.33
Failure to assess and manage the child's pain affects his body and mind in the long term	Agree	108	55.67
	Disagree	86	44.33
The nurse's physical and mental fatigue can affect children pain relief	Agree	77	39.69
	Disagree	117	60.31
Like other vital signs, pain score should be documented	Agree	100	51.55
	Disagree	94	48.45
Communicating with and educating child's parents play an effective role in relieving pain	Agree	85	43.81
	Disagree	109	56.19
When the necessary procedures have been done for the patient, the persistence of pain does not cause problems	Agree	47	24.23
	Disagree	147	75.77
Using pain assessment tools for determining child's pain lead to an appropriate method of pain relief	Agree	124	63.92
	Disagree	70	36.08
Measurement and control of child's pain can affect the healing process and reduces the hospital stay	Agree	94	48.45
	Disagree	100	51.55
Evaluation and measurement of child's pain should be considered as one of the vital signs when examining the child	Agree	102	52.58
	Disagree	92	47.42
Comparable stimuli in different people produce the same intensity of pain	Agree	47	24.23
	Disagree	147	75.77
Measurement and control of pain in child leads to improved quality of child's life	Agree	105	54.12
	Disagree	89	45.88

Table 3: *Attitude of nurses toward pediatric pain management in in Hiowt Fana Specialized Referral Hospital, Harar, Ethiopia, 2023.*

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Factors associated with the knowledge of nurses toward pediatric pain management

Sex, level of education, current working area or ward, in-service training about pediatric pain management, and favorable attitude towards pediatric pain management were the variables that were taken into account for multivariate logistic regression analysis because they had a p-value of less than 0.5 in bivariate analysis. Level of education, present working location or ward and in-service training on pediatric pain management were substantially linked with nurses' knowledge of pediatric pain management when confounding factors were controlled using multiple logistic regressions.

The multivariate logistic analyses revealed that BSc nurses were three times more likely to be knowledgeable in pain treatment for hospitalized children than diploma nurses [AOR = 3.1; 95% CI: (1.52, 4.21)]. Compared to nurses working in other units, pediatrics ward nurses were approximately three times more likely to be knowledgeable about how to treat children's pain [AOR = 3.27; 95% CI: (2.01, 5.89)]. Compared to nurses who get training, those who did were five times more likely to be knowledgeable about pain treatment for hospitalized children [AOR = 5.29; 95% CI: (1.28, 10.34)].

Variables Injury		COR With 95% CI	AOR With 95% CI	P value
Sex	Male	1		
	Female	1.1 (1.52, 4.21)*	1.2 (0.32.4.11)	0.720
Level of education	Diploma	1		
	BSc	1.30 (1.20, 4.21)*	3.1 (1.52, 4.21)**	0.020
Current working area or ward	Others	1		
	Pediatrics	1.27 (1.01, 3.11)*	3.27 (2.01, 5.89)**	0.017
In-service training about pediatric pain management	No	1		
	Yes	3.29 (1.28, 5.34)*	5.29 (3.80,13.14)**	0.021

***Table 4:** Bivariate and multivariate analysis of knowledge.*
COR: Crude Odds Ratio; CI: Confidence Interval; AOR: Adjusted Odds Ratio, *Variables that are significant at p-value ≤ 0.05 in bivariate analysis, **Variables that are significant at p-value ≤ 0.05 in multivariate analysis.

Factors associated with the attitude of nurses toward pediatric pain management

Variables considered for multivariate logistic regression analysis were those with a p-value < 0.5 in bi-variate analysis and those significantly associated with bi-variable analysis were sex, level of education, work experience, current working area or ward, in-service training about pediatric pain management and good knowledge about pediatric pain management After controlling confounding variables using multiple logistic regressions; level of education, working experience and In-service training about pediatric pain management and good knowledge about pediatric pain management were significantly associated with knowledge of nurses on pediatric pain management.

As comparison to nurses with a diploma, those with a degree qualifications were 2 times [AOR = 2.17; 95% CI: (1.30, 5.54) more likely to have a positive attitude toward pain alleviation in children. Compared to nurses with less than 2 years of experience, those with more than 2 years of experience were 3 times [AOR = 3.42; 95% CI (1.23 - 7.35)] more likely to have a positive attitude toward pain management in children. The attitudes of nurses who received pain management training were 2 times more positive than those who did not [AOR = 2.17; 95% CI (1.13 - 3.59)]. Good knowledge increased a nurse's likelihood of having a positive attitude by three times compared to low knowledge [AOR = 3.16; 95% CI (1.34 - 3.50)].

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Variables Injury		COR With 95% CI	AOR With 95% CI	P value
Sex	Male	1		
	Female	1.1 (1.52, 4.21)*	2.2 (0.32, 7.11)	0.541
Level of education	Diploma	1		
	BSc	2.12 (1.25, 6.21)*	2.17 (0.30, 5.54)	0.020
Work experience	< 2 years	1		
	> 2 years	3.12 (1.25, 9.21)*	3.42 (1.23, 7.35)**	0.012
Current working area or ward	Others	1		
	Pediatrics	1.72 (1.01, 6.11)*	3.27 (0.01, 5.89)	0.817
In-service training about pediatric pain management	No	1		
	Yes	4.19 (2.28, 14.34)*	2.17 (1.13, 3.59)**	0,021
Knowledge towards pediatric pain management	Good knowledge	1		
	Poor knowledge	2.11 (1.43, 4.38)*	3.16 (0.34, 3.50)	0.020

Table 5: Bivariate and multivariate analysis of attitude

*COR: Crude Odds Ratio; CI: Confidence Interval; AOR: Adjusted Odds Ratio, *Variables that are significant at p-value ≤ 0.05 in bivariate analysis, **Variables that are significant at p-value ≤ 0.05 in multivariate analysis.*

Discussion

In this study, 63% of nurses had good knowledge about pain management.it is Lower than studies done in Australia (77.56%) [19], Uganda (75%) [20] but Higher than studies done in Nigeria (60%) [21], Mekelle city, Ethiopia (58.6%) [22] Kenya (47.2%) [16], Iran (46.6%) [23] and Zimbabwe (35.5%) [24]. The variances might be due to methodological differences and the higher score in some county nurses about pain relief in children might be related with a continuous professional training about current pain management principles and pain assessment and management contents may include in their nursing curriculum.

In this study, more than half (56.2%) of the participants had a positive attitude. It is Similar with study done in Zimbabwe (56%) [24] it is lower than a study done in Iran (90.3%) [25], Australia (72.46%) [19] Uganda (75%) [20] whereas it is higher than studies done in Jimma, Western Ethiopia (49.8%) [17]. The dissimilarities might be due to methodological differences educational status of respondents [AOR = 3.1; 5% CI: (1.52, 4.21)], working place (ward) [AOR = 3.27; 95% CI: (2.01, 5.89)] and in-service training [AOR = 5.29; 95% CI: (1.28, 10.34)] were significantly associated with knowledge on pediatric pain management.

In this study, respondents' educational status was positively correlated with their understanding of pain treatment, with BSc nurses having more knowledge than diploma nurses (p = 0.020). It is consistent with the findings of this study conducted in Turkey that there is a substantial gap between nurses' educational backgrounds and their degree of expertise in pain treatment [26] but this result contrasts with a research conducted in Nepal, which found no significant link between educational attainment and degree of expertise of pediatric pain treatment [27]. This suggests that education in pain management is essential for enhancing nurses' expertise in pain evaluation and treatment in pediatric patients.

Study conducted in Rwanda, which reported that knowledge is not only acquired through formal education but also through daily practice as a way of learning and acquiring knowledge in where assigned, is supported by this study's finding that respondents' current working area or ward has a positive association with pain management and that nurses working in pediatrics ward had higher knowledge (p = 0.017) than those working in other departments [28]. This might be related to informal way learning and gained knowledge during round

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time since that referral hospitals are also educational institutions, this may be connected to informal learning and information acquired during free time. As a result, nurses may learn more about pain and pain treatment in children at the bedside discussion.

In this study, respondents who received in-service training had a better knowledge of pain management than those who did not (p = 0.021). Another study that found that inadequate knowledge can be caused by a lack of formal training is a major issue that can impede the most effective pain evaluation and management supports it [13]. This shows that educational programs are required to improve nursing staff members' knowledge of pain and pain therapies for children. In order to acquire the necessary information and deliver quality work, it is essential to enhance the working environment and pursue standard practice.

Service years (work experience) [(AOR = 3.42; 95% CI (1.23 - 7.35)] and Training [AOR = 2.17; 95% CI (1.13 - 3.59)], had significantly association with attitude on pediatric pain management.

In this study Service years (work experience) of respondents have positive association with pain management in which nurses have > 2 years of Service years (work experience) had positive attitude (p = 0.012) than those nurses have < 2 years of Service years (work experience), it is supported by study done in Gondar, Ethiopia, that indicates nurses with work experience of greater than 3 years were more likely to have a favorable attitude as compared to those nurses with less than 2 years of experience [18], but it is contradicted with study done in Turkey in which those nurses with work experience of 1 - 5 years scored significantly higher than the nurses who had ⩾ 10 years of experience [29].

In our study, trained nurses were 2 times more likely to have a favorable attitude as compared to those nurses who did not take training, this was supported by studies done in Gondar, Ethiopia [18]. In Egypt, nurses who attended the pain course, seminar, or lecture were more likely to have a positive attitude than nurses who did not [30].

In a similar vein, a research conducted in Jordan found that nurses who had had prior training in pediatric pain treatment scored better on average and displayed a more positive outlook than those nurses who had not [15].

Limitation of the Study

First, because this research was cross-sectional, it cannot demonstrate a causal link between the knowledge and attitudes of pediatric pain treatment and the independent factors. Second, as this study relies on self-reports, survey participants' bias may exist. Also, because this study used a quantitative methodology, it does not take into account other determinants of knowledge and attitude on pediatric pain management.

Conclusion and Recommendation

According to this study, around two third of the participants and slightly greater than half of the respondents had good attitude and positive attitude toward pediatric pain management respectively. Educational status of respondents, working place and in-service training were significantly associated with knowledge on pediatric pain management and service years (work experience) and training had significantly association with attitude on pediatric pain management Therefore, for better pediatric pain management, it is recommended to provide continuous training for nurses.

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Declaration of Conflicting Interests

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