






# Managing Pain in Low Resource Settings: Healthcare Professionals' Knowledge, Attitude and Practice Regarding Pain Management in Western Nepal

Parbati Thapa <sup>1</sup>, Bhuvan KC <sup>1,2</sup>, Shaun Wen Huey Lee <sup>1</sup>, Juman Abdulelah Dujaili <sup>1</sup>, Sudesh Gyawali<sup>3</sup>, Mohamed Izham Mohamed Ibrahim <sup>4</sup>, Alian A Alrasheedy <sup>5</sup>

<sup>1</sup>School of Pharmacy, Monash University Malaysia, Subang Jaya, Selangor, Malaysia; <sup>2</sup>College of Public Health, Medical, and Veterinary Sciences, James Cook University, Townsville, Queensland, Australia; <sup>3</sup>Department of Pharmacology, Manipal College of Medical Sciences, Pokhara, Nepal; <sup>4</sup>Department of Clinical Pharmacy and Practice, College of Pharmacy, QU Health, Qatar University, Doha, Qatar; <sup>5</sup>Department of Pharmacy Practice, College of Pharmacy, Qassim University, Buraidah, Qassim, Saudi Arabia

Correspondence: Bhuvan KC, School of Pharmacy, Monash University Malaysia, Jalan Lagoon Selatan, Subang Jaya, Selangor, 47500, Malaysia, Email [kcbhuvan@gmail.com](mailto:kcbhuvan@gmail.com); Alian A Alrasheedy, Department of Pharmacy Practice, College of Pharmacy, Qassim University, Buraidah, Qassim, Saudi Arabia, Email [aarshiedy@qu.edu.sa](mailto:aarshiedy@qu.edu.sa)

**Background:** Pain is a public health problem and affects millions of people globally. Effective pain management is possible through comprehensive pain management guidelines, adequate facilities, and trained healthcare professionals. Therefore, this study aims to analyze the healthcare professionals' knowledge, attitude, and practice regarding pain management in Western Nepal.

**Methods:** A cross-sectional study was carried out in hospitals of Pokhara, Nepal. Healthcare professionals, including doctors, pharmacists, and nurses, were enrolled. Tools for the study were "The Knowledge and Attitudes Survey Regarding Pain (KASRP)" and a validated practice-based questionnaire. Frequencies and descriptive statistics were used to describe the outcomes. Kruskal-Wallis *H*-test and Mann-Whitney *U*-test were used to analyze the association between the mean rank of KASRP score and sample characteristics. A *p*-value of <0.05 was considered significant for all statistical tests.

**Results:** A total of 336 healthcare professionals were enrolled in this study (108 medical doctors, 150 nurses, and 78 pharmacists). The mean KASRP scores (% ± SD) obtained by doctors, pharmacists, and nurses were 58.48±8.98, 53.01±7.80, and 52.26±6.39, respectively. A significant difference was found between the KASRP score and sample characteristics (*p*<0.001). The pain assessment tool is used by 96 (29%) healthcare professionals every time they meet the patients. Doctors and nurses used it more frequently as compared to pharmacists. Many of the pharmacists, 40 (51%), reported that they counsel the patients on the prescribed medicine (analgesics, NSAIDs, and opioids) every time. As only few participants had already attended a training on pain management, most healthcare professionals, 110 (33%), agreed and 198 (59%) strongly agreed that training related to pain management is needed in Nepal.

**Conclusion:** Adequate training and support are required to enhance the knowledge, attitude and ultimately better practice for healthcare professionals regarding pain management in Nepal.

**Keywords:** pain management, knowledge, attitude, practice, healthcare professionals, Nepal

## Background

Pain is a common healthcare problem that affects millions of people globally and contributes to seeking medical care for patients.<sup>1</sup> Acute pain is initiated by a specific injury or disease coupled with activation of the sympathetic nervous system and self-limited. In contrast, chronic pain is a disease state that outlasts the average healing time and persists or recurs for three months or more.<sup>2,3</sup> The International Association for the Study of Pain (IASP) estimates that 1 in 5 patients experience pain and 1 in 10 patients are diagnosed with chronic pain every year.<sup>1</sup> The prevalence of chronic pain in low-

and middle-income countries (LMICs) varies between 34 and 41%. It causes a high clinical, financial and humanistic burden on people where the public health systems are inadequate and underfunded.<sup>4</sup> In Nepal, the prevalence of chronic pain was estimated to be 48–50%, while 24–41% in India.<sup>5</sup>

Effective pain management requires a comprehensive approach comprising national strategy and guidelines on pain management, adequately trained human resources, and proper healthcare facilities/settings. Pain management in LMICs, especially in developing countries, is inadequate. The infrastructure, human resources, and clinical systems to manage pain are lacking in developing countries.<sup>6,7</sup> Access to information and specialist pain service is limited in Nepal.<sup>8</sup> Like in other chronic disease management, people often rely on medical care that one can access via out-of-pocket spending at private healthcare facilities.<sup>9</sup>

Adequate pain management needs a national strategy that recognizes pain as an essential aspect of secondary and long-term care. Institutional guidelines and policies on pain management are formed based on the federal system. In line with this goal, the IASP has recommended various methods to improve pain care including access to pain education for healthcare providers and the general population, coordination of care, quality improvement program, and funding for pain research.<sup>10</sup>

Proper pain management needs healthcare professionals to be appropriately trained on pain management, which involves appropriately assessing pain and selecting the right medicines and approaches. Therefore, the knowledge and training of healthcare professionals on pain education form the backbone of improved pain care. Studies carried out among healthcare professionals in several countries have revealed varied responses ranging from sufficient to inadequate level of knowledge, attitude, and practice on pain management. Low scores were obtained on key aspects of pain management, including initial assessment, treatment plan, reassessment, and knowledge of the pharmacology of medications, especially narcotics.<sup>11,12</sup> Studies have also reported poor knowledge and attitudes regarding pain relief among healthcare professionals, lack of access to medicines and proper pain treatment, financial and socioeconomic factors among patients as the main barriers to effective pain management.<sup>13</sup> These studies highlight the need to assess healthcare providers' knowledge regarding pain management in each country and provide training and support as per the local needs.

In Nepal, patients with acute or chronic pain visit hospitals (both public and private), clinics, and other available healthcare facilities that could provide pain management. For minor ailments, including mild to moderate pain, patients prefer self-medication with the available over-the-counter medications.<sup>14</sup> Many patients visit tertiary care hospitals or hospitals because of the availability of multiple facilities at low cost and the available insurance policy. Some institutions have pain management clinics that provide outpatient services and interventions. A multidisciplinary approach to pain management is gradually emerging in Nepal, especially in the private sector. There are very few specialized pain management clinics in the country,<sup>8</sup> and most of them are localized in the capital city Kathmandu. A study by Shakya et al has reported strict opioid regulation, lack of knowledge among patients about pain management, insufficient staff, and the least priority for pain management services as barriers to pain management in Nepal.<sup>15</sup> Furthermore, Nepal lacks a comprehensive pain management strategy at the national level that deals with procedures, policies, systems, and human resources required to manage chronic pain. There is inadequacy in terms of proper training of healthcare professionals on pain management, availability of therapeutic resources, and dedicated pain management programs in hospitals.<sup>16</sup> Very few studies have been conducted in Nepal regarding the knowledge, attitude, and practice of healthcare professionals on pain management, and the studies focused only on nurses.<sup>15,17</sup>

There have not been any attempts to assess and compare the knowledge, attitude, and practice (KAP) of doctors, nurses, and pharmacists in pain management in Nepal. Such studies would contribute to pain management policy and improve pain management practice. Consequently, in this study, we aimed to assess the knowledge, attitude, and practice of pain management among medical doctors, pharmacists, and nurses in hospitals in Western Nepal.

## Methods

### Study Design and Setting

A cross-sectional study was carried out from June to August 2020 at five hospitals in Pokhara, Western Nepal.

## Study Population, Sample Size, and Sampling methods

Registered doctors, pharmacists, and nurses who have been working as full-time employees at the hospitals were included in the study. The sample size for the study was 334, calculated by the Raosoft sample size calculator,<sup>18</sup> with a margin of error of 5%, confidence level of 95%, the population of 2500, and response distribution of 50%. Healthcare professionals meeting the inclusion criteria and willing to participate in the study were enrolled. A convenience sampling method was used, and all healthcare professionals available during data collection were enrolled until the required sample size was reached.

## The Study Instrument

The questionnaire consisted of 3 main parts: the demographic and participants' data, knowledge and attitude regarding pain, and participants' practices for pain management. The items for knowledge and attitude regarding pain were adapted from "The Knowledge and Attitudes Survey Regarding Pain (KASRP)," developed by Ferrel and McCaffery, revised in 2014.<sup>19</sup> The tool's content was based on the standards of pain management such as the American Pain Society and the World Health Organization guidelines etc. Internal consistency reliability for this tool was established ( $\alpha r > 0.7$ ). In our study, we have adopted 31 items from the KASRP based on the study objectives. Out of these, 18 were true or false questions, 11 were multiple-choice questions with four options and 2 items from the case study. We did not include some questions/items, especially those related to cancer pain ( $n=5$ ), pediatric pain ( $n=2$ ), culture ( $n=1$ ), and the 2<sup>nd</sup> case study ( $n=2$ ). The response to each item of KASRP was scored as "1" for the correct response and a "0" for the incorrect response. The total score was the sum of all correctly answered questions. The percentage score is calculated by dividing the number of correct responses by the total number of items in the survey. Healthcare professionals were considered to have adequate knowledge and attitude if the score was 80% and above, a level identified by McCaffery and Robinson 2002.<sup>20</sup> However, the percentage called "adequate" varies among different studies, as some used 80% or above as representing adequate knowledge and attitudes,<sup>21</sup> whereas others used 70% as a minimum score.<sup>22</sup> Some studies did not even indicate the pass rate.<sup>23</sup> According to Ferrel et al, items should be differentiated with the least correct responses and those with the best scores for better response analysis.<sup>19</sup> For the participants' perspectives on the practice of pain management, eight questions were developed to assess their practices based on the literature review,<sup>6,12,24</sup> with six questions on a 4-point Likert scale and two yes/no questions. Consequently, the final questionnaire consisted of 39 items and demographic information. The practice was assessed based on the response provided by the healthcare professionals on the Likert scale.

The final questionnaire was checked by a panel of experts comprising pharmacists, physicians, senior nurses, and academicians to ensure clarity and suitability in the Nepalese healthcare system. In addition, pretesting of the questionnaire was conducted among 17 healthcare professionals: six doctors, six nurses, and five pharmacists. They were requested to fill up the form and provide feedback on the questionnaire. The questionnaire was examined for reliability, and its internal consistency was established (Cronbach alpha of 0.73 was obtained for the practice-based questionnaire, and for the KASRP tool, it was 0.7).

## Data Collection

The questionnaire was developed in a google form. Department heads of medical, nursing and pharmacy facilities were contacted and requested coordination among staff to fill out the questionnaire. Healthcare professionals working full time in hospitals, registered in respective professional councils, and consented to participate in the study were enrolled.

## Data Analysis

Data from the google forms were checked for completeness and accuracy. Data were retrieved on an excel sheet and were transferred to IBM SPSS Statistics for Windows, version 26.0. Frequencies and descriptive statistics were used to describe the sample characteristics and responses to each item of KASRP and the practice-based question. Mann-Whitney *U*-test and Kruskal-Wallis *H*-test were used to analyze the association between the mean rank of KASRP score and sample characteristics as data were non-normally distributed. A *p*-value of  $<0.05$  was considered significant for all statistical tests.

## Ethical Consideration

Ethical approval for the study was obtained from the Nepal Health Research Council (Reg no. 211/2020). Permission to collect the data was obtained from institutional review committees of the respective hospitals.

## Results

### Participants' Characteristics

A total of 336 questionnaire were completed, mostly by nurses (n=150, 44.6%), followed by medical doctors (n=108, 32.1%) and pharmacists (n=78, 23.2%) from different hospitals. Most of the respondents were female (n=230, 68.5%), and more than two-thirds of them (n=240, 71.4%) were young adults aged 25–35 years old. The demographic characteristics are shown in [Table 1](#).

**Table 1** Demographic Details and the mean Knowledge and Attitudes Survey Regarding Pain (KASRP) Score

Characteristics	Frequency	Percent	Mean KASRP Score (%)	p-value
<b>Profession</b>				
Doctor	108	32.1	58.48	<0.001
Nurse	150	44.6	52.26	
Pharmacist	78	23.2	53.01	
<b>Gender</b>				
Male	106	31.5	59.26	<0.001
Female	230	68.5	53.46	
<b>Age</b>				
20–24	82	24.4	51.75	<0.001
25–35	240	71.4	56.47	
36–45	10	3.0	53.40	
46–55	4	1.2	61.50	
<b>Department</b>				
Medicine	98	29.2	52.91	<0.001
Orthopaedics	22	6.5	60.72	
Gynaecology and obstetrics	46	13.7	54.34	
Pharmacy	78	23.2	53.64	
Surgery	32	9.5	60.68	
Others	60	17.85	63.43	
<b>Experience</b>				
Less than 5 years	200	59.5	54.58	<0.001
5–10 years	122	36.3	58.01	
11–15 years	4	1.2	54.50	
More than 15 years	10	3	58.60	

**Note:** p< 0.05 is considered statistically significant. The Knowledge and Attitudes Survey Regarding Pain (KASRP) Others: ENT, ICU, Dermatology, Emergency, Paediatric.

## Knowledge and Attitude of Health Care Professionals (HCPs) Regarding Pain

The mean percentage KASRP score obtained was  $55.29 \pm 8.66$  for correct responses. The mean score ( $\% \pm SD$ ) obtained by doctors, pharmacists, and nurses were  $58.48 \pm 8.98$ ,  $53.01 \pm 7.80$ , and  $52.26 \pm 6.39$ , respectively. The maximum score obtained was 24 (77%), and the minimum was 10 (32%). Most healthcare professionals, 63.1%, have their scores between 40–60%. Details of the score obtained are depicted in Table 2.

Items of the KASRP were classified into assessment, medication, intervention, addiction, and spiritual categories. More than 80% of the healthcare professionals showed a correct response to 5 items of the medication category and 1 item of the addiction category. These items assessed knowledge on respiratory depression due to opioids, the effectiveness of combining analgesics, adjustment of opioid doses, the definition of “equianalgesic,” the peak effect of morphine after intravenous administration, and assessment of sedation during pain management using opioids; however, knowledge and attitude were found poor on using placebo to determine whether the pain is real, initiation of opioid when the source of the pain is not known, use of opioids among patients with substance abuse and symptoms of physical dependency on opioid withdrawal. Details of the correct responses to different items are shown in Table 3.

Kruskal Wallis tests showed a statistically significant difference in the KASRP score between the professional category ( $p < 0.001$ ), age ( $p < 0.001$ ), department ( $p < 0.001$ ), and their experience ( $p < 0.001$ ). Further pairwise comparison showed a significant difference between doctor and pharmacist, doctor and nurse. For department wise the differences included medicine and surgery, gynaecology/obstetrics and surgery, pharmacy and surgery. A significant difference in score was observed between the gender, as shown by the Mann Whitney *U*-test ( $p < 0.001$ ). The details are presented in (Table 1).

## The Practice of HCPs Regarding Pain Management

Assessment of the practice of healthcare professionals on pain management reveals that only 96 (29%) of them used the pain assessment tool every time during their consultation. Doctors (37%) and nurses (32%) used it more frequently as compared to pharmacists (10%). The verbal/graphic rating scale was reported as the most used tool to assess pain ( $n=132$ , 39%). Counselling on the use of analgesics, NSAIDs, opioids, and assessment of allergic response or adverse drug reaction to the prescribed drugs was conducted every time by 128 (38%) healthcare professionals. Similarly, only 100 (31%) of them used opioid risk assessment tools before prescribing, administering, or dispensing. Pharmacist involvement was higher in counselling as 51% reported counselling the patient every time. However, only a few, 10%, assessed the allergic responses and adverse drug reactions. In addition, 30% of the doctors and 41% of the nurses provided the counselling every time, and 44% and 48% assessed allergic responses, respectively.

The majority of them either agreed or strongly agreed that standard pain management guidelines should be followed, and training related to pain management is needed for healthcare professionals in Nepal. However, more than three-quarters of the healthcare professionals ( $n=254$ , 76%) reported that they do not follow any specific pain management guidelines. Likewise, the majority ( $n=284$ , 85%) of them had never attended any training regarding pain management. Details of the response of healthcare professionals on the practice-based questions are shown in Table 4.

**Table 2** Distribution of the Knowledge and Attitudes Survey Regarding Pain (KASRP) Score

	$\geq 60\%$	$>40$ and $<60\%$	$\leq 40\%$
<b>Doctors n (%)</b>	52 (48.1)	56 (51.9)	0 (0)
<b>Nurses n (%)</b>	24 (16.0)	120 (80.0)	6 (4.0)
<b>Pharmacists n (%)</b>	28 (35.9)	36 (46.2)	14 (17.9)
<b>Total n (%)</b>	104 (31.0)	212 (63.1)	20 (6.0)

**Note:** Maximum score 77% and minimum score 32%.

**Abbreviation:** n, frequency.

**Table 3** Frequency of Correctly Answered Questions; the Knowledge and Attitudes Survey Regarding Pain (KASRP)

S. No.	Assessment Category	Doctors		Nurse		Pharmacist		Overall	
		n	(%)	n	(%)	n	(%)	n	(%)
1	Vital signs are always reliable indicators of the intensity of a patient's pain.	82	76	28	19	56	72	166	49
2	Patients may sleep despite severe pain.	86	80	116	77	50	64	252	75
3	Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real.	36	33	32	21	22	28	90	27
4	If the source of the patient's pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain.	24	22	22	15	4	5	50	15
5	The most accurate judge of the intensity of the patient's pain is the patient.	64	59	140	93	54	69	258	77
6	Case Study A. Andrew is 25 years old and this is his first day following abdominal surgery. As you enter his room, he smiles at you and continues talking and joking with his visitor. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8. A. On the patient's record you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew's pain.	20	19	10	7	0	0	30	9
<b>Medication Category</b>									
7	Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids for months.	84	78	130	87	64	82	278	83
8	Combining analgesics that work by different mechanisms (eg, combining an NSAID with an opioid) may result in better pain control with fewer side effects than using a single analgesic agent.	92	85	126	84	70	90	288	86
9	The usual duration of analgesia of 1–2 mg morphine IV is 4–5 hours.	26	24	48	32	10	13	84	25
10	Opioids should not be used in patients with a history of substance abuse.	30	28	26	17	46	59	102	30
11	Elderly patients cannot tolerate opioids for pain relief.	84	78	58	39	50	64	192	57
12	Patients should be encouraged to endure as much pain as possible before using an opioid.	76	70	72	48	16	21	164	49
13	After an initial dose of an opioid analgesic is given, subsequent doses should be adjusted by the individual patient's response.	108	100	136	91	54	69	298	89
14	(Hydrocodone 5 mg + acetaminophen 300 mg) PO is approximately equal to 5–10 mg of morphine PO.	76	70	110	73	36	46	222	66
15	Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose.	68	63	50	33	10	13	128	38
16	Benzodiazepines are not effective pain relievers and are rarely recommended as part of an analgesic regimen.	60	56	114	76	62	79	236	70
17	The term "equianalgesic" means approximately equal analgesia and is used when referring to the doses of various analgesics that provide approximately the same amount of pain relief.	108	100	144	96	74	95	326	97
18	The recommended route administration of opioid analgesics for patients with brief, severe pain of sudden onsets such as trauma or postoperative pain is Intravenous.	72	67	130	87	54	69	256	76

(Continued)

Table 3 (Continued).

S. No.	Assessment Category	Doctors		Nurse		Pharmacist		Overall	
		n	(%)	n	(%)	n	(%)	n	(%)
19	A 30 mg dose of oral morphine is approximately equivalent to Morphine 10 mg IV.	68	63	68	45	46	59	182	54
20	Analgesics for postoperative pain should initially be given around the clock on a fixed schedule.	100	93	90	60	54	69	244	73
21	The most likely reason a patient with pain would request increased doses of pain medication is experiencing increased pain.	70	65	92	61	54	69	216	64
22	The time to peak effect for morphine given IV is 15 min.	108	100	138	92	76	97	322	96
23	The time to peak effect for morphine given orally is 1–2 hours.	52	48	50	33	56	72	158	47
24	Which statement is true regarding opioid-induced respiratory depression: Obstructive sleep apnea is an important risk factor.	74	69	64	43	40	51	178	53
<b>Intervention Category</b>									
25	Patients who can be distracted from pain usually do not have severe pain.	42	39	80	53	22	28	144	43
26	Case Study A, b Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8, and he had no clinically significant respiratory depression, sedation, nor other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1–3 mg q1h PRN pain relief." Check the action you will take at this time. 1. Administer no morphine at this time. 2. Administer morphine 1 mg IV now. 3. Administer morphine 2 mg IV now.	14	13	8	5	2	3	24	7
<b>Addiction Category</b>									
27	Narcotic/opioid addiction is defined as a chronic, neurobiological disease characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving.	88	81	106	71	66	85	260	77
28	Sedation assessment is recommended during opioid pain management because excessive sedation precedes opioid-induced respiratory depression.	108	100	150	100	78	100	336	100
29	How likely is it that patients who develop pain already have an alcohol and/or drug abuse problem? 5–15%	74	69	64	43	40	51	178	53
30	Following abrupt discontinuation of an opioid, physical dependence is manifested by the following sweating, yawning, diarrhea, and agitation with patients when the opioid is abruptly discontinued.	42	39	30	20	12	15	84	25
<b>Spiritual Category</b>									
31	Patients' spiritual beliefs may lead them to think pain and suffering are necessary.	56	52	96	64	56	72	208	62

**Abbreviation:** n, frequencies.

**Table 4** Response to Practice-Based Question

		Doctor (N=108)		Nurse (N=150)		Pharmacist (N=78)		Total (N=336)	
		n	%	n	%	n	%	n	%
<b>1. How often do you use the pain assessment tools to assess the pain level of the patients?</b>	Never	4	4	32	21	32	41	68	20
	Rarely	16	15	44	29	34	44	94	28
	Often	48	44	26	17	4	5	78	23
	Every time	40	37	48	32	8	10	96	29
<b>If you use, select the one you prefer often:</b>	Face pain scale	30	28	16	11	26	33	72	21
	Numeric rating scale	28	26	10	7	0	0	38	11
	Verbal rating scale/ graphic rating scale	24	22	88	9	20	26	132	39
	Visual analog scale	22	20	4	3	0	0	26	8
<b>2. How often do you provide counselling to the patient on analgesics, NSAIDs, or opioids?</b>	Never	4	4	12	8	0	0	16	5
	Rarely	6	6	40	27	4	5	50	15
	Often	66	61	36	24	34	44	142	42
	Every time	32	30	62	41	40	51	128	38
<b>3. How often do you assess allergic response/ adverse drug reaction to drugs prescribed for chronic pain?</b>	Never	0	0	10	7	2	3	12	4
	Rarely	26	24	30	20	52	67	108	32
	Often	34	31	38	25	16	21	88	26
	Every time	48	44	72	48	8	10	128	38
<b>4. How often do you use opioid risk assessment tools before prescribing/ administering /dispensing opioids?</b>	Never	6	6	22	15	14	18	42	13
	Rarely	28	26	44	29	38	49	110	33
	Often	34	31	24	16	24	31	82	24
	Every time	40	37	60	40	2	3	102	30
<b>5. Do you agree that standard pain management guidelines should be followed to manage pain?</b>	Strongly disagree	4	4	10	7	0	0	14	4
	Disagree	2	2	0	0	0	0	2	1
	Agree	38	35	76	51	34	44	148	44
	Strongly agree	64	59	64	43	44	56	172	51
<b>6. Do you agree pain management-related training is needed for a healthcare professional in Nepal?</b>	Strongly disagree	6	6	14	9	4	5	24	7
	Disagree	4	4	0	0	0	0	4	1
	Agree	22	20	56	37	32	41	110	33
	Strongly agree	76	70	80	53	42	54	198	59

(Continued)



Table 4 (Continued).

		Doctor (N=108)		Nurse (N=150)		Pharmacist (N=78)		Total (N=336)	
		n	%	n	%	n	%	n	%
7. Do you follow any guidelines for the management of pain?	Yes	30	28	42	28	10	13	82	24
	No	78	72	108	72	68	87	254	76
8. Have you attended any training related to pain management?	Yes	20	19	28	19	4	5	52	15
	No	88	81	122	81	74	95	284	85

## Discussion

The current study assessed doctors, pharmacists, and nurses' knowledge, attitude, and practice regarding pain management in hospitals of Western Nepal. In general, our study indicated that the performance of healthcare professionals on the selected aspect of knowledge and attitude was low to moderate. Healthcare professionals were considered to have adequate knowledge and attitude if the score was 80% and above.<sup>20</sup> However, in comparison, doctors' scored higher than pharmacists and nurses. These results align with several other studies' outcomes where doctors scored higher than pharmacists or nurses on these aspects.<sup>11,12,25</sup> Furthermore, a pairwise comparison shows a significant difference in scores between doctors and nurses, consistent with the results of the studies by Nuseir et al, 2016, Fallatah et al, 2017 and Alkhatib et al, 2020.<sup>12,25,26</sup> Doctors' better knowledge and attitude scores in our study may be due to their experience and prior education on pain management. Doctors lead the current pain management paradigm with only a supportive role for nurses and a minor role/involvement for pharmacists. However, these discrepancies could be resolved through continuing education and the development of multidisciplinary pain management team in an organization.<sup>11,27</sup> The low percentage and variation of correct response among the healthcare professionals might be due to inadequate pain management content in the educational curriculum and insufficient training regarding pain management, especially in low resources settings like Nepal.<sup>6</sup> Similarly, a lack of institutional policy and guidelines regarding pain management, limited inter-professional education, and knowledge sharing between healthcare professionals could also contribute to the variability in the pain management knowledge and attitude score.

The concept of pain management in Nepal dates to 1970. However, it could not progress much due to a resource crunch, an inadequate public health system, and a lack of comprehensive pain management policy and training system in healthcare institutions. Over the recent years, pain management as a specialized discipline has been increasing as more and more training, fellowship, and practice environments are being provided to healthcare professionals in Nepal.<sup>8</sup> However, our study shows that there is still a need for institutional policy and environmental support for pain management, especially in public hospitals outside the Kathmandu valley and other healthcare settings.

A significant difference in KASRP score was observed between different professions ( $p < 0.001$ ), genders ( $p < 0.001$ ), age ( $p < 0.001$ ), department ( $p < 0.001$ ), and experience ( $p < 0.001$ ). Differences in gender might be because almost all nurses were female, and their score was relatively lower than doctors and pharmacists. More than half of the doctors were male and obtained higher scores. This finding is similar to Al-Quliti and Alamri, where there was a statistical difference in scores obtained by physicians compared to nurses.<sup>28</sup> In the study findings of Alkhatib et al, there was no significant difference observed based on gender.<sup>26</sup> A gender skewed scenario can be observed among healthcare professionals in Nepal as more females work as nurses and more males as doctors. However, the impact of gender differences in KASRP scores between departments and professionals needs further study to see the effect of gender on collaborative practice and knowledge sharing among professionals regarding pain management.

Our study showed that the healthcare professionals scored low (ie, 30% and below) on three items of the assessment category and these items were about the use of sterile water (placebo) to determine whether the pain is real using placebo, use of opioids during the pain evaluation period and pain assessment based on patient medical history and facial

expression. Items from the medication category which were less scored were the duration of action of 1–2 mg morphine and the use of opioids among substance abusers. Likewise, one item from the intervention category that dealt with a selection of morphine dose based on pain rating and clinical condition, and one item from the addiction category about symptoms of physical dependency on abrupt cessation of morphine, were also scored low. Most of these items were related to opioids. This result was consistent with the study's findings by Kheshti et al, where the narcotic questions get the lowest percentage of correct responses.<sup>29</sup> Another survey by Nuseir et al, also reported a deficit in knowledge of the pharmacology of narcotics among healthcare professionals.<sup>12</sup> The poor knowledge regarding opioids (narcotic analgesics) could probably be due to low use of narcotics, policy constraints, and training regarding its use among healthcare professionals. In hospitals, all healthcare professionals do not have the same privilege /opportunities to prescribe and dispense narcotics which could also be a reason for inadequate knowledge. Narcotics are considered controlled drugs due to their abuse potential.<sup>30</sup> Morriss et al reported the poor knowledge and attitude about pain relief and access to opioids as a barrier to pain management in LMICs.<sup>13</sup> Nepal has ranked in the bottom three countries in the WHO Regional Office for Southeast Asia (SEARO) between 1996 and 2005 for the consumption of morphine.<sup>31</sup> Physicians were reluctant to prescribe opioids due to a lack of education and training in pain management, which led to the expiration of 49% of the sustained release morphine products in 2011. Likewise, though Nepal's national drug policy promotes the rational use of medicines, there is no specific mention or details, or guidance for opioids for pain management.<sup>30</sup> Consequently, adequate training and proper guidelines regarding opioids in pain management are crucial for Nepalese healthcare professionals.

Participants had inadequate knowledge of pain assessment and drug dosing, as reflected by their response to the case study-based question. A small number of healthcare professionals provided the correct response (< 10%). These are similar to the finding of Khasay et al, where the nurses from resource-limited settings scored least for pain assessment and drug dosing.<sup>32</sup> The deficit in pain assessment and management knowledge was also identified among healthcare providers in Saudi Arabia, and the study suggested the requirement of pain education among the providers.<sup>25</sup> The lack of comprehensive pain management guidelines that outline a routine assessment of pain in clinical settings and its appropriate might have resulted in low scores on pain assessment and drug dosing.<sup>28</sup> Likewise, the selection of minimum doses shows a reluctance from healthcare professionals to prescribe higher doses of analgesics. It also shows that the patients, mostly with moderate to severe pain, might not be receiving adequate analgesics. Healthcare professionals were quite aware of the possible adverse effects of opioids, as depicted by the response to item "22," where all of them correctly answered the questions about the sedation assessment during opioid management to prevent respiratory depression. So, a fear of side effects from a higher dose of opioids and other factors might have contributed to using a low dose of analgesics (narcotic analgesics). Inadequate pain treatment is a grave issue, and we need studies to identify possible reasons for the use of analgesics with low doses.

Practice related to pain management among healthcare professionals revealed that still few doctors, pharmacists, and nurses do not use any assessment tool to assess the patient's pain level, which is consistent with the findings of Shakya et al, 2020 and Nuseir et al, 2016.<sup>6,12</sup> Limited consultation time of the physician's  $5.26 \pm 2.31$  minutes<sup>33</sup> due to several contributing factors; higher patient flow, workload and lack of clear protocol on patient assessment could also have impacted the pain assessment. Likewise, inadequate training and inappropriate nurse-to-patient ratios were considered barriers to implementing the nursing process, which could relate to pain assessment as well.<sup>34</sup>

The verbal or graphical rating scale is the most widely used tool to assess pain in the current study, in contrast to the study by Shakya et al, 2020 where the visual analog scale was primarily used almost by 84% of healthcare professionals.<sup>6</sup> However, there is still variation in the choice of pain assessment tool between healthcare professionals. A common practice for pain assessment of outpatients in Nepal is to verbally ask the patient the intensity and types of pain and note the patient's response. This could be due to the lack of implementation of pain management guidelines and knowledge of the available pain assessment tools. However, nurses use different pain assessment tools in the in-patient hospital settings, including the numeric pain rating scale<sup>35</sup> and The Wong-Baker Faces Pain Rating Scale.<sup>10</sup> These pain assessment tools are available in Nepalese languages, and they can be used in hospital and clinical settings for better practice. Likewise, pain characterization with an appropriate tool like McGill pain questionnaire could help in better pain assessment and management.<sup>36</sup>

Most pharmacists reported that they never or rarely used the pain assessment tool. Clinical pharmacy practice is a recent establishment in Nepalese hospital settings as per the government's directive (2015 hospital pharmacy guidelines).<sup>37</sup> Nepalese hospital pharmacists are primarily involved in dispensing medications and counselling. Their involvement in pain management activities such as pain assessment, pain medication education, and pharmacotherapy review of pain medications are still lacking in Nepalese hospitals. Therefore, pharmacists have less opportunity to deal with the patient's symptoms as they meet the patient only after the assessment is complete. This trend might change if more clinical pharmacists are well trained and involved in multidisciplinary pain management teams involving nurses, physicians, and pharmacists are set up at Nepalese hospitals in the near future. These pharmacists can help with pain management via medication review, pain assessment, discharge counselling, medication reconciliation, and medication education.<sup>38</sup>

Most healthcare professionals provide counselling on the use of NSAIDs and opioids, assess allergic responses, and use the opioid risk assessment tool. Patients managing their pain via self-medication practice with paracetamol and NSAIDs is high in Western Nepal, where this study was carried out.<sup>39</sup> These NSAIDs are over-the-counter drugs and may benefit mild to moderate pain or manage chronic pain. However, OTC analgesics, without proper consideration, could result in adverse effects and serious complications such as gastrointestinal bleeding and kidney diseases.<sup>14</sup> Pharmacists need to promote the safe use of OTC analgesics in Nepal via appropriate dispensing and medication safety education.<sup>40</sup>

More than three-quarters of the healthcare professionals (76%) reported that currently, they do not follow any standard pain management guidelines, and very few follow the WHO pain management guidelines. Likewise, 85% of the healthcare professionals have not attended any training regarding pain management. However, they agreed that standard protocol should be followed, and pain-related training should be provided to the healthcare professionals in Nepal. Comprehensive pain management guidelines are essential as they promote evidence-based practice. Many international and national pain management guidelines are available. However, there are no specific pain management guidelines formulated or made mandatory to follow in Nepal. Pain management has not been given priority in secondary and tertiary care settings.<sup>6</sup> This could be the barrier to optimal practice. The treatment gap in pain management is prevalent in Nepal and many developing countries. Inadequate education and training of health professionals coupled with limited resources and facilities for pain management and limited access to medicines for pain relief are the significant reasons for this gap. In addition to the government policies, fear of opioid addiction, patient noncompliance, and the high cost of medication are the barriers to effective pain management in developing countries, as per the International Association for the Study of pain study.<sup>16</sup> So, it is necessary for the hospital management and healthcare professional's organization to be aware of the status of pain management and provide the essential training and support to enhance the knowledge, attitude, and improve practice.

Overall, the study findings emphasize the need for developing a national pain management strategy and comprehensive institutional guidelines for hospitals, primary care centers, and community pharmacies. A systematic assessment and management of pain can be carried out at Nepal's different healthcare facilities. Revision of the healthcare professionals teaching curriculum with the addition of modules on pain management could have positive impact on the practice. Continuing Professional Development training modules for doctors, nurses, and pharmacists will help them enhance their knowledge and equip them with the right tools and approaches for pain management.<sup>32</sup>

## Strength and Limitations of the Research

This study depicts healthcare professionals' current knowledge, attitude, and practice in pain management in Western Nepal. It opens the opportunity for the development and implementation of intervention programs to strengthen the ability of healthcare professionals and healthcare institutions in pain management. Limitations include the study site, only one part of Nepal, so studies with multiple healthcare facilities and a larger sample could provide a better representation of the situations. Data were collected using a self-reported questionnaire which could limit the identification of the problem, so further studies with quantitative and qualitative component could better portray the scenario.

## Conclusions

This study highlights the need of improvement in knowledge and attitude toward pain management among healthcare professionals in Western Nepal. Variation of practice exists among healthcare professionals in the implementation of pain assessment tools, opioid risk assessment tools, counselling, and assessing allergic reactions. Only a few participants reported having and following pain management guidelines, and the majority agreed that pain management training is crucial.

## Disclosure

The authors report no conflicts of interest in this work.

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