

# Pain Management Competency and its Associated Factors among Nurses

Indu Shrestha,<sup>1</sup> Sudaporn Payakkaraung,<sup>1</sup> Wanida Sanasuttipun<sup>1</sup>

<sup>1</sup>Faculty of Nursing, Mahidol University, Thailand.

## ABSTRACT

**Background:** Nurses play a vital role to handle the situation in the care of the patients especially for prioritizing and managing care of pain. Nursing competency attributes personal characteristics, professional attitude, values, knowledge and skills to demonstrate professional responsibility through practices. Nursing competency helps to provide high quality essential care to the patients at a right time. This study aimed to explore pain management competency and its associated factors among nurses in a tertiary hospital, Nepal.

**Methods:** A cross-sectional survey with correlational predictive design was conducted with 203 staff nurses who had work experience related to pain for more than two months at Tribhuvan University Teaching Hospital in Nepal. They were working in medical, surgical, gynecology and obstetrics, pediatric and neonatal, emergency and intensive care departments. The participants were selected from inpatient departments by convenience sampling technique from December 2020 to February 2021. SPSS 18.0 version was used for data entry and analysis using descriptive statistics, chi-square and logistic regression. Significant factors reported at  $P < 0.05$ .

**Results:** In total participants, 67.5% of nurses were competent on pain management. Work experience [OR = 0.426 (95% CI: 0.205-0.887)] could significantly predict on nurses' competency for pain management. However, there was no significant association educational level, working unit, nurse-physician relationship, and training on nurses' competency.

**Conclusions:** Based on the findings, two third (67.5%) nurses are competent on pain management and work experience is a factor contributed to the nurses' competency for pain management, the researcher recommends nurses with lower work experience should provide pre-service training on pain management.

**Keywords:** Competency; nurse; pain management.

## INTRODUCTION

Pain is the common reason of the individual to visit hospitals for medical attention. In Nepal, 50% had prevalence of pain, among them, 30% had chronic pain and 37% had everyday pain.<sup>1</sup> Nurses are the vital persons to handle the situation of the pain based on their experiences and caring of the patient during hospitalization.<sup>2</sup> Nurses' competency for pain management refers to nurses' perception on their ability to demonstrate a set of professional core competency required for nursing profession capability in the pain management.<sup>3</sup> Pain management competency refers to the understanding to the four main domains multidimensional nature of pain, pain assessment and measurement, management of the pain and clinical

condition of pain.<sup>4, 5</sup> The objectives of the study were to examine nurses' competency and the predictive factors on nurses' competency for pain management at a tertiary hospital, Nepal.

## METHODS

A cross-sectional survey with correlational predictive study was conducted among 203 nurses who worked in Tribhuvan University Teaching Hospital in Kathmandu, Nepal. Data were collected by convenience sampling technique from December 2020 to February 2021. Ethical approval was obtained from Institutional Research Board (IRB) Faculty of Nursing, Mahidol University and Ethical Review Board, Nepal Health Research Council (NHRC) in Nepal. Permission was obtained to

**Correspondence:** Dr Sudaporn Payakkaraung, Faculty of Nursing, Mahidol University, Thailand. Email: sudaporn.pay@mahidol.ac.th.

collect data from Tribhuvan Hospital Teaching hospital (TUTH). The signature of participants were obtained in participation information sheet and written consent form. The inclusion criteria was nurses who had working experience related to pain management more than two months. The exclusion criteria were nurses who worked in the administrative position and nurses who were on leave or taking short course training.

The sample size was calculated by G\* power software version 3.1.9.4. The sample size was calculated by referencing Neme, Nemera and Bekela, 2018.<sup>6</sup> Based on this study, the sample size was calculated by using logistic regression with two tails, probability  $H1 = 0.44$  and  $H0 = 0.252$  to get OR 2.33. While plotting the values in the software, Power (1-B) as 0.8 and X parm  $\pi$  as 0.5 with binominal distribution, as a result of sample size was 203 subjects were recruited in the study. All 203 sample were participants in the research. The non-response rate was zero.

The original Nurse pain management competency questionnaire,<sup>7</sup> 41 items, was performed for test retest reliability in present study which was 0.60. The researcher deleted three items to maintain reliability of the questionnaire and to decrease the redundancy. Therefore, Nurse pain management competence questionnaire included 38 items in current study. The Cronbach's alpha coefficient for this modified Nurse Pain management competency questionnaire (test-retest reliability) was of 0.72. The Cronbach's alpha coefficient for this Staff work relationship (Nurse-Physician) questions in present study was 0.81.

Self-administered structured questionnaire<sup>6</sup> was used to collect data which was divided into four parts; Demographic questionnaire, General Information questionnaire, Staff works relationship (Nurse-Physician) questionnaire<sup>6</sup> and Nurse pain management competency questionnaire.<sup>6</sup>

Part 1: Demographic questionnaire consisted of 4 items; age, sex, marital status and religion.

Part 2: The general Information questionnaire consisted of 5 items: level of education, work experience, working unit, training on pain management and read pain management guidelines/protocols.

Part 3: The staff works relationship (Nurse-Physician) questionnaire<sup>6</sup> consisted of 12 items, three domains: joint participation on pain management competency, sharing of patient information on pain management

and cooperativeness on pain management. Each domain consisted of 4 items, total of 12 items in this tool. "Likert" scale ranged from "Rarely", "Sometimes", "Usually" and "Always". This questionnaire included 10 positive and 2 negative questions. Items number 2 and 9 were negative questions. For negative questions, it had reverse scoring that Rarely score 4, Sometime score 3, Usually score 2 and Always score 1. Whereas positive questions Rarely score as 1, Sometimes score as 2, Usually score as 3 and Always score as 4. The interpretation of scoring criteria was based on total score with ranged from 12- 48 points. The total score was divided into two categories: good and poor relationship. The score from 12 to 30 indicated poor relationship and the score from 31 to 48 indicated good relationship.<sup>6</sup>

Part 4: Nurse pain management competency questionnaire was originally developed in English language by Abiru Neme, Gugsu Nemera and Gadisa Bekela in 2018 to identify nursing competency in pain management. This instrument was adopted from the Knowledge and Attitude Survey Regarding Pain (KASRP) by study of Ferrell & McCaffery in 2014.<sup>7</sup> Nurse pain management competency questionnaire consisted of 38 items; four domains in this questionnaire; multidimensional nature of pain, pain assessment and measurement, clinical manifestation of pain and pain management. Correct answer scores 1 and incorrect answer scores 0. The range of score is 0 - 38. The total score is divided into 100%. Score  $\geq 19$  ( $\geq 50\%$ ) are refer as competent of pain management and score  $< 19$  ( $<50\%$ ) refer as in-competent of pain management. The psychometric properties were done by multiple pilot studies and test-retest reliability was established.<sup>7</sup> Internal consistency reliability was established ( $\alpha > 0.70$ ).<sup>7,8</sup>

Data were entered into the Statistical Package for Social Science (SPSS) version 18 for analysis. A descriptive analysis (frequency and percentage) was used to analyze all study variables. Age, experience year and hours of training on pain management are continuous data. These were analyzed by using frequency, percentage, mean, median and standard deviation. Chi-square was used to analyze the association of each categorical independent variable with dependent variable. Binary logistic regression was used to examine the predictive power of each independent variable with dependent variable. A p-value of less than 0.05 was considered statistically significant.

## RESULTS

The majority of staff nurses aged between 20 to 60 years

old with the mean age was 29.45 years old (SD=5.53). All participants were female, among them 60% were married. Regarding the religion of participants, majority of the nurses were Hinduism (92.1 %) and 6.9% were Buddhism.

**Table 1. General information of participants related to education and work experience (n= 203).**

Characteristics	Frequency (N)	Percent (%)
<b>Level of Education</b>		
Diploma degree (PCL)	29	14.3
Bachelor of Nursing (BN)	49	24.1
Bachelor of Science in Nursing (BSc. Nursing)	88	43.4
Bachelor in Nursing Science (BNS)	34	16.7
Master of Nursing (MN)	1	0.5
Master of Science in Nursing (MSc. Nursing)	2	1
<b>Work Experience in providing care to the patient</b>		
1 to < 5	98	48.3
5 to 10	67	33
>10	38	18.7
<b>Working Department</b>		
Medical department	44	21.7
Surgical department	64	31.5
Emergency department	14	6.9
Pediatric and Neonatal department	49	24.1
Gynecology/Obstetrics department	14	6.9
Intensive care unit	18	8.9
<b>Current Working department experience</b>		
< 5	143	70.4
5 to 10	46	22.7
>10	14	6.

General information of participants related to education and work experience was shown in table 1. The majority of the nurses pursued bachelor degree 84.2%, 14.3% pursued diploma degree and 1.5% pursued master degree. The mean work experience was 7.35 years (SD = 5.99), the minimum work experience was 1 year and the maximum work experience was 36 years. About half of the nurses (48.3%) had 1 to <5 years of work experience, one third of the nurses (33%) had 5 to 10 years of work experience and nurses with >10 years work experience were of 18.7%. Most of the nurses work in the surgical department (31.5%) and the lowest and equal percentage of the nurse participants in emergency and gynecology/

obstetrics department (6.9%). The mean score of current work experience was 4.9 years (SD = 4.5, Range = 34.5). The minimum current work department experience was 6 months and maximum current working department experience was 35 years.

**Table 2. General information of participants related to training experience and reading pain management guidelines/protocols (n= 203).**

Characteristics	Frequency (N)	Percent (%)
<b>Pre-service training on pain management</b>		
Yes	9	4.4
No	194	95.6
<b>Attended of short course training on pain management</b>		
Yes	15	7.4
No	188	92.6
<b>Read pain management guidelines/protocols</b>		
Yes	130	64
No	73	36

General information of participants related to training experience and reading pain management guidelines/protocols was shown in table 2. Regarding training, only 4.4% got pre-service training on pain management and 7.4% attended short course training on pain management. More than half of the nurses (64%) read pain management guidelines/protocols.

**Table 3. Interpretation of Staff work relationship (Nurse-Physician) (N = 203).**

Items	Possible Range	Actual Range	Mean Score	Standard Deviation	Interpretation
Total nurse-physician Relationship	12-48	17-41	31.70	4.78	Good
<b>Subscale:</b>					
Overall Joint participation on pain management	1-16	4-16	10.74	1.79	Good
Overall Sharing of patient information on pain management	1-16	4-16	10.74	2.50	Good
Overall Cooperativeness on pain management	1-16	4-16	10.75	2.65	Good

**Table 4. Level of nurses' pain management competency (N =203).**

Variable	Possible Range	Actual Range	Mean Score	Standard Deviation	Interpretation
Total					
Nurses' pain management competency	0 - 38	11 - 34	22.41	4.65	Competent
<b>Domains:</b>					
Multidimensional nature of pain	0 - 4	0 - 4	2.74	0.91	Competent
Pain assessment and measurement	0 - 8	1 - 8	4.25	1.69	Competent
Clinical manifestation of pain	0 - 3	0 - 3	1.44	0.88	Incompetent
Pain management competent	0 - 23	6 - 22	13.97	2.98	Competent

Bivariate analysis was used to examine the relationship between level of education, work experience, working unit, nurse-physician relationship, and training on pain management with nurses' competency for pain management with significant level p-value < 0.05 and shown in Table 5. Work Experience is association between work experience and nurses' competency for pain management was statistically significant (p < 0.05). The highest and lowest rate of nurses' competency for pain management were 5 to less than or equal to 10 years of experience (79.1%) and greater than or equal to 10 years of work experience (57.9%) respectively.

For multivariate analysis, binary logistic regression analysis were compared with nurses' 1 to < 5 years work experience, nurses' with 5 to 10 years work experience were 57% less likely to be competent for pain management with p value < 0.05 [OR= 0.426( 95% CI: 0.205- 0.887)] and shown in Table 6.

Nurse-Physician communication and collaboration was measured by staff work relationship (Nurse-Physician) questionnaire which were recognized by three subscales; joint participation on pain management competency, sharing of patient information on pain management and cooperativeness on pain management.<sup>6</sup> The mean score of the staff work (Nurse-Physician) relationship was of 31.70 (SD = 4.78). Therefore, the relationship to staff work (nurse-physician) was good. Interpretation of Staff work relationship (Nurse-Physician) was shown in table 3.

The nurses' competency for pain management was measured by Nurse Pain Management Competency questionnaire. The scoring of pain management competency questionnaire was 1 for correct answer and 0 for incorrect answer. The mean score of nurses' pain

management competency was of 22.41 (SD = 4.65). For all participants, 67.5% nurses were competent on pain management whereas 32.5% nurses were in-competent on pain management. Level of nurses' pain management competency was shown in table 4.

**Table 5. Relationships between level of education, work experience, working unit, nurse-physician relationship, training on pain management and nurse's competency on pain management.**

Variables	Nurses Competency on Pain Management (N = 203)		X <sup>2</sup>	p value
	Competent	Incompetent		
<b>Level of Education</b>			<b>3.596</b>	<b>0.058</b>
Diploma Degree	24 (82.8)	5 (17.2)		
Bachelor Degree and above	113 (64.9)	61 (35.1)		
<b>Work experience</b>			<b>6.51</b>	<b>0.039*</b>
1 to < 5	62 (63.3)	36 (35.7)		
5 to 10	53 (79.1)	14 (20.9)		
>10	22 (57.9)	16 (42.1)		
<b>Work department</b>			<b>1.028</b>	<b>0.794</b>
Medical/ Surgical department	42 (33.3)	42 (33.3)		
Emergency department	10 (71.4)	4 (28.6)		
Pediatric Neonatal department	32 (65.3)	17 (34.7)		
Gynecology/ Obstetrics department	11 (78.6)	3 (21.4)		
<b>Training on pain management</b>			<b>0.005</b>	<b>0.944</b>
Yes	10 (66.7)	5(33.3)		
No	127 (67.6)	61(32.4)		
<b>Nurse-Physician Relationship</b>			<b>0.039</b>	<b>0.844</b>
Good	85 (68)	40 (32)		
Poor	52 (66.7)	26 (33.3)		

Significant at p-value, \*p<0.05

**Table 6. Binary logistic regression analysis of nurses' competency for pain management.**

Variables	95% C.I for EXP (B)			p-value
	Exp (B)	Lower	Upper	
<b>Work experience</b>				
1 to < 5	(reference)			
5 to 10	.426	.205	.887	.023*
>10	1.110	.506	2.436	.795

Significant at p-value, \*p<0.05

## DISCUSSIONS

Nurses' competency for pain management demonstrates effective performance in a professional situation.<sup>3</sup> Most of the studies in Nepal were conducted on knowledge and attitude of nurses on pain management.<sup>9,10</sup> There was no such study found related to nurses' competency on pain management in Nepal. So, this study aimed to examine nurses' competency for pain management and the predictive factors on pain management on nurses' competency for pain management at a tertiary hospital, Nepal.

In this study, the mean score of overall nurses' competency for pain management was 22.41 (SD = 4.65) which was good competency on pain management of nurses. The reason might be the proactive nurses who were more active in self-study to gain more skills and practice on pain management as they read pain management protocols/guidelines by themselves. Another reason might be the site of the study which was one of the largest territory hospital with highest rate of patient flow<sup>11</sup>, which made nurses to be busier in the care of the patients with acute as well as chronic pain in different units. Nurses used non-pharmacological and pharmacological pain management to relief patients' pain. The next possible reason might be this was a hospital where more medical students were enroll every year. Nurses in this hospital had to guide and supervise student nurses every time on patient care and their work experience, which encouraged nurses to review and more update their skills and practice on consistently. As a result, nurses' had high level of pain management competency. The other possible reason for high level of pain management competency could be 84.2% of the participant's nurses were bachelor degree holder. Nurses with bachelor degree had to study more hours of pain management on their course book than other degrees. Hence, the majority of the participants i.e. 67.5% were competent on pain management competency. The competent on pain management of nurses was higher than that of the study of Ethiopia, in which 37% nurses were competent on pain management.<sup>5</sup>

This study revealed that nurses couldn't identify clinical manifestation of pain domain which is focuses on collaborative approaches to decision-making, flexibility in care, and caring based on appropriate understanding of the clinical condition. The mean score of clinical manifestation of pain was 1.44 (SD= 0.88) which was low level compare to others domains. Around half of the nurses knew signs and symptoms of patient with opioid induced respiratory distress. Nurses could not identify signs and symptoms of patient with opioid induced

respiratory depression in cancer patients. They had less understanding about the use of opioid, its side-effects, overdose, management and precautions while taking opioid. It is due to the less exposure in care of the patient with cancer. This might be because of no training specific to cancer pain and clinical manifestation of patient having opioid.

Most of the nurses (93%) didn't get official pain management training to identify clinical manifestation of pain in chronic pain. The study in an Ethiopian University hospital revealed that there was a significant increase in nurses' knowledge and attitude by in-service training on pain management.<sup>12</sup> Knowledge and attitude are the part of the nurses' competency. So, the training is the most essential to be competent in every aspect on pain management.

The current study found that work experience was a significant predictor of nurses' competency for pain management. A higher work experience nurse with five to ten years of work experience was more competent on pain management when compared with one to less than five years of work experience. According to Benner's theory (1982) novice to expert, nurses with five to ten years of work experience had greater competency through more experience than less than five years of work experience.<sup>13</sup> There was less nurses who had more than ten years of work experience which was not significant while compare to one to five years of work experience. The finding from this study was consistent with a study of Vietnam and Korea which found that the longer work experience nurses had high level of nurses' pain management competency.<sup>3, 11</sup>

The current study revealed that 7.4% nurses attended training on pain management. Whereas, the study of Ethiopia found that 46.3% nurses<sup>6</sup> and 56.4% nurses in China<sup>14</sup> got training on pain management. As the result in current study, it found that only 16.3% nurses (Mean = 0.16, SD = 0.37) had understanding on pharmacological pain management which was low (23%) as compare to Ethiopia.<sup>6</sup> Likewise, this study also found that 23.6% of nurses (Mean = 0.24, SD = 0.42) made best action on pain management of patient having opioid analgesic. This finding was almost similar (21.8%) to the study of Ethiopia.<sup>6</sup> Similarly, 27% of nurses (Mean = 0.27, SD = 0.44) had mention that 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 which was low (41.6%) compare to the study of Ethiopia.<sup>6</sup> It implies that nurses were not paid any attention to training on

pain management.

Work unit, training, education and staff works relationship had no any significant relationship on nurses' competency for pain management. In work unit, nurse's rotation from one department to other departments helped them to get more knowledge and skills<sup>3</sup> as well as reflection of attitudes and beliefs that facilitate nurses to offer care of professional standards.<sup>13</sup> In current study, it found that 93% nurses did not have any training on pain management. Nurses could manage pain according to their clinical experience, but they had less knowledge on specific pain and rationales of pharmacological pain management. They also did self-study about the pain whereas they had not enough study on pain management in their course book. Nurses continue their learning even after entering the hospital. Regarding to staff works relationship, nurses were too busy in patient care rather than to communicate with the physicians. Communication and collaboration among healthcare providers were associated with higher technical quality of care, shorten hospital stay and risk adjusted morbidity.<sup>16</sup> Nurse used to manage pain as much as she had understanding on pain and doctor's prescription.

The limitation is that this study did not include orthopedic and ENT unit because of pandemic. These units were closed.

## CONCLUSIONS

Although the nurse's competency for pain management is high, there are few implementations on nursing practice, policy, education and future research. Nurses should provide pre-service training and in-service training on pain management to manage patients' pain on time. Implementation of pain assessment tool and protocols/guidelines for sound decisions in complex circumstances based on evidence and best practice should be performed/ monitored. Specific pain management should be added in nursing curriculum. Further study should be conducted on an experimental study design in order to enhance nurses' competency for pain management with effective in-service training on pain management.

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## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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