

## The Effective of Pain Resource Nurse Program on Knowledge toward Pain Management of Nurses at Hai Duong Provincial General Hospital, Vietnam

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### ABSTRACT

**Introduction:** Pain management education program had an effectiveness in improving knowledge of nurses toward pain management. However, in Vietnam including Hai Duong provincial general hospital, it has never tested. Therefore, this study aim to evaluate the effectiveness a Pain Resource Nurse program on knowledge toward pain management of nurses at Hai Duong provincial General Hospital, Vietnam.

**Material methods:** A quantitative, experimental design was used. Twelfth units were randomly assigned to Pain Resource Nurse program(n=6) and control group(n=6). 47 nurses in each group were randomly selected. The Knowledge and Attitudes Survey Regarding Pain (KASRP) developed and revised by Ferrell and McGrant (2014) was used to assess the knowledge and attitudes of the nurses regarding pain management of nurses at two measurement points <sup>[18]</sup>.

**Results:** The total number of participants who were surveyed at two measurement points with a completion rate of 100%. Findings revealed that after 1 month of intervention, the percentage of nurses had good knowledge level in the intervention group increased from 19.5% to 53.2%. In contrast, the control group tended to decrease from 31.9% of nurses had good knowledge level to 21.3%. Chi Square test indicated that post intervention one month there was significant difference between two groups with regard to pain management knowledge level ( $\chi^2 = 10.2, p = 0.001$ )

**Conclusion:** A well-structured education program have a significant positive impact on nurses' pain management knowledge.

**KEYWORDS:** Pain, Nurse, Pain education program, Knowledge.

### ARTICLE DETAILS

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### INTRODUCTION

Pain is often reported as highly prevalent among patients. Approximately 50–80% of hospitalized patients suffer pain<sup>[1],[2],[3]</sup>. A study of Benimana (2017) indicated that there was about 55% to 78.6% of inpatients experience moderate-to-severe pain<sup>[4]</sup>. If patients' pain is not managed properly and effectively, it can lead to poorer health conditions such as sleep disturbances, often falling into a state of anxiety or depression, delayed wound healing, increased complications, and prolong the length of hospital stay<sup>[5],[6],[7]</sup>.

As recommended by the American Pain Association, pain is considered as a 5th vital sign and should be evaluated and managed promptly<sup>[8]</sup>. Nurses play a vital role in alleviating the patient's pain as experts in pain assessment, management, and patient education in all healthcare settings because during hospitalized, most of

nurses' work involves direct contact with patients<sup>[9],[10]</sup>. Knowledge and attitude are two of the important factors that determine an individual's behavior. This has been demonstrated in the study of the authors Alzghoul, & Abdullah (2015) that knowledge and attitudes can explain 69% of nursing behaviors in pain management for patients<sup>[11]</sup>. However, many studies indicate that over 70% of nurses did not have adequate knowledge of pain management<sup>[12],[13],[14]</sup>.

A study of Latchman (2014) suggested that continuing education, updated with current treatment guidelines, and the implementation of new educational strategies may help to adequately prepare future practitioners and nurses to manage pain more effectively<sup>[15]</sup>. Previous studies also have shown that the benefits of educational intervention on nurses' knowledge and attitude regarding pain management<sup>[8],[16]</sup>. From searching for relevant research

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evidence, there are no research have examined the effectiveness of educational intervention on nurses' knowledge and attitude regarding pain management in Vietnam, including Hai Duong General Hospital. Therefore, we conducted this study aim to evaluate the effectiveness an educational program on nurse's pain management knowledge.

## MATERIAL AND METHODS

### Study Design and Setting

A quantitative, experimental design was used to evaluated the effectiveness of a pain management education program in improving the nurses' knowledge ragarding pain management at Hai Duong General Provincial Hospital, Vietnam. The participants must have worked as nurses for at least one experience year, directly take care for patients, and willing to participate were included. We excluded nurses who leaved work related to sickness, pregnancy. Cluster random technique was used to selected department into each group. In each group, nurses who meet the selection criteria were randomly choosed in this study. A total of 47 nurses were selected for each group.

### Research Intervention

In this study, we applied and revised the Pain Resource Nurse program (PRNP). PRNP was developed and applied in the early 1990s by Marcia Grant & et al<sup>[17]</sup>. The program includes a complete package of teaching material, consisting of slide presentations and clinical cases, with full speaker's notes, case narrative, sample test questions.

The PRNps has 10 modules cover all areas regarding pain, including: Overview of pain types and prevalence ; Assessment of pain; Pain management: Pharmacological; Pain management: Nonpharmacological; Acute pain management; Headaches; Management of chronic noncancer pain; Pain management and substance abuse; Implementation of the PRN role. This program was translated into Vietnamese according to the standard translation process of the World Health Organization and modified in some parts based on experts's recommendations. After that, the final Vietnamese version of program was evaluated by 15 nurses for the appropriateness of the intervention. The PRNP was taught in three afternoon day by nurses, physicians, pharmacist and physiotherapist who have expert knowledge and experience in pain management. The teaching methods include theory teaching, group discussion, practice teaching by using case study to stimulate active participation of the attendees

### Measurements

A self-administered questionnaire containing two parts was used for data collection. The first part comprised

demographic of characteristics of nurse. The second part was the the Knowledge and Attitudes Survey Regarding Pain (KASRP) developed and revised by Ferrell and McGrant (2014) to assess the knowledge of nurses regarding pain management of nurses<sup>[18]</sup>. The Vietnamese version of this instrument has accepted psychometric properties in Vietnam<sup>[19]</sup>. It consists of 41 items, including 22 true/false, 15 multiple-choice questions, and two cases scenarios with two responses each. Each correctly answered item is assigned a score of 1; a score of 0 is assigned incorrectly. The total scores ranged from 0-41 points. Scores for classified knowledge of 70% or more are considered good knowledge<sup>[20]</sup>.

### Statistical analysis

Data analysis was conducted by using SPSS statistics software version 25. Statistical significance level with  $p$  value less than or equal to 0.05. Steps of data analyses were as follows:

- For describing data, descriptive statistic was used to describe frequency, percentage of demographics and pain management knowledge level variables.

- The differences between demographic and pain management knowledge level variables in control group and intervention group were measured using a Chi-square/Fisher's Exact test.

- A McNemar's test was performed to compare the difference in pain management knowledge level in each group, before and after the intervention.

## RESULTS

### The characteristics of participants

Completed questionnaire data were obtained from 94 nurses in total. They were randomly assigned in intervention group and control group. In the intervention group, the majority were female (68.1%), 70.2% had a Bachelor degree, 50.9% had  $\geq 10$  years of experience, and especially, 70.2% did not attend training program regarding pain management. In the control group, most were female (78.4%), 68.19% had a Bachelor degree, and a high percentage of the participants (61.7%) did not received a training program regarding pain management. In contrast to the intervention group, in the control group the majority of study participants had 5 to 10 years of experience. The Chi square test was used to compare characteristics of nurses between the control group and the intervention group showed no difference in sex characteristics ( $\chi^2 = 1.362$ ;  $p = 0.243$ ), education level ( $F = 0.111$ ;  $p = 0.36$ ), number of years of experience ( $\chi^2 = 1.73$ ;  $p = 0.245$ ), and attended previous pain training ( $\chi^2 = 0.758$ ;  $p = 0.384$ ). (Table 1).

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**Table1: Compare the demographic difference between intervention group and control group at baseline**

Research variable	Intervention group n(%)	Control group n(%)	Total n(%)	$\chi^2 / F$	<i>p</i>
<b>Sex</b>					
Male	15(31,9)	10(21.3)	25(26.6)	1.362 <sup>a</sup>	0.243
Female	32(68,1)	37(78.4)	69(73.4)		
<b>Academic level</b>					
Intermediate, college	13(27,7)	15(31.9)	28(29.8)	0.111 <sup>b</sup>	0.56
University	33(70,2)	32(68.19)	65(69.1)		
Post graduate	1(2,1)	0(0.00)	1(1.1)		
<b>Experience</b>					
< 5 years	3(6,4)	5(10.6)	8(8.50)	0.173 <sup>a</sup>	0.245
5-10 years	18(34)	24(51.1)	42(44,70)		
≥ 10 years	26(59,6)	18(38.3)	44(46,80)		
<b>Attend previous pain management training course</b>					
Yes	14(29,8)	18(38,3)	32(34.00)	0.758 <sup>a</sup>	0.384
No	33(70,2)	29(61,7)	62(66.00)		

a. 0 cells (.0%) have expected count less than 5.

b. 2 cells (more than 20%) have expected count less than 5. The minimum expected count is 1.56.

**Knowledge of nurses**

At baseline data, the result showed that in both group, most of participants had poor knowledge regarding pain management, 80.9% in intervention group and 68.1% in control group. A Chi Square test showed that there was no difference in knowledge level between two group with  $\chi^2 =$

10.14, *p* = 0.001. After 1 month of intervention, the percentage of nurses had good knowledge level in the intervention group increased from 19.5% to 53.2%. In contrast, the control group tended to decrease from 31.9% of nurses had good knowledge level to 21.3%. Chi Square test indicated that there was significant difference between two groups regard to pain management knowledge level ( $\chi^2 = 10.2, p = 0.001$ ) (Table2).

**Table 2: Comparing the pain management knowledge level between intervention group and control group at baseline**

Research variable	Intervention group n(%)	Control group n(%)	$\chi^2$	<i>p</i>
<b>At baseline</b>				
- Good pain management knowledge	9(19,5)	15(31,9)	2,014 <sup>a</sup>	0.156
- Poor pain management knowledge	38(80,9)	32(68,1)		
<b>After 1 month of intervention</b>				
- Good pain management knowledge	25(53,2)	15(21,3)	10.2 <sup>a</sup>	0.001
- Poor pain management knowledge	22(46,8)	32(68,1)		

0 cells (.0%) have expected count less than 5

The results showed that when receiving the intervention program, intervention group had a change in the percentage of nurses's knowledge about pain management higher than before intervention from 10.1% to 53.2%, and the rate of nurses who had a poor level of knowledge of pain management were also reduced from 80.9% to 46.8% and this

change was statistically significant with *p*=0.0000. In contrast, for the control group after 1 month of implementing the intervention program, the percentage of nurses had good pain management knowledge level decreased from 31.9% to 21.3% and nurses who had a poor level of pain management knowledge increased from 68.1% to 78.7%. However,

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Mcnemar's test documented that there was not statistically significant  $p = 0.267$  (table 3)

**Table 3: Comparing the pain management knowledge level between before and after intervention 1 month of intervention and control group.**

Research variable	Before intervention n (%)	After intervention n (%)	<i>p</i>
<b>Intervention group</b>			
- Good pain management knowledge	9(19,15)	25(53,2)	<b>0.000<sup>b</sup></b>
- Poor pain management knowledge	38(80,9)	22(46,8)	
<b>Control group</b>			
- Good pain management knowledge	15(31,9)	10(21,3)	<b>0.267<sup>b</sup></b>
- Poor pain management knowledge	32(68,1)	37(78,7)	

*b. Use binomial distribution used*

### DISCUSSION

The characteristics of the study subjects in terms of gender, age, education level, years of experience, and attend previous pain management training course between the intervention group and the control group were no significant difference ( $p > 0.05$ ). This proves that the sampling method of this study is appropriate and will limit errors when evaluate the effective of Pain Resource Nurse program on nurses' pain management knowledge. The results of this study were consistent with some previous studies also revealed that there were no significant differences between the control and intervention groups regarding demographic characteristics [21], [22].

Before intervention, based on Tran's knowledge level classification criteria (2020)<sup>[20]</sup>, there were 80.85% of nurses in the intervention group and 68.1% of nurses in the control group who did not have good knowledge of pain management with total score of  $< 70\%$ . The reason for this situation was that most of participants in both groups did not participate in pain training before. In addition, there were no significant difference in level of knowledge between 2 groups ( $\chi^2 = 2.014$ ,  $p = 0.156$ ). This result could be explained because the nurses into the two groups had similar demographic characteristics and they work in the same working environment. In particular, the research results showed that no nurse achieved a total score of 100% of pain management knowledge. This proved that the nurses in both groups had a lack of knowledge in all areas related to pain management. In comparison with previous studies, the results of this study were consistent with them, which reported that there was no difference in characteristics and level of pain management knowledge between intervention group and control group ( $p > 0.05$ )<sup>[21],[22]</sup>.

Nurses have an important role in pain management for patient, it includes pain assessment, management using pharmacological and nonpharmacological, reassessment, educating patients and their family about treatment pain. Therefore, to achieve all these roles, sufficient knowledge toward pain managements are required. Providing an pain management education program to improve knowledge and attitude of the nurses is necessary. The results of this study showed that the interventions were effective in improving pain management knowledge of nurses. Post-intervention, rate of the participants in the intervention group who achieved good knowledge was higher than before intervention, increased from 10.1% to 53.2% ( $p = 0.000$ ). Conversely, the control group without intervention had percentage of nurses with good pain management knowledge decreased from 31.9% to 21.3% after the intervention. However, this difference was not statistically significant ( $p > 0.05$ ).

The effectiveness of the intervention was further confirmed when comparing results between the control group and the intervention group. The post-intervention group had a higher percentage of nurses with good knowledge than the control group ( $\chi^2 = 10.2$ ,  $p = 0.003$ ). All of these can be explained as follows. Firstly, 100% nurses in intervention group fully participated in training course, it meant that they were very interest to learning methods and knowledge content. When they were participated into the program, they had more awareness of the importance of pain management to patient health and well-being. Furthermore, this intervention program covers all contents related to pain management, using a variety of educational delivery methods such as lecture method, discussion, practice teaching. It can be seem that, providing education program to change nurses' knowledge of pain management is very necessary.

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These finding was consistent with previous studies. A study of Trudeau et al. (2017) conducted a random controlled trial study, the group who received pain management educational intervention program had achieved statistically significant improvements in pain management knowledge after 1 month ( $p < 0.05$ )<sup>[23]</sup>. Similarly, Gunnarsdottir et al. (2017) also used a randomized controlled trial study to assess changing in nurse's knowledge of pain management. The data obtained indicated that nurses' knowledge increased by 25% overall for the intervention group and decreased by 5% in the control group<sup>[24]</sup>. Another controlled experimental study also demonstrated the effectiveness of an educational program in combination with the use of pain-guided regimens. The results showed that nurse's knowledge in the intervention group increase 11% ( $p = 0.009$ ) compared to the time before the intervention<sup>[25]</sup>. In addition, other semi-empirical studies were conducted in China also found that nurses who had received pain management education had significantly higher mean knowledge scores than before intervention ( $45.6\% \pm 12.3\%$  to  $54.2\% \pm 10.2\%$  ( $t = 5.786, p < 0.001$ )<sup>[26]</sup>.

However, the findings from our study were not consistent with the findings from study conducted by Grommi, Voutilainen, Vaajoki, et.al, (2017). This study showed that after the intervention with a short-term program, there were no significant difference between before and after intervention regarding pain management knowledge of nurses ( $p > .05$ ). The difference was explained by reasons, in this study of Grommi, Voutilainen, Vaajoki, et.al, (2017) only simply implemented a brief lecture-based educational intervention (45 minutes lecture), it could not cover all knowledge regarding pain management. Furthermore, in the study of Grommi, Voutilainen, Vaajoki, et.al, (2017) also only using traditional teaching methods to provide pain management knowledge for nurses, it were not enough to promote the nurses active and interested in learning<sup>[27]</sup>.

The strength of this study are use of a validated instrument to evaluate pain management knowledge of nurses and uses control group. This allowed for an accurate evaluation of the effect of the interventions on nursing pain management knowledge. However, this study had some limitations. First, the participants in both groups only came from one setting. In addition, sample size of the study was not large. All of these may lead to bias results and the result was not generalization for Vietnamese nurses in other setting.

### CONCLUSION

These findings suggest that nurses have a low level of knowledge regarding pain management at baseline. In addition, the results also proved that a well-structured education program have a significant positive impact on nurses' pain management knowledge

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### CONFLICT OF INTEREST

We confirm that there was no conflict of interest in this study.

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