

암환자의 통증관리에 대한 일 지역 간호사의 지식 및 수행도에 관한 융합적 연구

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Converged Study on the Nurses' Knowledge and Performance of Cancer Pain Management in one city

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요약 본 연구는 간호사의 암성통증관련 지식과 수행도를 융합적으로 조사하기 위한 연구로 M시의 간호사 295명을 대상으로 하였다. 암성통증관련 지식과 수행도는 조은경(2009)의 연구도구를 사용하였다. 수집된 자료는 SPSS 18.0, t-test, ANOVA, Multiple Linear Regression 으로 분석하였다. 대상자의 지식은 30점 만점에 평균 19.21 ± 6.16 , 수행도는 4점 만점에 평균 3.12 ± 0.41 으로, 같은 도구를 사용한 다른 연구들에 비해 낮은 수준이었다. 권고안을 인지하고 있는 간호사의 지식과 수행도 사이에 유의한 차이가 있었고, 대상자의 지식과 수행도 사이에 정적인 상관관계가($r=.488, p=.001$) 있었다. 대상자의 권고안인지는 38.6%에 불과하였으므로, 간호사의 권고안 인지 및 활용능력 향상 내용을 포함한 암성통증관리관련 교육으로 암성통증관련 지식도를 높여 통증관리 수행도를 높여야 할 필요성이 있다.

• 주제어 : 융합, 지식, 수행도, 암환자, 암성통증관리

Abstract The purpose of this converged study is to find nurses' knowledge and performance of cancer pain management targeting 295 nurses in M City. Cancer pain management knowledge and performance scales by Jo(2009) were the research tool used. Using SPSS 18.0, t-test, ANOVA, Multiple Linear Regression were carried out. The average scores of knowledge and performance were 19.2 ± 6.16 out of 30, and 3.12 ± 0.40 out of 4 each. There was a significant difference between nurses' knowledge and performance according to Cancer Pain Management Guideline(CPMG). There was a positive correlation between nurses' knowledge and performance($r=.488, p=.001$). Explanation rate of the knowledge on the performance was 38.6%. For the purpose of increasing nurses' performance level of cancer pain management, systematic education and elevating awareness of CPMG are needed.

• Key Words : Convergence, Knowledge, Performance, Cancer patient, Cancer pain management

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1. Introduction

The incidence of cancer in South Korea was 319.8 people per 100 thousand people in 2000. However, it increased to 435.1 people per 100 thousand people in 2011 and it is increasing continuously[1]. The increased survival rate of cancer patients is a factor to increase the number of cancer patients persistently[2].

Pain is the most common symptom of cancer[3]. Particularly, uncontrolled pain disturbs the daily life of cancer patients.

Moreover, it can cause depression and lower the quality of life[4,5,6,7]. The hospitalized cancer patients have a hard time to express their pain so it becomes an obstacle in managing the cancer pain[8,9]. Nevertheless, complaints associated with cancer pain is the top nursing need and it means that cancer pain management is an important area of nursing[10,11]. Therefore, it is necessary to expand the role of nurses to overcome the obstacles for managing pain in clinical practice[5]. Insufficient knowledge and the prejudice of nurses on cancer pain could be an obstacle to an effective pain management[12]. Only 20~30% of health care workers received education of cancer pain management. Moreover, a survey identifying the degree of knowledge on the cancer pain management showed that both doctors and nurses group showed low scores (below 40%). Furthermore, both group did not have a full faith on pain complaints of cancer patients[13,14].

For properly managing the continuously increasing cancer pain of patients, not only the nurses working at oncologic ward but also nurses working at a general ward must be able to give a high-quality care[15,16]. Therefore, it is necessary to give continuous practical education on cancer pain management and analgesic administration due to the insufficient knowledge of nurses on cancer pain management[17]. On the other hand, the Ministry of Health and Welfare has made many efforts in creating and delivering cancer pain management guideline recommendations(hereafter, CPMG)[18]. This study was conducted to evaluate the

awareness of clinical nurses on the CPMG, identify the relationship between the knowledge of cancer pain management and the performance of it, and to prepare the basis of a program, which is easy to apply to the clinical practice based on the results.

The objectives of the study were as follows.

1. Investigate the knowledge and performance associated with cancer pain management according to the characteristics of subjects.
2. Check the awareness of the CPMG of subjects and investigate the performance of pain management associated with it.
3. Examine the relationship between the cancer pain management related knowledge and the performance of it according to the characteristics of subjects.
4. Identify the explanatory rate of variables of performance on cancer pain management according to the characteristics of subjects.

2. Methods

2.1 Design

This research is a descriptive correlation study to identify the degree of knowledge and performance regarding the cancer pain management of nurses.

2.2 Participants

The participants of this study are the nurses who had cared hospitalized patients with cancer, understand the objectives of the study and agreed to participate voluntarily among the nurses working at hospital located in M city.

2.3 tool

2.3.1 The knowledge tool of cancer pain management

The questionnaire, developed by Jo[19], composed of total 30 questions that includes 5 questions related to cancer pain knowledge, 21 questions about

pharmacotherapy and 4 questions about nonpharmacological therapy was used to measure the knowledge of cancer pain management. Each question should be answered 'yes', 'no', or 'I don't know'. 'Correct answer' was calculated as 1 point while 'wrong answer' and 'I don't know' was considered 0 point. The range of score was 0 and 30 and higher score means a higher degree of knowledge. The Cronbach's α of this tool were .91 in the Jo's study, and .86 in this study.

2.3.2 The performance tool of cancer pain management

The performance level of cancer pain management was developed by Jo based on CPMG[18,19]. It is composed of total 21 questions, in which nine questions are based on assessment of pain, seven questions on intervention of pain, and five questions on evaluation of pain. Each item of the tool was measured by 4 points Likert scale; 'rarely do' was 1 point, 'mostly not do' was 2 points, 'mostly do' was 3 points, and 'always do' was 4 points. Higher points indicated higher performance level. The Cronbach' α of the tool are used in this study was 0.86 while previous studies reported similar values such as 0.91 and 0.78[19,20].

2.4 Data gathering

Data was gathered at seven hospitals between Oct 1 and (to) Oct 20, 2014, after explaining the objectives of the study to their nursing departments and asking for cooperation. After distributing the questionnaire, the researcher explained the objectives and the methods of the study, confidentiality policy of person information, and risk-free condition and received written agreements from nurses. 326 were collected out of 330 distributed questionnaires, but 295 questionnaires were analyzed after excluding 21 untrustworthy questionnaires and 10 unexperienced cancer patient nursing questionnaires.

2.5 Analysis of data

The collected data was analyzed by using SPSS

Window 18.0.

- 1) General characteristics of subjects were analyzed in frequency and percentage. The knowledge and the performance of cancer pain management were analyzed by using mean, standard deviation, t-test, and ANOVA.
- 2) The performance of cancer pain management in accordance with awareness of CPMG was calculated by mean, standard deviation, and t-test.
- 3) The relationship between the knowledge and the performance on cancer pain management was analyzed by a Pearson correlation coefficient.
- 4) The explanatory rate of variables on the performance of cancer pain management was estimated by a multiple linear regression analysis.

2.6 Ethical considerations

To consider the ethical aspects, the proposal of this study was approved (IRB; 2014-005) by the IRB committee of C University, and the questionnaires were distributed. Prior to answering the questionnaire, each subject voluntarily signed in agreement. They were explained that they could stop the participation at any time, whenever they want to stop. Subjects were rewarded with small compensation. To protect the anonymity of subjects, a completed questionnaire was contained in an individual envelope and sealed. The collected data was exclusively used for research purposes.

3. Results

3.1 Knowledge and performance related to cancer pain management according to the general characteristics of subjects

184(62.4%) nurses, majority of the subjects were in 20s, 160(54.2%) subjects who had less than 5 years of clinical experience, 185(62.7%) subjects who worked in internal medicine ward, and 272(92.2%) subjects were

staff nurses. The last education of 195(66.1%) subjects was junior college. The religion of 121(41%) subjects was Christianity, and 228(77.2%) subjects were single. 197(66.8%) subjects had experienced pain management training and 210(71.2%) subjects had experience of less than 5yrs in cancer patient care. The 262(88.8%) subjects had experiences in nursing for the cancer patients who were in terminal cancer <Table 1>.

<Table 1> General Characteristics (N=295)

Characteristics	Category	Frequency	%
Age	20	184	62.4
	30	96	32.5
	40	15	5.1
Career	Less than 5 Years	160	54.2
	Over 5 Years	135	45.8
Work area	Surgical	95	32.2
	Internal medicine	185	62.7
	ICU	15	5.1
Position	Head nurses	12	4.1
	Chief nurses	11	3.7
	Nurses	272	92.2
Education	College graduates	195	66.1
	University graduates	97	32.8
	Graduate school	3	1.1
Religion	Christian	121	41.0
	Catholic	42	14.3
	Buddhism	13	4.4
	Atheism	119	40.3
Marriage	Single	228	77.2
	Married	67	22.8
Terminal ill cancer patient care experience	Yes	262	88.8
	No	33	11.2
Experience of pain education	Yes	197	66.8
	No	98	33.2
Cancer patient care period	Less than 5 Years	210	71.2
	Over 5 Years	85	28.8
Recognition of CPMG	Yes	114	38.6
	No	181	61.4

The knowledge of subjects was 19.21±6.16 (Mean±SD) out of 30 point scale. The knowledge level of cancer pain was 3.50 out of 5 point scale in sub-categories of the knowledge, that of pharmacotherapeutic knowledge was 13.12 (Mean) out of 21 point scale, and that of nonpharmacological

therapy was 2.60 out of 4 point scale.

The performance level was 3.12±0.41 (Mean±SD) out of 4 point scale. In sub-categories of the performance, the mean scores of pain assessment, intervention and evaluation were 2.98, 3.11, and 3.39, respectively <Table 2>.

<Table 2> Knowledge and Performance of Cancer Pain Management (N=295)

Variable	Items	Min	Max	Mean	SD
Knowledge related to	Cancer Pain	0.00	5.00	3.50	1.25
	Pharmacologic	3.00	21.00	13.12	4.39
	Non-Pharmacologic	0.00	4.00	2.60	1.27
	Total	3.00	30.00	19.21	6.16
Performance	Pain assessment	1.56	3.89	2.98	0.52
	Pain intervention	1.71	4.00	3.11	0.44
	Pain evaluation	2.00	4.00	3.39	0.40
	Total	2.00	3.86	3.12	0.41

The level of knowledge in accordance with the general characteristics of subjects were significantly different among ages ($F=8.277, p<.001$) and working areas ($F=11.910, p<.001$). Post-hoc analysis showed that knowledge of nurses working in internal medicine ward and 30s was significantly higher than working in a surgical ward. and 40s each. There were significant differences on the education level ($F=3.174, p=.043$), the experience of pain management education ($t=6.339, p<.001$), and years of cancer patients nursing ($F=-4.75, p<.001$). Subjects who cared patients who were in terminal stage had a significantly higher level of knowledge ($t=7.454, p<.001$) <Table 3>.

In analyses on the level of performance in accordance with the general characteristics, there were significant differences in age ($F=3.100, p=.046$) and working place ($F=24.834, p<.001$). Post-hoc analysis showed that nurses working in the internal medicine department, 20s and 30s had significantly higher level of performance. Subjects having religion ($F=3.395, p=.018$), subjects received pain management education ($t=6.720, p<.001$), subjects cared cancer patients over 5years($t=-2.87, p<.004$) and subjects cared for cancer

<Table 3> Knowledge of Cancer Pain Management according to general characteristics (N=295)

Characteristics	Category	Mean	SD	t or F	p	Scheffe
Age	20 ^a	18.42	6.55	8.277	.001	b>c
	30 ^b	21.03	4.91			
	40 ^c	16.19	4.81			
Work area	Surgical ^a	16.78	4.22	11.910	.001	b>a
	Internal medicine ^b	20.35	6.64			
	ICU ^c	19.47	5.68			
Position	Head nurses	19.58	3.29	1.510	.223	
	Chief nurses	16.17	6.01			
	Nurses	19.27	6.21			
Education	College graduates	19.66	6.15	3.174	.043	
	University graduates	18.02	5.96			
	Graduate school	23.33	4.73			
Religion	Christian	19.21	5.09	.551	.648	
	Catholic	20.16	6.69			
	Buddhism	19.31	4.66			
	Atheism	18.77	6.98			
Marriage	Married	19.12	6.48	-.186	.852	
	Single	19.25	4.90			
Experience of pain education	Yes	20.52	6.31	6.339	.001	
	No	16.45	4.73			
Cancer patient care period	Less than 5 Years	18.17	6.21	-4.75	.001	
	Over 5 Years	21.80	5.26			
Terminal ill cancer patient care experience	Yes	19.67	6.27	7.454	.001	
	No	15.22	2.79			

<Table 4> Performance of Cancer Pain Management according to general characteristics (N=295)

Characteristics	Category	Mean	SD	t or F	p	Scheffe
Age	20 ^a	3.11	0.43	3.100	.046	a,b>c
	30 ^b	3.17	0.34			
	40 ^c	2.91	0.36			
Work Area	Surgical ^a	2.93	0.33	24.834	.001	b>a,c
	Internal medicine ^b	3.24	0.40			
	ICU ^c	2.91	0.25			
Position	Head nurses	3.17	0.25	.461	.631	
	Chief nurses	3.02	0.46			
	Nurses	3.12	0.41			
Education	College graduates	3.11	0.43	.585	.558	
	University graduates	3.13	0.34			
	Graduate school	3.37	0.32			
Religion	Christian	3.05	0.40	3.395	.018	
	Catholic	3.17	0.39			
	Buddhism	3.02	0.36			
	Atheism	3.20	0.40			
Marriage	Single	3.12	0.42	.269	.788	
	Married	3.11	0.34			
Experience of pain education	Yes	3.22	0.38	6.720	.001	
	No	2.92	0.37			
Cancer patient care period	Less than 5 Years	3.08	0.40	-2.87	.004	
	Over 5 Years	3.23	0.40			
Terminal ill cancer patient care experience	Yes	3.16	0.39	4.898	.001	
	No	2.83	0.35			

patients who were in terminal stage ($t=4.898, p<.001$) had a significantly higher level of performance <Table 4>.

3.2 The relationship between the knowledge and the performance of subjects

The knowledge and the performance of subjects had a positive correlation ($r=.488, p<.001$). The level of cancer pain knowledge ($r=.290, p<.001$), the level of pharmacotherapeutic knowledge ($r=.482, p<.001$), and nonpharmacological therapy ($r=.420, p<.001$), which were sub-categories of knowledge on cancer pain management, showed positive correlations <Table 5>.

<Table 5> Correlation between Knowledge and Performance of Pain Management

(N=295)		
Variable	Subarea	Performance
Knowledge	Cancer Pain	.290($p<.001$)
	Pharmacologic	.482($p<.001$)
	Non-Pharmacologic	.420($p<.001$)
	Total	.488($p<.001$)

3.3 Knowledge and Performance of Pain Management according to CPMG

Only 114 subjects(38.6%) were aware of the CPMG. The knowledge($t=7.882, p<.001$) and the performance ($t=3.692, p<.001$) of the group awaring CPMG were significantly higher than those of the group who were not aware <Table 6>.

<Table 6> Knowledge and Performance of Pain Management according to CPMG

(N=295)					
Characteristics	Category	Mean	SD	t or F	p
Knowledge of CPMG	Yes	22.39	5.44	7.882	.001
	No	17.17	5.68		
Performance of CPMG	Yes	3.23	0.42	3.692	.001
	No	3.06	0.38		

3.4 Explanatory rate of each variable on the cancer pain management performance of each subject

To calculate the explanatory rate of each variable about the performance of subjects, the age, working area, religion, experience of receiving pain management education, number of years caring cancer patients, experience of caring cancer patient in terminal stage, and the awareness of CPMG of subjects and the level of knowledge were selected as possible explanatory variables. They were treated as dummy and analyzed with a multiple regression analysis.

The level of knowledge, working in an internal medicine department, the experience of receiving pain management education, and the experience of caring cancer patients in terminal stage were significant explanatory variables. Among them, the knowledge of subjects explained performance the best <Table 7>.

4. Discussion

This descriptive research was to identify the knowledge and the performance of nurses on cancer pain management in one area. It targeted 295 nurses, who experienced in caring cancer patients. 54.2% of subjects had a short period of clinical experience less than 5 years, and 92.2% of them were staff nurses. 62.7% of them were working in the internal medicine ward who cares cancer patients more than other wards, and majority of them i.e., 71.2% had less than 5 years of cancer patients caring experience.

In this study, the level of pain management knowledge of subjects was 64%(mean score, 19.21), which was lower than other studies using the same tool. The result was lower comparing to the hospice ward and general wards targeted study(74%)[14], and oncologic ward targated study(73.4%)[15]. In addition, 69.3% in a study of emergency room nurses[16], was not reached in 83.0%[17], of the hospice nurse target research, the result did not meet hospice ward nurse and general ward nurse 72.4%[18]. It could be because

<Table 7> Explanatory rate of each variable on performance of each subject

Variables	B	S.E.	β	t	p	adjusted R ²	F(p)
(Constant)	2.347	.094		24.993	.001	0.349	12.63 (0.01)
Knowledge	.025	.004	.385	6.590	.001		
Age(30yrs)	.040	.052	.046	.760	.448		
Career	-.028	.049	-.032	-.561	.575		
Work Area(Internal medicine)	.191	.044	.229	4.305	.001		
Position(Head nurses)	.050	.105	.025	.473	.637		
Education(Graduate school)	.017	.194	.004	.088	.930		
Religion(Christian)	-.069	.041	-.084	-1.677	.095		
Marriage(Single)	.013	.053	.014	.249	.804		
Experience of pain education(Yes)	.141	.047	.162	2.995	.003		
Cancer patient care period(Over 5)	-.025	.054	-.029	-.466	.641		
Terminal ill cancer patient care experience(Yes)	.128	.065	.101	1.975	.049		
Recognition of CPMG	-.024	.046	-.029	-.520	.603		

the majority of subjects were working at general wards and hospital at a small city, not a metropolis. It strongly suggested that it would be urgent to give education related to cancer pain management to nurses in this region. Related studies showed that nurses working at an oncologic ward had better knowledge than nurses working in a general ward.

However, in clinical area, the majority of cancer patients are treated at a general ward. Therefore, it is necessary to improve the cancer pain management education for nurses working in general wards.

In this study, knowledge of subjects related to nonpharmacological therapy was 65%(mean score, 2.60). It was lower than the results of other studies 86.9%, 69.2% each[14,16] using the same tool. A repeated study is needed to determine if it was due to a regional factor or study subjects. Moreover, the results implied the need of continuous education about a nonpharmacological therapy, which is often used by clinical nurses. The knowledge about the cancer pain, pharmacologic knowledge and non-pharmacologic knowledge affected to the performance of pain management.

The literature review showed that subjects had

different levels of knowledge depending on the ward. This study showed that the level of knowledge was significantly different between nurses working in internal medicine wards and those working in general wards. The difference in knowledge about pharmacotherapy and non-pharmacological therapy between oncologic ward nurses and general ward nurses, and the difference in level of knowledge between hospice ward nurses and general ward nurses, can be seen as a result of the context similar to this study[15]. And the nurses working at a hospice ward had a significantly higher degree of knowledge than nurses working at a general ward did[17]. To overcome this, continuous education is needed for the nurses who are working in the general wards. The performance level of pain assessment which is sub-category of performance was 2.98 out of 4. It was similar of previous studies[14,16]. In this study, even the performance level of subjects on cancer pain management was poor, these results suggested that the performance level of pain assessment was similar regardless of the level of knowledge related to cancer pain. Therefore, it is needed to study by increasing the number of subjects and expanding the regions.

In this study, the awareness of subjects on CPMG was 38.6%. There was a significant difference between the group who were aware and not aware of CPMG in the level of knowledge and performance of pain management. Therefore, in this study, the awareness of subjects on CPMG was much lower comparing to the general nurses CPMG awareness 65.1%[19], 64.2%[23] hence hospice nurses CPMG awareness was 94%[22] So, it is urgent to identify the cause of it and prepare the countermeasures. The results of related studies showed that nurses working at a hospice ward had better awareness on CPMG and higher knowledge and performance than nurses working in an internal medicine ward[17], which concurred with the results of this study. For effective cancer pain management, it is necessary to educate nurses so that they could recognize and apply the CPMG. It is necessary to conduct active and systematic supplementary education to nurses working at a general ward about applying the CPMG, even when they do not work at oncologic wards.

The knowledge and the performance showed a positive correlation ($r=.488$, $p=.001$). The results agree with previous studies on nurses working in general wards using the same tool[14,18]. However, the previous study evaluating the nurses on the hospice ward and general ward at the same time showed that there was no correlation between the knowledge and the performance of them[17]. This different result indicated that performance was not accompanied with a high degree of knowledge. So, repeated studies are needed to analyze related factors. Moreover, we need to find a way to increase the degree of performance of subjects.

This study showed that the degree of knowledge, working area, the experience of pain management education, and the experience of caring patients with terminal cancer were explanatory variables of cancer pain management performance of subjects. Their explanatory rate was 34.9%. This result is partially consistent with who has the more influence on

performance of cancer pain management according to working area, receiving education on cancer pain management, marriage state and religion[19]. Eventually the results indicated that nurses with a higher level of cancer pain management knowledge, working in internal medicine ward, having cancer pain management education, and having an experience of caring patients with terminal cancer had higher performance in cancer pain management.

5. Conclusions

This is a descriptive research to compare the knowledge and the performance related to cancer pain management of nurses working at hospitals in M city. The level of subjects' knowledge was 19.21 out of 30. There was a positive correlation ($r=.488$, $p<.001$) between the level of subjects' knowledge and the performance. The explanatory rate of variables were 0.025, 0.191, 0.141, and 0.128 for the level of knowledge, working area (internal medicine ward), the experience of pain management education, and experience of caring patients with terminal cancer patients, respectively, which were all significant. Among them, the level of knowledge explained the performance of nurses the best.

Based on the results of this study, it is necessary to conduct repeated study by expanding number of subjects and area, develop an education program for caring cancer patients, compare nurses before and after educating the CPMG, and educate nurses repeatedly since nurses have insufficient knowledge on cancer pain management.

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