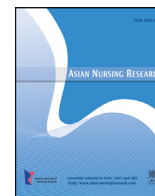


Contents lists available at [ScienceDirect](http://ScienceDirect.com)

Asian Nursing Research

journal homepage: www.asian-nursingresearch.com

Research Article

Professional Quality of Life and Clinical Competencies among Korean Nurses



Kyunghee Kim, PhD,¹ Yonghee Han, PhD,² Yeunhee Kwak, PhD,¹ Ji-su Kim, PhD^{1,*}

¹ Red Cross College of Nursing, Chung-Ang University, Seoul, South Korea

² Department of Nursing, Hallym Polytechnic University, Chuncheon, South Korea

ARTICLE INFO

Article history:

Received 23 September 2014

Received in revised form

18 December 2014

Accepted 13 March 2015

Keywords:

clinical competence
clinical nurse specialist
cluster analysis
quality of life

SUMMARY

Purpose: Clinical competence among nurses is an essential requirement for the provision of safe and effective patient care. This study aims to classify types of professional quality of life experienced by Korean nurses, and examine the relationship between demographic and professional characteristics and clinical competence among nurses experiencing each type.

Methods: A total of 335 nurses completed questionnaires assessing professional quality of life, clinical competence, and demographic and professional characteristics. Following identification of the underlying factors of professional quality of life, we classified participants into three clusters.

Results: There were significant differences in age, marital status, religion, educational status, and position between clusters. Results also revealed that nurses with high compassion satisfaction and low compassion fatigue (burnout, secondary traumatic stress) tended to have higher clinical competence.

Conclusions: This study demonstrated that it is possible to directly examine the relationship between professional quality of life level and clinical competence among nurses. Thus, interventions to increase nurses' compassion satisfaction and relieve compassion fatigue are needed, as professional quality of life may affect clinical competence.

Copyright © 2015, Korean Society of Nursing Science. Published by Elsevier. All rights reserved.

Introduction

Nurses require highly specialized clinical competencies to accurately determine patients' states and predict and cope with problems that may occur during treatment [1]. Clinical competence is defined as “the ability of the registered nurse to integrate and apply the knowledge, skills, judgments and personal attributes required to practice safely and ethically in designated role and setting” [2]. Several issues in recent healthcare environments contribute to the need to assess nurse competence [3]. For instance, previous studies related to nurses' clinical competence have shown that factors associated with nursing performance and competence differ according to the type of department, and that nursing performance and competence increase with age, work experience, and level of education [4–6]. Therefore, most studies of the factors affecting clinical nurses' performance and competence have focused on work-related characteristics (e.g., job stress, job satisfaction, demographic characteristics). In addition, other studies

have examined the relationship between nurses' critical thinking skills and self-leadership [1,4–7].

More recently, attention has been focused on concepts related to quality of work life, which has been found to be closely related to nursing job performance, including clinical performance and competence [8]. Because quality of work life is also related to job performance, professional quality of life (ProQOL) is increasingly viewed as important. Nevertheless, no previous research has addressed the relationship between the clinical competence and ProQOL among nurses.

The term “professional quality of life” refers to the positive and negative emotions that an individual feels about his or her job as a helper. Compassion satisfaction (CS), burnout (BO), and compassion fatigue (CF) (also known as secondary traumatic stress [STS]) are all elements of ProQOL that can be experienced by workers in service industries that aid persons with afflictions [9,10]. Nurses, in particular, are professionals highly likely to experience CF, which can negatively affect their mental and physical health as well as job performance [11]. CF can also cause nurses to lose their objectivity and empathy for patients. Specifically, they may be driven to avoidance as a way of escaping the pain that empathy for patients can cause. Consequently, CF and associated avoidance behavior can eventually lower the quality of nurses' clinical performance and

* Correspondence to: Ji-su Kim, Faculty of Red Cross College of Nursing, Chung-Ang University, 84 Heukseok-Ro, Dongjack-Gu, Seoul 06974, South Korea.

E-mail address: jisu80@cau.ac.kr

competence [12,13]. However, previous ProQOL studies among Korean nurses have only examined nurses who work in specialty departments (e.g., emergency rooms, intensive care units, oncology wards), rather than examining CF and nursing competencies. Furthermore, CF research has been neglected in favor of studies examining the relationship between job-related factors (e.g., job satisfaction and job stress) and demographic characteristics [13–15]. The results of these studies have been inconsistent, and no empirical studies have examined the relationship between nurses' ProQOL and their clinical performance or competence.

ProQOL is composed of three subfactors (CS, BO, STS), and standardizing each variable as a z score (rather than simply summing the scores), allows for interpretations based on types classified by the combination of individual subfactor scores [10]. However, previous ProQOL studies have analyzed each individual subfactor rather than the types, making it difficult to examine nurses' ProQOL at an integrated level. For this reason, the current research was conducted with the aim of classifying the ProQOL types of Korean nurses through cluster analysis, and then identifying differences in clinical competencies for each type.

Purpose

The purpose of this study was to delineate the relationships between the three variables characterizing ProQOL (CS, BO, STS) among Korean nurses as well as classify types of nursing-related ProQOL. Subsequently, this will assist in the development of interventions to improve nurses' ProQOL, clinical performance, and competence. The specific purposes of this study were to identify the (a) levels of the three factors in ProQOL, (b) ProQOL types for the three factors using cluster analysis, (c) differences between demographic characteristics and ProQOL types, (d) levels of clinical competencies, (e) differences between demographic characteristics and clinical competencies, and (f) differences between ProQOL type and clinical competencies.

Methods

Study design, sample, and data collection

This cross-sectional study examines the relationship between types of ProQOL and clinical performance and competence among clinical nurses. A power analysis conducted using the G*Power 3.1.4 program indicated that a sample of 305 or more participants would be required to have 95% power to detect an effect of size 0.25 (a medium effect size) in an analysis of variance (ANOVA) examining differences among the five groups [16]. We recruited nurses who had worked for more than 1 year in any of the three hospitals affiliated with a university in two provinces in South Korea. Four hundred questionnaires were distributed in the three hospitals from June 20 to June 27, 2014, and 370 copies were returned (response rate: 92.5%). After poorly completed questionnaires (e.g., they were not fully completed) were excluded, data from 335 participants were used in the final analyses. Thus, the sample was an appropriate size.

Instruments

The ProQOL is a 30-item self-report measure developed by Stamm [9,10], who provided the researchers with permission for its use in the current study. The Korean translation of version 5 of the ProQOL tool was used in this study. The ProQOL instrument contains three subscales, which cover the three subfactors of ProQOL (i.e., CS, BO, and STS). Each subscale consists of 10 questions, with each item rated on a 5-point Likert scale. A higher score on a

subscale signifies a higher degree of the corresponding subfactor. However, the three subscale scores are not simply summed to obtain the overall ProQOL score. Instead, the scores for all of the questions are standardized into z scores, with a mean of 50 and variance of 10. At the time of the instrument's development, the Cronbach's alpha values were .88 for CF, .75 for BO, and .81 for STS. In the present study, the Cronbach's alphas were .88 for CS, .71 for BO, and .77 for STS, respectively.

Park, Park, Kim, and Sung [17] developed the Clinical Competence Instrument used to evaluate Korean nurses' clinical performance and competence. Its validity has been established [18] and it is available for use by members of the Korean Hospital Nurses Association. This instrument has a total of 30 questions divided into four subscales, including 20 questions about competence in providing nursing care, 3 about competence in supporting patients, 2 about competence in communicating with patients and their families, and 5 about attitudes towards nursing care. Each item is rated on a 5-point Likert scale, with higher scores signifying higher clinical performance and competence. At the time of the instrument's development, the Cronbach's alpha for the total score was .93, while it was .92 for the competence in providing nurse care, and .76 for the subfactors (competence in supporting patients, competence in communicating with patients and their families, and attitudes towards nursing care). In the present study, the Cronbach's alpha for the total score was .96, while they were for .96 for competence in providing nursing care, .76 for competence in supporting patients, .81 for competence in communicating with patients and their families, and .76 for attitudes towards nursing care.

Data analysis

The data were analyzed as follows using SPSS 21.0 statistical software (SPSS Inc., Chicago, IL, USA). To identify demographic characteristics associated with the participants' ProQOL, clinical performance, and competence scores, we conducted frequency analysis to generate descriptive statistics. For scores on the CS, BO, and STS subscales, minimum, maximum, and quartile scores as well as means and standard deviations were calculated. As advised in the ProQOL manual [10], in preparation for cluster analysis, scores on the CS, BO, and STS subscales were standardized to a mean of 50 and a standard deviation of 10. Then, the influences of the three subfactors on the ProQOL score were equalized, and a K-mean cluster analysis was conducted. K-mean clustering aims to partition n observations into k clusters whereby each observation belongs to the cluster with the nearest mean, serving as a prototype of the cluster. In order to identify the demographic factors associated with the observed differences in clinical competence scores between the clusters, a least significant difference (LSD) analysis was conducted using Chi-squared test, ANOVA, and post hoc test.

Ethical considerations

This study received ethical approval (1041078-201405-HR-085-01) from the Institutional Review Board of the Chung-Ang University. The purpose of the study, guarantee of anonymity and confidentiality, the voluntary nature of participation, and freedom to withdraw at any time were explained to all participants, and their written consent was obtained prior to participation.

Results

Level of ProQOL

Table 1 shows the mean CS, BO, and STS scores of the 25th, 50th, and 75th percentiles, the raw and standardized scores of the

Table 1 Descriptive Analysis of ProQOL Subscales (N = 335).

Variables	Minimum (standardized score)	25th percentile (standardized score)	50th percentile (standardized score)	75th percentile (standardized score)	Maximum (standardized score)	M (SD)
CS	17 (18.63)	29 (42.78)	32 (48.81)	36 (56.86)	47 (78.99)	32.59 (4.97)
BO	15 (17.50)	27 (45.28)	29 (49.91)	32 (56.85)	39 (73.06)	29.04 (4.32)
STS	13 (21.41)	24 (43.81)	27 (49.92)	30 (56.03)	40 (76.40)	27.04 (4.91)

Note. BO = burnout; CS = compassion satisfaction; LSD = least significant difference; ProQOL = professional quality of life; STS = secondary traumatic stress.

subscales of the ProQOL, and the raw score averages. In terms of overall averages, CS was 32.59 ($SD = 4.97$), BO was 29.04 ($SD = 4.32$), and STS was 27.04 ($SD = 4.32$) (Table 1).

ProQOL type by cluster analysis

Table 2 shows the results of the K-mean cluster analysis of the three groups' CS, BO, and STS scores. First, the mean CS score of cluster 1 was 60.02 ($SD = 7.48$), which was higher than the standardized CS score of the 75th percentile. In contrast, the mean BO and STS scores for cluster 1 were 37.23 ($SD = 7.96$) and 43.76 ($SD = 7.96$), respectively, and they were lower than the standardized BO and STS scores of the 25th percentile (45.28 and 43.81, respectively). Only 25.1% of the sample fell into cluster 1, which had high CS levels and low BO and STS levels. Second, the mean STS score of cluster 2 was 59.02 ($SD = 6.67$), which was higher than the standardized STS score of the 75th percentile (56.03). However, the mean CS and BO scores of cluster 2 fell between the corresponding standardized scores of the 50th and 75th percentiles, at 51.50 ($SD = 7.04$) and 54.12 ($SD = 6.10$), respectively. A total of 38.2% of the sample fell into cluster 2, which had moderate CS and BO levels, and high STS levels. Finally, the mean CS score of cluster 3 was 41.55 ($SD = 6.38$), which was lower than the standardized CS score of the 25th percentile (42.78), while the mean cluster 3 BO score (54.44, $SD = 6.50$) fell between the standardized BO scores of the 50th and 75th percentiles. Furthermore, the mean STS score of cluster 3 (44.90, $SD = 7.04$) was close to the standardized STS score of the 25th percentile (43.81). A total of 36.7% of the sample fell into cluster 3, which had low CS and STS levels and moderate to high BO levels. An ANOVA was conducted for the reference variables used in the cluster analysis. The results indicated that the CS scores of the clusters differed significantly, with cluster 1 having the highest CS scores, and cluster 3 the lowest ($p < .001$). In addition, the BO scores of clusters 2 and 3 were significantly higher than those of cluster 1 ($p < .001$); the STS scores of cluster 2 were significantly higher than those of clusters 1 and 3 ($p < .001$) (Table 2).

Differences in demographic factors by ProQOL type

The demographic factors that significantly differed among the three clusters were identified. In particular, the groups differed significantly by age ($\chi^2 = 21.35$, $p < .001$), marital status ($\chi^2 = 11.06$,

Table 2 Cluster Analysis Based on ProQOL Scores (N = 335).

Variables	Cluster			F	p (LSD)
	1 (n = 84, 25.1%)	2 (n = 128, 38.2%)	3 (n = 123, 36.7%)		
CS	60.02 (7.48)	51.50 (7.04)	41.55 (6.38)	183.10	< .001 (1 > 2 > 3)
BO	37.23 (7.96)	54.12 (6.10)	54.44 (6.50)	200.69	< .001 (1 < 2, 3)
STS	43.76 (7.65)	59.02 (6.67)	44.90 (7.04)	169.31	< .001 (1, 3 < 2)

Note. BO = burnout; CS = compassion satisfaction; LSD = least significant difference; ProQOL = professional quality of life; STS = secondary traumatic stress.

$p = .004$), religion ($\chi^2 = 9.06$, $p = .011$), educational status ($\chi^2 = 16.08$, $p = .013$), and position ($\chi^2 = 18.10$, $p = .001$). Specifically, the members of cluster 1 were typically older, more likely to be married and religious, and tended to have higher levels of education and higher positions within their hospitals compared to members of clusters 2 and 3. However, the groups did not differ significantly by gender, type of department, or number of years of nursing experience (Table 3).

Levels of clinical competencies

Table 4 shows the results of the descriptive analysis of levels of clinical competence. The overall clinical competence score was 113.92 ($SD = 14.61$) and the mean score for each item was 3.80. The scores for the subfactors (i.e., competence in providing nursing care, competence in supporting patients, competence in communicating with patients and their families, and attitudes towards nursing care) were 75.27 ($SD = 10.36$, $M = 3.76$), 11.32 ($SD = 1.74$, $M = 3.77$), 7.64 ($SD = 1.18$, $M = 3.82$) and 19.69 ($SD = 2.48$, $M = 3.94$), respectively (Table 4).

Table 3 Comparison of Demographic Characteristics by Cluster (N=335).

Variables	n (%)	Cluster			χ^2	p
		1 % (SE)	2 % (SE)	3 % (SE)		
Age (yr)						
20–29	222 (66.3)	42 (18.9)	90 (40.5)	90 (40.5)	21.35	< .001
30–39	87 (26.0)	27 (31.0)	27 (31.0)	27 (31.0)		
40–49	26 (7.8)	15 (57.7)	6 (23.1)	6 (23.1)		
Gender						
Male	6 (1.8)	2 (33.3)	1 (16.7)	3 (50.0)	1.06	.589
Female	329 (98.2)	82 (24.9)	122 (37.1)	125 (38.0)		
Marital status						
Married	76 (22.7)	30 (39.5)	21 (27.6)	21 (27.6)	11.06	.004
Single	259 (77.3)	54 (20.8)	102 (39.4)	102 (39.4)		
Religious						
Yes	134 (40.0)	45 (33.6)	41 (30.6)	41 (30.6)	9.06	.011
No	201 (60.0)	39 (19.4)	82 (40.8)	82 (40.8)		
Level of education						
College	181 (54.0)	39 (21.5)	73 (40.3)	73 (40.3)	16.08	.013
Bachelor's degree	106 (31.6)	26 (24.5)	41 (38.7)	41 (38.7)		
RN-BSN	10 (3.0)	1 (10.0)	3 (30.0)	3 (30.0)		
Graduate level & above	38 (11.3)	18 (47.4)	6 (15.8)	6 (15.8)		
Type of department						
Inpatient unit	201 (60.0)	49 (24.4)	76 (37.8)	76 (37.8)	0.28	.868
Special unit ^a	134 (40.0)	35 (26.1)	47 (35.1)	47 (35.1)		
Position						
Nurse	305 (91.9)	68 (22.3)	116 (38.0)	116 (38.0)	18.10	.001
Nurse in charge	21 (6.3)	9 (42.9)	6 (28.6)	6 (28.6)		
Head nurse	9 (2.7)	7 (77.9)	1 (11.1)	1 (11.1)		
No. of years as a clinical nurse						
0 to < 3	111 (33.1)	21 (18.9)	44 (39.6)	44 (39.6)	11.51	.074
3 to < 5	70 (20.9)	14 (20.0)	29 (41.4)	29 (41.4)		
5 to < 10	86 (25.7)	22 (25.6)	32 (37.2)	32 (37.2)		
≥ 10	68 (20.3)	27 (39.7)	18 (26.5)	18 (26.5)		

^a Special units include ICUs, operating rooms, and emergency rooms.

Table 4 Descriptive Analysis of Clinical Performance Competencies (N = 335).

Competency	Min	Max	M (SD)	Average score
Overall	81	150	113.92 (14.61)	3.80
In providing nursing care	51	100	75.27 (10.36)	3.76
In providing support to patients	6	15	11.32 (1.74)	3.77
In communicating with patients & their families	4	10	7.64 (1.18)	3.82
Attitudes towards nursing care	13	25	19.69 (2.48)	3.94

Differences in demographic factors by clinical competencies

Table 5 displays the results of the analysis examining the effects of each subfactor on overall clinical competence scores after controlling for demographic characteristics. The overall clinical competence scores differed significantly by age ($p < .001$), marital status ($p < .001$), religiousness ($p = .001$), educational status ($p = .001$), position ($p < .001$), and number of years of nursing experience ($p < .001$). Specifically, results revealed that nurses who were older, married, religious, had higher levels of education, held higher positions, and had more clinical experience had higher clinical competence scores. However, the scores did not differ by gender or type of department.

Differences in clinical competence by ProQOL type

Table 6 displays the results of the analysis examining the subfactors of clinical competence by cluster. First, cluster 1 had the highest mean overall clinical competence score at 123.62 ($SD = 13.91$), while clusters 2 and 3 had somewhat lower scores, at 112.50 ($SD = 14.25$) and 108.76 ($SD = 14.61$), respectively. Furthermore, there was a significant difference between cluster 1 and cluster 3 ($p < .001$). Second, examination of each subfactor demonstrates that cluster 1 had the highest scores on competence in providing nursing care and attitudes towards nursing care, with scores of 81.79 ($SD = 10.01$) and 21.25 ($SD = 2.06$), respectively, while scores for cluster 2 were somewhat lower, at 74.37 ($SD = 10.09$) and 19.45 ($SD = 10.09$), respectively. Cluster 3 demonstrated a similar trend as cluster 2, with scores of 71.81 ($SD = 8.85$) and 18.87 ($SD = 2.11$), respectively. Moreover, these differences between all three clusters were statistically significant ($p < .001$). Finally, in cluster 1, the subfactors of competence in supporting patients and communicating with patients and the families were 12.29 ($SD = 1.68$) and 8.42 ($SD = 1.11$), respectively. These scores were higher than those for cluster 2, which were 11.20 ($SD = 1.17$) and 7.48 ($SD = 1.17$), respectively. In turn, cluster 2 scores were higher than those for cluster 3, at 10.80 ($SD = 1.60$) and 7.28 ($SD = 0.99$), respectively. These differences were all statistically significant ($p < .001$).

Discussion

In today's rapidly changing healthcare environment, the need for clinical competence among nurses is continually increasing. However, individuals in the nursing profession are highly likely to experience low ProQOL, which can negatively impact their clinical competence. We conducted the present study because of a lack of existing research on the relationship between ProQOL and clinical competence.

In this study, we examined nurses' ProQOL scores using the cut-off scores specified by Stamm [10], who conducted research on ProQOL among healthcare professionals and other members of helping professions (e.g., social service workers, teachers, fire fighters, and other first responders). When compared to Stamm's

[10] findings, Stamm's [10] raw CS, BO, and STS scores were 32, 15 and 7, respectively and 75th percentile standardized CS, BO and STS scores were 42, 25 and 17, respectively; the CS scores in our study were lower; however, our BO and STS scores were higher. Furthermore, Stamm's [10] 25th percentile standardized CS score was higher than that found in the current study, but the 25th percentile standardized BO and STS scores were lower.

As a whole, the ProQOL levels of Korean nurses appear to be lower than those reported in earlier ProQOL studies (e.g., [10]). These differences may be attributable to cultural differences between Korea and other countries, or to the lower ProQOL of nurses compared to other occupations [13]. However, since none of the studies conducted in other countries used the ProQOL Version 5 with nurses, it is difficult to compare our results. To allow for comparison, future international studies should assess the ProQOL of nurses using the same instrument. That said, a previous study of Korean emergency room nurses using the ProQOL reported CS and BO levels similar to those in our study, but found higher raw 75th percentile standardized STS scores (57.51) [13]. In addition, a study of Korean oncology nurses did not present standardized percentile scores [14]. However, if the mean raw CS, BO, and STS scores found in that study (30.10, 31.36, and 29.95, respectively) [14] are compared to the current study, our study participants appear to have slightly higher CS scores and lower BO and STS scores. Considering these findings, it appears that Korean nurses generally have relatively low self-perceived ProQOL; however, there are subtle differences in the subfactors that are affected by hospital characteristics.

According to the results of this study's cluster analysis, cluster 1 (high CS, moderate to low BO and STS) had relatively high ProQOL levels, but only a small percentage of nurses (25.1%) fell into this cluster. Cluster 1 participant characteristics are that they receive positive reinforcement to work, and are likely good influences on their colleagues and organizations [10]. Therefore, policy efforts at both nursing department and individual nurse levels are necessary to increase the ratio of nurses in cluster 1 within nursing organizations. Cluster 2 (moderate CS and BO, high STS) contained 38.2% of the participants. This combination is seemingly the emotionally distressing for nurses [10]. Consequently, it is important that interventions address the high levels of STS among nurses within this group, as it is characterized by a preoccupation with thoughts about the individuals nurses have tried to help, and an inability to separate private life from the helper role [9,10]. Moreover, Stamm [10] asserted that while STS problems are rare, "many people could develop them" (p. 21). It is believed that levels of STS among Korean nurses tend to be high because the emotional traumas they experience while caring for patients go unmanaged. Therefore, to address this finding, support systems need to be developed for nurses at high risk for STS [19,20]. Finally, cluster 3 (low CS and STS, moderate to high BO) contained 36.7% of our study participants. Cluster 3 participants can be regarded as being at the highest risk when compared to the other groups. The prototype for BO is associated with high workload and poor system function; therefore, nurses may feel as if there is nothing they can do to better the situation [10]. BO is also associated with a decrease in occupational well-being, an increase in turnover, and poor ProQOL. Job demands, exposure to traumatic events, and several organizational variables are determinants of BO. As a result, specific action targets for hospital management should be formulated to prevent BO among nurses [21].

The demographic factors associated with membership in each cluster were also compared. We found that members of cluster 1 were older and had higher ProQOL levels than did those in clusters 2 and 3, who had relatively low ProQOL levels. Furthermore, nurses

Table 5 Comparison of Clinical Performance Competencies according to Demographic Characteristics (N = 335).

Variables	Overall		In providing nursing care		In providing support to patients		In communicating with patients & their families		Attitudes towards nursing care	
	M (SD)	p (LSD)	M (SD)	p (LSD)	M (SD)	p (LSD)	M (SD)	p (LSD)	M (SD)	p (LSD)
Age [†]										
20–29 ^a	109.84 (12.63)	<.001	73.38 (9.10)	<.001	10.89 (1.61)	<.001	7.40 (1.09)	<.001	19.18 (2.32)	<.001
30–39 ^b	118.89 (14.37)	(c > b > a)	78.86 (10.08)	(c > b > a)	11.86 (1.62)	(c > b > a)	7.89 (1.18)	(c > b > a)	20.28 (2.41)	(c > b > a)
40–49 ^c	132.15 (12.30)		87.92 (8.18)		13.19 (1.47)		8.92 (0.98)		22.12 (2.14)	
Gender										
Male	116.33 (14.56)	.684	77.00 (10.0)	.680	11.83 (0.98)	.469	7.67 (1.03)	.959	19.83 (3.31)	.886
Female	113.88 (14.63)		75.24 (10.38)		11.31 (1.75)		7.64 (1.18)		19.69 (2.47)	
Marital status										
Married	123.21 (13.92)	<.001	81.75 (9.89)	<.001	12.18 (1.62)	<.001	8.22 (1.00)	<.001	21.14 (2.31)	<.001
Single	111.20 (13.68)		73.37 (9.72)		11.07 (1.69)		7.47 (1.18)		19.29 (2.38)	
Religion										
Yes	117.04 (15.81)	.001	77.47 (10.89)	.001	11.57 (1.93)	.035	7.81 (1.28)	.029	20.19 (2.64)	.002
No	111.84 (13.39)		73.80 (9.75)		11.16 (1.59)		7.53 (1.10)		19.35 (2.31)	
Educational status [†]										
College ^a	110.03 (13.72)	<.001	72.49 (9.86)	<.001	10.95 (1.70)	<.001	7.37 (1.11)	<.001	19.21 (2.34)	<.001
Bachelor's degree ^c	114.07 (11.91)	(d > c > a, b)	75.48 (8.35)	(d > c > b > a)	11.29 (1.50)	(d, c > b, a)	7.68 (1.13)	(d, c, b > a)	19.61 (2.36)	(d, c > b, a)
RN-BSN ^c	123.40 (10.84)		81.60 (8.68)		12.40 (1.43)		8.30 (0.67)		21.10 (1.91)	
Graduate & above ^d	129.58 (15.12)		86.24 (10.34)		12.89 (1.67)		8.66 (1.12)		21.79 (2.42)	
Type of department										
Inpatient unit	114.86 (14.22)	.150	76.02 (10.19)	.102	11.32 (1.72)	.990	7.65 (1.17)	.925	19.87 (2.34)	.111
Special units [‡]	112.51 (15.10)		74.13 (10.54)		11.32 (1.78)		7.63 (1.20)		19.43 (2.65)	
Position [†]										
Nurse ^a	112.13 (13.60)	<.001	74.04 (9.73)	<.001	11.13 (1.66)	<.001	7.52 (1.13)	<.001	19.44 (2.38)	<.001
Nurse in charge ^b	129.10 (11.53)	(c, b > a)	85.67 (8.15)	(c, b > a)	12.95 (1.16)	(b, c > a)	8.71 (0.90)	(b, c > a)	21.76 (1.97)	(b, c > a)
Head nurse ^c	139.33 (9.54)		92.67 (5.77)		13.89 (1.45)		9.33 (1.00)		23.44 (1.67)	
No. of years as a clinical nurse [†]										
≤ 1 to < 3 ^a	104.31 (10.58)	<.001	68.21 (7.44)	<.001	10.39 (1.58)	<.001	7.06 (1.10)	<.001	18.64 (2.32)	<.001
3 to < 5 ^b	113.64 (11.18)	(d > c, b > a)	75.14 (7.80)	(d > c > b > a)	11.33 (1.38)	(d > c, b > a)	7.60 (0.97)	(d > c, b > a)	19.57 (2.10)	(d > c, b > a)
5 to < 10 ^c	117.58 (13.35)		78.23 (9.54)		11.58 (1.55)		7.85 (1.14)		19.92 (2.38)	
≥ 10 ^d	125.28 (14.96)		83.16 (10.44)		12.51 (1.72)		8.37 (1.09)		21.23 (2.40)	

Note. Registered Nurse-Bachelor of Science in Nursing degree (RN-BSN).

[†] Post hoc test.

[‡] Special units include intensive care units, operating rooms, and emergency rooms.

who are married, religious, and have higher levels of education tend to have higher positions within their hospitals. Since this is a cross-sectional study, we can only hypothesize that more highly educated nurses have higher ProQOL levels because they change jobs less frequently and hold higher positions as a result of job promotions. Nevertheless, factors such as age, marital status, religiousness, level of education, and position are highly correlated with ProQOL level. Although it is not possible to control for these demographic factors [10], it would be beneficial to identify the individual characteristics associated with low ProQOL levels among nurses.

In the present study, nurses' clinical competence scores averaged 3.80 on a 5-point scale. In addition, they had higher competence scores on attitudes towards nursing care than on the other subfactors of clinical competence, and lower scores on competence in providing nursing care than on other subfactors. Notably, our participants' scores were lower than those in previous studies using

the Clinical Competence Instrument [17], which reported high mean scores—specifically, 4.10 and 4.18 [1,4]—on competence in providing support to patients and competence in providing nursing care, respectively. These differences from previous studies [1,4] may be attributable to differences in the participants' characteristics. Specifically, participants in similar studies had higher levels of education and longer periods of work experience, which may have increased nurses' confidence in their clinical competence [22]. Therefore, future longitudinal studies are needed in order to accurately determine the influence of level of education and years of work experience on nurses' clinical competence.

Clinical competence and each of its subfactors are affected by demographic and professional characteristics such as age, marital status, religiousness, level of educational, position within one's hospital, and length of work experience. Similar results were found in previous studies [1,3–5,7,23,24]. These results might signify that

Table 6 Clinical Competence Scores by Cluster (N = 335).

Variables	Clusters			F	p (LSD)
	1 M (SE)	2 M (SE)	3 M (SE)		
Overall	123.65 (13.91)	112.50 (14.25)	108.76 (14.61)	33.83	<.001 (1 > 2 > 3)
In providing nursing care	81.70 (10.01)	74.37 (10.09)	71.81 (8.85)	31.19	<.001 (1 > 2 > 3)
In providing support to patients	12.29 (1.68)	11.20 (1.17)	10.80 (1.60)	26.82	<.001 (1 > 2, 3)
In communicating with patients & their families	8.42 (1.11)	7.48 (1.17)	7.28 (0.99)	35.82	<.001 (1 > 2, 3)
Attitudes towards nursing care	21.25 (2.06)	19.45 (2.61)	18.87 (2.11)	325.43	<.001 (1 > 2 > 3)

Note. LSD = least significant difference.

as age and years of work experience increase, so do skill, efficiency, and expertise. This increase in clinical competence could be the result of continuing education, a growing capacity to overcome stress, family support, or religious practices.

In this study, we identified differences in clinical competence by cluster. cluster 1 demonstrated higher clinical competence scores in all areas compared to clusters 2 and 3. In addition, the results of this study showed that technical factors such as competence in providing nursing care (demonstrated when nurses provide care in clinical situations) and competence in supporting patients (e.g., creating an environment that supports provision of nursing care, monitoring the state of equipment, having facilities and tools required for performing nursing care, and creating a therapeutic environment) increased ProQOL. Moreover, nurses with high ProQOL levels tend to perform effectively when communicating with patients and their families (maintaining harmonious relationships with patients, their caregivers, and other concerned persons) and have positive attitudes towards nursing, including the general attitude, working attitude, and patient response attitudes that professional nurses require. Since previous studies have only addressed the relationship between characteristics such as job stress and job satisfactions and clinical competence among nurses [25,26], direct comparisons are not possible. Therefore, the implications of this study are important, as it is the first to examine the relationship between nurses' ProQOL and their clinical competence.

Although causal inferences cannot be made based on the results of this cross-sectional study, our findings indicate that managers at clinical sites must prepare realistic plans for increasing nurses' CS and reducing their CF because ProQOL levels may influence their clinical performance and competence. In particular, raising awareness of the risk of BO and STS can help prevent the onset of symptoms of these phenomena [27]. Notwithstanding, nurses belonging to cluster 1 show characteristics similar to Stamm's [10] interpretation in that they have positive attitudes in general and in communication with their colleagues, as well as in their provision of direct patient care. Additionally, nurses in cluster 2 require additional skill improvement training, even after receiving treatment and intervention for resolving high-level STS [10]. Therefore, we suggest that current management interventions be examined, and new systems be developed to support nurses. Moreover, because different types of traumatic events in the hospital environment require different types of interventions, the prevention and management of STS among different department nurses must be addressed using a variety of approaches [28–30]. Lastly, in cluster 3, participants' total clinical competencies were the lowest. Consequently, organizations with many nurses with BO should seriously consider their organizational system and use nurses' capital to identify system pitfalls and ways to better support nurses in accomplishing their goals and work [10].

The limitations of this study are as follows. First, since this cross-sectional study sampled participants from only three university hospitals in South Korea, causal inferences about the relationship between ProQOL and clinical competence cannot be drawn. Second, because the study was based on self-report measures, nurses' clinical competence was likely underestimated or overestimated. Therefore, we suggest future studies measure clinical competence more objectively. Finally, as noted above, longitudinal research is needed to clarify the nature of the relationship between ProQOL and clinical competence among nurses.

Conclusion

Clinical competence among nurses is an essential requirement for the provision of safe and effective patient care. This study

demonstrated that it is possible to directly examine the relationship between ProQOL level and clinical competence among nurses. The study also revealed that there are different types of ProQOL that are associated with different subfactors of nurses' clinical competence. Overall, raising nurses' ProQOL levels can help improve their clinical competence. Consequently, programs to increase nurses' CS levels and relieve their CF need to be designed and implemented. In addition, the variables discussed in this study can be employed in designing education programs within nursing programs and creating policies that can help improve nurses' clinical competence.

Conflicts of interest

The authors declare that no conflict of interest.

References

- Park JA, Kim BJ. Critical thinking disposition and clinical competence in general hospital nurses. *J Korean Acad Nurs*. 2009;39:840–50. <http://dx.doi.org/10.4040/jkan.2009.38.6.840>
- Black J, Allen D, Redfern L, Muzio L, Rushowick B, Balaski B, et al. Competencies in the context of entry-level registered nurse practice: a collaborative project in Canada. *Int Nurs Rev*. 2008;55:171–8. <http://dx.doi.org/10.1111/j.1466-7657.2007.00626.x>
- Meretoja R, Numminen O, Isoaho H, Leino-Kilpi H. Nurse competence between three generational nurse cohorts: a cross-sectional study. *Int J Nurs Pract*. 2014. <http://dx.doi.org/10.1111/ijn.12297>. Advance online publication.
- Han YH, Park YR. Effects of self-leadership and job involvement on clinical competence in general hospital nurses. *J Korean Acad Nurs Adm*. 2013;19:462–9. <http://dx.doi.org/10.111/jkana.na.2013.19.4.462>, 462–460.
- Kang KJ, Kim EM, Ryu SA. Factors influencing clinical competence for general hospital nurses. *J Korea Contents Assoc*. 2011;11:284–93.
- Park KN, Park MK. A study on nurses' self-leadership, organizational commitment and the nursing performance. *J Korean Acad Nurs Adm*. 2008;14:63–71.
- Sung MH, Eum OB. Relationships between critical thinking disposition, professional nursing competence and job satisfaction in clinical nurses. *J Korean Acad Nurs Adm*. 2009;15:26–36.
- Vagharseyyedin SA, Vanaki Z, Mohammadi E. The nature nursing quality of work life: an integrative review of literature. *Western J Nurs Res*. 2011;33:786–804. <http://dx.doi.org/10.1177/0193945910378855>
- Stamm BH. Professional quality of life: compassion, satisfaction and fatigue subscales-III [Internet]. 2002 [cited 2013 Sep 20]. Available from: <http://www.proqol.org>
- Stamm BH. The concise ProQOL manual [Internet]. 2nd ed. 2010 [cited 2013 Sep 20]. Available from: <http://www.proqol.org>
- Joinson C. Coping with compassion fatigue. *Nursing*. 1992;22:116–20.
- Boyle DA. Countering compassion fatigue: a requisite nursing agenda. *Online J Issues Nurs*. 2011;16. <http://dx.doi.org/10.3912/OJIN.Vol16No01Man02>
- Kim HJ, Choi HJ. Emergency nurses' professional quality of life: compassion satisfaction, burnout, and secondary traumatic stress. *J Korean Acad Nurs Adm*. 2012;18:320–8.
- Kim S, Kim JH, Park JY. Oncology nurses' professional quality of life in a tertiary hospital. *J Korean Clin Nurs Res*. 2010;16:145–55.
- Potter P, Deshields T, Divanbeigi J, Berger J, Cipriano D, Norris L, et al. Compassion fatigue and burnout: prevalence among oncology nurses. *Clin J Oncol Nurs*. 2010;14:E56–62. <http://dx.doi.org/10.1188/10.CJON.E56-E62>
- Faul F, Erdfelder E, Lang AG, Buchner A. G*Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behav Res Methods*. 2007;39(2):175–91. <http://dx.doi.org/10.3758/BF3193146>
- Park SA, Park KO, Kim SY, Sung YH. A development of standardized nurse performance appraisal tool. *J Korean Clin Nurs Res*. 2007;13:197–211.
- Park KO, Park SA, Park SH, Lee EH. A validation of nurse performance appraisal tool. Seoul (Korea): Korean Hospital Nurses Association Report; 2010.
- Bogaert P, Clarke S, Willems R, Mondelaers M. Nurse practice environment, workload, burnout, job outcomes, and quality of care in psychiatric hospitals: a structural equation model approach. *J Adv Nurs*. 2013;69:1515–24. <http://dx.doi.org/10.1111/jan.12010>
- Komachi MH, Kamibepu K, Nishi D, Matsuoka Y. Secondary traumatic stress and associated factors among Japanese nurses working in hospitals. *Int J Nurs Pract*. 2012;18:155–63. <http://dx.doi.org/10.1111/j.1440-172X.2012.02014.x>
- Adriaenssens J, De Gucht V, Maes S. Determinants and prevalence of burnout in emergency nurses: a systematic review of 25 years of research. *Int J Nurs Stud*. 2014;52:649–61. <http://dx.doi.org/10.1016/j.ijnurstu.2014.11.004>
- Istomina N, Suominen T, Razbadauskas A, Martinkenas A, Meretoja R, Leino-Kilpi H. Competence of nurses and factors associated with it. *Medicina (Kaunas)*. 2011;47:230–7.
- Salonen AH, Kaunonen M, Meretoja R, Tarkka MT. Competence profiles of recently registered nurses working in intensive and emergency settings. *J Nurs Manag*. 2007;15:792–800. <http://dx.doi.org/10.1111/j.1365-2934.2007.00768.x>

24. Slåtten K, Fagerström L, Hatlevik OE. Clinical competence in palliative nursing in Norway: the importance of good care routines. *Int J Palliat Nurs*. 2010;16:80–6.
25. Farquharson B, Allan J, Johnston D, Johnston M, Choudhary C, Jones M. Stress amongst nurses working in a healthcare telephone-advice service: relationship with job satisfaction, intention to leave, sickness absence, and performance. *J Adv Nurs*. 2012;68:1624–35. <http://dx.doi.org/10.1111/j.1365-2648.2012.06006.x>
26. Nabirye RC, Brown KC, Pryor ER, Maples EH. Occupational stress, job satisfaction and job performance among hospital nurses in Kampala, Uganda. *J Nurs Manag*. 2011;19:760–8. <http://dx.doi.org/10.1111/j.1365-2834.2011.01240.x>
27. Young JL, Derr DM, Cicchillo VJ, Bressler S. Compassion satisfaction, burnout, and secondary traumatic stress in heart and vascular nurses. *Crit Care Nurs Q*. 2011;34:227–34. <http://dx.doi.org/10.1097/CNQ.0b013e31821c67d5>
28. Drury V, Craigie M, Francis K, Aoun S, Hegney DG. Compassion satisfaction, compassion fatigue, anxiety, depression and stress in registered nurses in Australia: phase 2 results. *J Nurs Manag*. 2014;22(4):519–31. <http://dx.doi.org/10.1111/jonm.12168>
29. Emer D, Gloria A, Maura D. Secondary traumatic stress among emergency nurses: a cross-sectional study. *Int Emergency Nurs*. 2015;23:53–8.
30. Kim SY, Park WO, Kim JK. Nurses' Experience of Incivility in General Hospitals. *J Korean Acad Nurs*. 2013;43(4):453–67 <http://dx.doi.org/10.4040/jkan.2013.43.4.453>