Mediating Effects of Empathy on Competence of Korean Nursing Students

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Abstract

Background: Empathic communication is important for nurses to establish therapeutic relationships with patients and to improve the quality of care. Thus, empathy is essential for nursing students who will be future nurses. The aim of this study was to examine the mediating role of empathy in the influence of communication competence on interpersonal competence of nursing students.

Methods: This study was conducted at the Catholic University of Korea. Participants were 218 nursing students who completed a survey questionnaire on general characteristics, Interpersonal Reactivity Index, Primary Communication Inventory, and Interpersonal Competence Questionnaire from Feb. 20 to Feb. 21, 2014. Data were analyzed using simple and multiple regression analyses. Mediation analysis was performed according to the Baron and Kenny method and Sobel test.

Results: A three-step regression analysis was performed to verify the mediating role of empathy in the relationship between communication competence and interpersonal competence. Results confirmed that communication competence significantly influenced interpersonal competence, showing that empathy had a partial mediating role ($Z=2.40$, $P=.016$).

Conclusion: Communication competence improved interpersonal competence through mediation by empathy in nursing students. Result of this study suggested that nursing schools should implement communication education that can strengthen empathy in order to boost nursing students' interpersonal competence.

Keywords: Nursing students; Empathy; Communication; Interpersonal relations

Introduction

For nurses, successful interaction is determined by their interpersonal competence, an ability to effectively form and maintain relationships with others (1). Nurses must maintain a therapeutic relationship with their patients to motivate healthy behavioral changes. It is also important to build good relationships with other healthcare personnel in order to provide comprehensive care to patients (1). A good interpersonal relationship enhances one's psychological wellbeing and satisfaction (2). It has also been reported to lead to positive clinical outcomes for the patient (3), while a poor interpersonal relationship increases a sense of depres-

sion (4) and turnover intention (5). Thus, interpersonal relationship is a critical component not only for an individuals' mental health, but also for the organization. Thus, successful interactions by nurses require interpersonal competence, the ability to effectively form and maintain relationships with others.

Previous studies have identified self-esteem (6), ego-resiliency, empathy (7), and communication skills (8) as variables influencing interpersonal competence in college students. Of these factors, communication skills and empathy in particular are essential for nursing students to practice caring, the essence of nursing, through communication based on empathy.

Empathy refers to the ability to perceive others' emotions, psychological states, or experience as one's own and convey it to them. The process through which nurses empathize with their patients helps patients freely reveal and express themselves (1). Through this process, nurses can form a meaningful relationship with their patients by responding to patients' needs. They can also improve patients' wellbeing and quality of care by providing customized nursing care (9, 10).

As the nurse's communication skills are the key to holistic nursing, communication between the nurse and the patient affects the patient's experience of nursing service (11). Moreover, effective communication skill is one of the most important demands made by patients for their nurses (12). It ensures safe and reliable patient care (13, 14). Particularly, communication based on empathy is an essential component for nurses to maintain a therapeutic relationship with patients. It improves patient satisfaction and treatment compliance (1). For these reasons, it is important for nursing students to acquire not only intellectual skills that can be used in actual clinical practice, but also communication skills based on empathy (15).

However, nursing students are burdened by various human relationships with healthcare professionals, patients, and caregivers in the course of clinical practice (16), and this in turn causes stress for nursing students, which has a negative effect on successfully forming interpersonal relationships (17). Thus, it is necessary to make efforts to improve interpersonal skills of nursing college students.

Associations among empathy, communication skills, and interpersonal competence in nursing students have been extensively studied in the literature (18-20). However, most studies merely confirmed a correlation among these variables (18, 19) or investigated effects of communication skills and empathy on interpersonal relationships (20). And there is no study on how empathy plays a role in the relationship between communication skills and interpersonal competence.

Therefore, the objective of this study was to examine the mediating role of empathy in the influence of communication competence on interpersonal competence of nursing students. Findings of the present study were expected to improve our understanding of the significance of empathy in the communication of nursing students. Findings of this study also provided foundational data for nursing students to build successful interpersonal relationships.

Materials and Methods

Study design

This was a descriptive investigative study aiming to confirm the mediating role of empathy in the influence of communication competence on interpersonal competence in nursing students.

Participants and data collection procedure

The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. This study was approved by the institutional review board of the Catholic University of Korea (IRB No. MC14QISI0005) with which the authors were affiliated.

It was conducted on nursing students of the Catholic University of Korea in Seoul who attended freshman/current student orientation. After IRB approval, data were collected from Feb. 20 to Feb. 21, 2014. All participants provided informed written consent and no participant was subjected to any discomfort. Exclusion criteria was those who diagnosed with a mental disorder, and those with alcohol or drug addiction.

The sample size was calculated using G*power program (version 3.1.9.2, Heinrich-Heine-Universität Düsseldorf, Germany) (21), a statistical power analysis program. For multiple regression analysis, the significance level was 0.05 at the 80% power level, 0.15 for the medium effect size, and two for the predictive variable, at least 68 subjects were required (22). This study included all students who wanted voluntary participation, and a total of 220 students were enrolled. All distributed questionnaires (*n* = 220) were retrieved. After excluding two questionnaires for incomplete responses, a total of 218 questionnaires were included in the final analysis.

Measurements
Interpersonal Competence
Interpersonal competence was measured using the Interpersonal Competence Questionnaire originally developed by Buhrmester, Furman, Wittenberg, & Reis (23) and adapted by Han & Lee (24) after obtaining approval from these authors who adapted the instrument. This 40-item questionnaire consisted of items in five domains (i.e., relationship initiation, negative assertion, emotional support, self-disclosure, and conflict management). Each item was rated on a five-point scale ranging from "not at all" (1 point) to "extremely true" (5 points). Negative items 1, 10, 12, 24, 33, and 40 were reverse-coded. Higher score indicated higher level of interpersonal competence. Regarding the reliability of the tool, its Cronbach's *a* value was 0.77 to 0.87 at the time of development. It was 0.88 in the present study.

Communication Competence
Communication competence was measured using a modified version by Choi (25) of the Primary Communication Inventory (26) to examine communication between married couples. An approval was obtained from the author who modified the instrument most recently. This 25-item tool consisted of 20 items in the verbal communication domain and 5 items in the nonverbal communication domain, including contents on skills of listening, self-disclosure and expression ability, empathy, and relationship building skills. Each item was

rated on a five-point scale, ranging from "not at all" (1 point) to "always true" (5 points). Negative items 8 and 16 were reverse-coded. A higher score indicated higher level of communication efficiency. Regarding the reliability of the tool, Cronbach's *a* was 0.83 in Choi (25)'s study. It was 0.83 in this study.

Empathy
Empathy was measured using the Interpersonal Reactivity Index (27) after obtaining approval from the original author. This 28-item instrument consisted of domains in perspective-taking, fantasy, empathic concern, and personal distress. Perspective-taking refers to the tendency of trying to understand others by thinking in their stances and perspectives. Fantasy refers to the degree of imagining oneself to be in the situation of the character in a book or film. Empathic concern refers to having an interest in and becoming compassionate about other people's status. Personal distress refers to the degree of suffering from someone else's pain. Each item was rated on a five-point scale ranging from "not at all" (1 point) to "extremely true" (5 points). Negative items 2, 5, 10, 13, 16, 19, 20, 25, and 27 were reverse-coded. Higher score indicated higher level of empathy. Regarding the reliability of the tool, Cronbach's *a* was 0.62-0.81 at the time of development. It was 0.76 in this study.

Data analysis
Collected data were analyzed as follows using SPSS/Win 25.0 (Chicago, IL, USA) software. Participants' general characteristics are presented as frequency and percentage while empathy, communication competence, and interpersonal competence are presented as mean and standard deviation. Mediating effects of empathy on the relationship between communication competence and interpersonal competence were verified (28) which involved the use of simple and multiple regression analyses. The significance of the mediating effect was confirmed with Sobel test. According to Baron & Kenny (28), for a variable to have mediating effect, it must meet the following four conditions: 1) The independent variable must have a

significant impact on the mediating variable in the first equation; 2) The independent variable must have a significant impact on the dependent variable in the second equation; 3) The mediating variable must have a significant impact on the dependent variable in the third equation, and 4) The independent variable's influence on the dependent variable must be smaller in the third equation than that in the second equation. The mediating variable is said to have complete mediation if the influence of independent variable on the dependent variable in the third equation is not significant. It is considered to have partial mediation if the influence of independent variable on the dependent variable in the third equation is significant.

Results

The mean age of all participants was 20 yr and 83.5% of these participants were women. More information about characterizes of participants is informed in Table 1.

Table 1: General Characteristics of Participants (*n* = 218)

Variables	n (%) or Mean±SD
Age (yr)	20.0±1.53
Gender	
Men	36 (16.5)
Women	182 (83.5)
Grade	
Freshmen	82 (37.6)
Sophomore	48 (22.0)
Junior	52 (23.9)
Senior	36 (16.5)
Religion	
Yes	127 (58.3)
No	91 (41.7)
Perceived economic status	
Bad	12 (5.5)
Average	195 (89.4)
Good	11 (5.0)
Number of siblings	
0	12 (5.5)
1	171 (78.4)
2	30 (13.8)
≥3	5 (2.3)

SD = standard deviation

The mean scores of interpersonal competence, communication competence, and empathy of participants were all above the mean level, and the percentage of participants above the mean level was 93.1, 95.0, and 86.2%, respectively. In the sub-domains of interpersonal competence, the score for the emotional support domain was the highest, followed by that for conflict management, self-disclosure, relationship initiation, and negative assertion. In the sub-domains of communication competence, the verbal communication score was higher than the nonverbal communication score. In the sub-domains of empathy, the empathic concern score was the highest, followed by that for fantasy, perspective-taking, and personal distress (Table 2).

Table 2: Level of Interpersonal Competence, Communication Competence and Empathy (*n* = 218)

Variables	*Mean±SD*	*Min*	*Max*
Interpersonal Competence	3.56±0.33	2.75	4.50
Emotional support	3.72±0.37	2.75	4.50
Conflict management	3.68±0.39	2.50	4.75
Self-disclosure	3.56±0.48	2.25	4.88
Relationship initiation	3.48±0.57	1.88	5.00
Negative assertion	3.36±0.53	1.50	4.63
Communication Competence	3.54±0.36	2.48	4.64
Verbal communication	3.58±0.38	2.55	4.65
Nonverbal communication	3.38±0.46	2.20	4.80
Empathy	3.38±0.31	2.68	4.36
Empathic concern	3.52±0.50	2.00	5.00
Fantasy	3.47±0.61	1.71	5.00
Perspective-taking	3.43±0.44	2.29	4.86
Personal distress	3.10±0.41	2.00	4.29

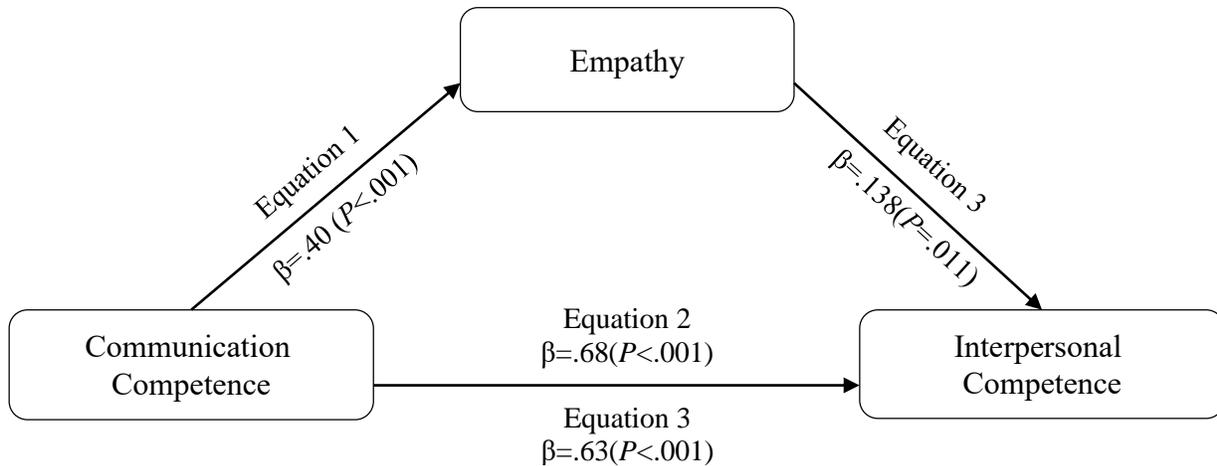Max = maximum; Min = minimum; *SD* = standard deviation

Prior to regression analysis, we confirmed that the following basic assumptions were all met. The Durbin-Watson statistic ranged from 1.94-2.06, confirming absence of autocorrelation of the residual. Tolerance limits were all above 0.10, ranging from 0.44 to 0.99. Variance inflation factor was below 10 (range, 1.00-1.19). Furthermore, correlations between variables were all below .80, confirming that there was no problem of multicollinearity. Residual analysis confirmed linearity of model, normality of error, and homogeneity of variance.

Table 3 shows results of the three-step regression analysis conducted to verify the mediating effect of empathy in the influence of communication competence on interpersonal competence. The independent variable (communication competence) significantly influenced the mediating variable (empathy) in the first equation ($\beta = .40$, $P < .001$). The independent variable (communication competence) significantly influenced the dependent variable (interpersonal competence) in the second equation ($\beta = .68$, $P < .001$). Finally, the mediating variable (empathy) significantly influenced the dependent variable (interpersonal competence) in the third equation ($\beta = .14$, $P = .011$). Furthermore, influence of the independent variable (communication competence) on the dependent variable (interpersonal competence) was smaller in the third equation than that in the second equation, thereby confirming the mediating effect of empathy in the influence of communication competence on interpersonal competence. Furthermore, because the independent variable (communication competence) had a significant impact on the dependent variable (interpersonal competence) in the third equation ($\beta = .63$, $P < .001$), empathy was found to have partial mediating effect. The significance of the mediating effect of empathy was tested with the Sobel test. Results confirmed that empathy had significant mediating effect on the relationship between communication competence and interpersonal competence ($Z = 2.40$, $P = .016$) (Fig. 1).

Table 3: Mediating Effect of Empathy in the Relationship between Communication Competence and Interpersonal Competence (*n*=218)

Equations	B	β	SE	t	P	Adj.R²	F	P
1. Communication Competence → Empathy	0.40	.40	.06	6.46	<.001	.158	41.73	<.001
2. Communication Competence → Interpersonal Competence	1.02	.68	.07	13.69	<.001	.462	187.46	<.001
3. Communication Comptence, Empathy → Interpersonal Competence						.476	99.45	<.001
Communication Competence → Interpersonal Competence	0.94	.63	.08	11.66	<.001			
Empathy → Interpersonal Competence	0.21	.14	.08	2.57	.011			

Fig. 1: Model showing the influence of communication competence on interpersonal competence, and the mediating effect of empathy

Discussion

We aimed to provide foundational data to help nursing students successfully build interpersonal relationships by investigating the mediating effect of empathy in the process through which communication competence influenced interpersonal competence in nursing students.

In this study, the interpersonal competence score was 3.56 out of 5, and the percentage of participants above the mean level was 93.1%. It is similar to that (3.57) found for Korean nursing students (20) and higher than that (3.37) found for American university students (29) in previous studies. In the sub-domain of interpersonal competence, the score of the emotional support domain was the highest and the score of the negative assertion domain of the others was the lowest. Nurses' emotional support not only reduces the patients' anxiety but also helps them to adapt effectively and give them psychological well-being (1). Therefore, the high level of emotional support of nursing students indicates that they have desirable quality as future nurses.

The lower score for the negative assertion domain seems to arise from the nature of the Korean culture in which negative feedback with others is considered uncomfortable and a challenging factor that hinders forming relationships with others. Negative assertion can be examined in relation to self-assertion. In interpersonal relationships, the act of expressing one's suppressed thoughts or emotions about others in an appropriate manner is known as self-assertive behavior (1). Self-assertive behavior is related to psychological empowerment, that is, one's internal motive to actively carry out one's given roles and control oneself (30). Self-assertive behaviors in nurses can improve the quality of care by protecting rights of nurses and patients (1). Therefore, it is important to provide self-assertion training programs in colleges to help nursing students acquire knowledge and skills related to self-assertion. It is also important to provide an educational environment that encourages students to express their opinions and rights and strengthen their autonomy.

In this study, the communication competence score was 3.54 out of 5, and the percentage of participants above the mean level was 95.0%. It is similar to that (3.66) found for the previous study which measured the communication competence of the nursing students who had clinical practice experience (31), but it was lower than that (4.03) of the students of other major (32). Although the level of communication competence of the nursing students was not low in this study, it is necessary to educate them to improve their communication skills considering the importance of communication competence as future nurses and the relatively low scores compared to other major college students' communication competence. Moreover, education programs should be modified to add simulation education that creates clinical setting environment to help students practice their communication skills.

Participants in this study scored lower for the nonverbal communication domain than that for the verbal communication domain. It might be due to the fact that nursing students are exposed to verbal communication more than to nonverbal communication as they undergo the routine curriculum. Nonverbal communication which comprises more than 50% of all communications not only clarifies communication between parties by strengthening meanings of messages, but also complements limitations of verbal messages (1). Particularly, nonverbal communication is an important component for nurses to build a trust relationship with patients and having empathy toward patients (33). Therefore, undergraduate curricula should focus on improving nursing students' nonverbal communication skills.

In this study, the mean empathy score of nursing students was 3.38 out of 5, and the percentage of participants above the mean level was 86.2%. It is similar to that (3.40) found among Korean nursing students (19). Regarding domains of empathy, the score was the highest for the empathic concern domain, followed by that for fantasy, perspective-taking, and personal distress. This order of scores was identical to results of a previous study that analyzed empathy in Korean nursing students (20). In this study, the empathic concern score was found to be the highest. This is believed to be due to the nature of nursing where students learn about providing care to improve patients' health and welfare, during which their empathic concern in promoting welfare of others (27) would have naturally been increased. On the other hand, the lowest score for the personal distress domain seems to be due to the fact that there is limitation to feeling empathetic toward others' distress for students in their early 20s.

The key goal of this study was to verify the mediating effect of empathy. We found that empathy had a partial mediating role in the relationship between communication competence and interpersonal competence of nursing students. This shows that communication competence can influence interpersonal competence both directly and indirectly through empathy. In other words, improving communication skills can increase empathy which in turn improves interpersonal competence. In this study, it is thought that nurses' communication based on empathy has formed a positive interpersonal relationship by promoting social interaction with others.

Since interpersonal competence, communication competence, and empathetic skills cannot be acquired in a short-term, it is important to pay attention to nursing education provided to nursing students. The Korean Accreditation Board of Nursing Education (34) stressed the significance of therapeutic communication skills through verbal and nonverbal interaction, establishment of a collaborative relationship among professionals, and work coordination within the healthcare team as learning outcomes of nursing education. This shows that building a good relationship with patients and other medical professionals is important for nursing students in order to demonstrate their professional competence as nurses in the future. Further, the lack of exposure to empathetic nursing role models during clinical training might be a cause of significantly lower empathy among nursing students (35). Thus, future nursing educations should be shaped to teach techniques and knowledge as well as training empathy needed for the clinical setting so that nurses could provide care that meet patient demands (36).

Limitation

First, findings of this study have limited generalizability as participants were convenience sampled from nursing students of one nursing school in Seoul. Thus, replications studies involving nursing students from more regions are needed. Second, the data was collected by self-reported. Therefore, the actual interpersonal competence, communication competence, and empathetic skills among nursing students could be overrated.

Conclusion

This study was based on study findings showing that communication competence and empathy influences interpersonal competence and that interpersonal competence, communication competence, and empathy are correlated. This study was meaningful in that it proposed a direction for future nursing education. It also revealed that com-

munication competence could influence interpersonal competence through effects of empathy. Since empathy was found to have a partial mediating role in the relationship between communication competence and interpersonal competence, subsequent studies should explore other potential mediating factors that can affect interpersonal competence in nursing students.

Based on these findings, we suggested the follows. First, nursing education providers should implement communication education strategies to strengthen self-assertion and non-verbal communication. Second, replication studies with larger sample from multiple regions are needed to substantiate findings of this study about interpersonal competence in nursing students. Third, additional studies should be conducted to identify other factors that can impact interpersonal competence in nursing students.

Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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Conflict of interest

The authors declare that there is no conflict of interest.

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