Factors influencing nursing students' empathy

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Purpose: This study attempted to examine nursing students' self-esteem, interpersonal relationships, and self-efficacy, to identify factors affecting empathy.
Methods: A predictive correlational design was used. The participants in this study were nursing students from fours university of Korea. The questionnaires were administered to a convenience sample of 147 nursing students in the Republic of Korea.
Results: Mean item scores for self-esteem, interpersonal relationship, self-efficacy, and empathy were 3.83, 3.63, 3.30, and 3.44, respectively (possible range, 1–5). Empathy was correlated with self-esteem, interpersonal relationships, and self-efficacy. The multiple regression analysis revealed that 45.9% of the variance in empathy is attributable to gender, major satisfaction, self-esteem, self-efficacy, and interpersonal relationships. The most important factor interpersonal relationship explained.
Conclusion: Improving nursing students' major satisfaction, self-esteem, self-efficacy, and interpersonal relationships are strategies that may foster empathy.

Key Words: Empathy, Self-esteem, Self efficacy

Introduction

Empathy is the ability to understand another person's emotions and circumstances, thereby fostering communication [1]. It is essential for understanding and promoting others' health and plays a vital role in forming treatment relationships and thus determining nursing quality [2]. An empathic approach to patient care can lead to more positive outcomes such as enhancing patient satisfaction, compliance with treatment regimens, factual history-taking, accurate diagnoses, effective resource utilization and the minimization of patient litigation [3]. Empathy in clinical environments results in greater patient satisfaction [4] and better compliance [4]. Increased empathic behaviors can enable greater diagnostic accuracy and minimize clinical errors and lapses in professional behavior [5].

Despite the compelling evidence for the importance of empathy in patient care, the literature suggests current undergraduates in the healthcare field not only display less empathy than did previous generations [6] but they also fail to acknowledge the importance of empathy [7]. Empathy is closely related to interpersonal relationships, communication skills, self-esteem, and self-efficacy [8] and those with high empathy tend to form positive relationships [9]. Furthermore, several factors that influence nursing students' empathy have been confirmed,

such as motivation for choosing nursing as a major or satisfaction with their nursing major [10]. However, studies of factors contributing to nursing students' empathy are limited.

Williams et al. [11] emphasized that patients want empathic and emotionally capable nurses. They suggest educators are responsible for promoting students' empathy through education. According to Vanlaere et al. [12] empathy involves cognitive responses learned and developed through basic nursing instruction and clinical practice. Globally, nurse educators have recognized empathy as the basis of therapeutic communication and have incorporated it into nursing curricula [12]. Both the study of factors influencing nursing students' empathy and the development and application of educational programs to promote empathy are very important, as they focus on the future of the nursing profession. Thus, the present study investigated nursing students' empathy levels and related factors to provide fundamental data for educational programs aimed at promoting empathy. This study investigated: (1) nursing students' empathy levels; (2) the relationship between empathy, self-esteem, self-efficacy, and interpersonal relationships and their general characteristics; (3) correlations between nursing students' empathy, self-esteem, self-efficacy, and interpersonal relationships; and (4) the influence of self-esteem, self-efficacy, and interpersonal relationships on empathy.

Methods

1. Study design

This descriptive survey investigated nursing students' empathy, self-esteem, self-efficacy, and interpersonal relationships, and the factors that influence nursing

students' empathy.

2. Participants

The participants in this study were nursing students from four universities located in Daejeon. The final subjects were selected using G*Power ver. 3.1.9.2 (Heinrich-Heine-University Düsseldorf, Germany). When a multiple regression analysis for the ten predictive variables was conducted, the minimum sample size calculated for a medium effect size of 0.15, with a significance level of 5% and a test power of 90%, was 147 subjects. A total of 160 people were recruited, but 13 subjects provided insincere answers; thus, 147 participants' responses were analyzed.

3. Measures

1) Empathy

The Interpersonal Reactivity Index, which was developed by Davis [13] and adapted for use in Korea by Jeon [14] was used to measure empathy. It comprises two factors (cognitive and emotional empathy) with 28 total questions. Each item is scored on a 5-point Likert scale, with higher scores indicating higher levels of empathy. The reliability (Cronbach's α) of Korean scale of Jeon [14] was 0.83, and it was 0.74 in this study.

2) Self-esteem

The Rosenberg Self-Esteem Scale [15] which was translated into Korean and adapted by Yang [16] was used to measure self-esteem. It comprises ten items (five positive and five negative), each scored on a 5-point Likert scale, with higher scores indicating higher levels of self-esteem. Possible scores range from 10 to 50. The reliability (Cronbach's α) of the adapted scale was 0.85, and it was 0.83 in this study.

3) Interpersonal relationships

Relationship Change Scale of Schlein and Guerney [17], modified by Lee and Moon [18] to fit the Korean context,

was used to measure the quality of everyday interpersonal relationships. This scale comprises 25 items, each scored on a 5-point Likert scale, with higher scores indicating better interpersonal relationships. The reliability of the adapted scale was 0.88, and it was 0.94 in this study.

4) Self-efficacy

The Self-efficacy Scale, which was developed by Sherer et al. [19] and adapted by Hong [20] was used to measure self-efficacy. It measures an individual's confidence level for specific performance in specific circumstances. This scale comprises 17 items, each scored on a 5-point Likert scale, with higher scores indicating higher self-efficacy. Cronbach's α for the scale was 0.86 when measured initially and 0.93 in this study.

4. Data collection and ethical considerations

This study was conducted with the approval of the Daejeon University Research Ethics Committee (approval no., 1040647). Prior consent to use the tools was obtained via email. Data were collected between February 1 and March 25, 2016. The researcher visited the university nursing departments between February 1 and March 25, 2016. And the researcher explained the study purpose and program process. Investigations began after university permissions were obtained. Participants were first informed that their anonymity would be maintained, that the data would be processed for study purposes only, and that they could decline to participate at any point during the study.

5. Statistical analysis

IBM SPSS ver. 21.0 (IBM Corp., Armonk, USA) was used for data storage and tabulation, and for generating descriptive statistics. Means were used to describe the descriptive data, and an independent samples t-test and analysis of variance were used to determine if any differences existed between gender, grade, age groups, and religion. A Shapiro-Wilk normality test was con-

ducted to check the normal distribution. The correlation between empathy, major satisfaction, self-esteem, interpersonal relationships, and self-efficacy were analyzed using Pearson's correlation coefficients, and a hierarchical multiple regression was used to investigate the effects of empathy factor.

Results

1. Participant demographics

Participants' mean age was 22.23±2.05 years. The

Table 1. Participants' Demographic Characteristics (N=147)

Variable	Value
Age (yr)	22.23 ± 2.05
≤21	56 (38.1)
22	50 (34.0)
≥23	41 (27.9)
Gender	
Female	124 (84.4)
Male	23 (15.6)
Grade	
1–2	63 (42.9)
3–4	84 (57.1)
Religion	
Protestant	39 (26.5)
Catholic	23 (15.6)
Buddhist	13 (8.8)
None	71 (48.3)
Others	1 (0.7)
Major satisfaction	3.733 ± 0.77
Very satisfied	28 (19.0)
Almost satisfied	74 (50.3)
Moderate	39 (26.5)
Almost dissatisfied	6 (4.1)
Very dissatisfied	0
Living status	
Rented/boarding house	44 (29.9)
Parents	40 (27.2)
Dormitory	45 (30.6)
Friend	14 (9.5)
Other	4 (2.7)

Data are presented as mean±standard deviation or number (%).

majority of the participants were women and 3rd and 4th year students (124 and 84 students, 84.4% and 57.1%, respectively). Regarding "major satisfaction," 74 participants (50.3%) were "almost satisfied," 39 (26.5%) were "moderately satisfied," 28 (19.0%) were "very satisfied," and six (4.1%) were "almost dissatisfied" (Table 1).

2. Descriptive statistics of study variables

Mean empathy score was 3.44±0.34 (maximum=5); self-esteem ranged from 2.67 to 5, with a mean value of 3.83±0.62. The mean interpersonal relationships score was 3.63±0.53, and the mean self-efficacy score was 3.30±0.58 (Table 2).

3. Differences in study variables according to participants' characteristics

Results of the normality test show that the scores for empathy, self-esteem, interpersonal relationships, and self-efficacy of each group were normally distributed. For empathy, self-esteem and self-efficacy there were no significant difference depending on age, gender, grade, or religion. For self-esteem, there was a significant difference depending on age (F=5.182, p=0.007), but there was no significant difference depending on other variables (Table 3).

Table 2. Participants' Empathy, Self-Esteem, Interpersonal Relationships, and Self-Efficacy Scores (N=147)

Variable	Minimum	Maximum	Mean±standard deviation
Empathy	2.61	4.36	3.44±0.34
Self-esteem	2.67	5.00	3.83±0.62
Interpersonal relationship	1.96	5.00	3.63±0.53
Self-efficacy	1.88	4.94	3.30±0.58

Table 3. Differences in Study Variables According to Participants' Characteristics (N=147)

Characteristic	No. of participants	Empathy	Self-esteem	Interpersonal relationship	Self-efficacy
Age (yr)					
≤21	56	3.45±0.36	3.82±0.64	3.61±0.48	3.22±0.58
22[a]	50	3.41±0.28	3.65±0.63	3.61±0.55	3.25±0.53
≥23[b]	41	3.46±0.49	4.06±0.57	3.69±0.57	3.46±0.61
F-value (p-value)		0.371 (0.691)	5.182 (0.007)	0.327 (0.722)	2.347 (0.099)
Scheffe's test			[a]<[b]		
Gender					
Female	124	3.46±0.34	3.79±0.61	3.63±0.51	3.29±0.59
Male	23	3.34±0.34	4.02±0.65	3.67±0.64	3.35±0.49
t-value (p-value)		1.502 (0.135)	−1.648 (0.102)	−0.370 (0.712)	−0.454 (0.651)
Grade					
1−2	63	3.46±0.40	3.90±0.66	3.63±0.51	3.28±0.60
3−4	84	3.42±0.30	3.78±0.59	3.63±0.54	3.31±0.56
t-value (p-value)		1.502 (0.135)	−1.648 (0.102)	−0.370 (0.712)	−0.454 (0.651)
Religion					
Yes	76	3.46±0.37	3.89±0.61	3.69±0.53	3.31±0.56
No	71	3.41±0.31	3.77±0.63	3.57±0.52	3.28±0.59
t-value (p-value)		0.876 (0.382)	1.207 (0.229)	1.394 (0.165)	0.326 (0.745)

Data are presented as mean±standard deviation, unless otherwise stated.
[a]22 years old. [b]Over 23 years old.

4. Correlations between subjects' empathy, self-esteem, interpersonal relationships, and self-efficacy

Empathy was positively correlated with self-esteem (r=0.453, p<0.001), interpersonal relationships (r=0.529, p<0.001), and self-efficacy (r=0.270, p=0.001). Self-esteem was positively correlated with interpersonal relationships (r=0.670, p<0.001) and self-efficacy (r=0.582, p<0.001), and interpersonal relationships was positively correlated with self-efficacy (r=0.435, p<0.001). Thus, a positive correlation was observed among all variables in this study. Major satisfaction was positively correlated with self-esteem (r=0.281, p<0.001), interpersonal relationships (r=0.167, p=0.043), and self-efficacy (r=0.309, p<0.001) (Table 4).

5. Factors influencing participants' empathy

A hierarchical multiple regression was conducted to investigate the factors that influence empathy. The basic assumptions of the regression analysis for independent variables—normality, linearity, equal dispersed phase, and multicollinearity of residuals—were tested. Histogram and regression standardization confirmed that the residuals were close to the 45-degree line in the normal P-P plot analysis, whereas in the dispersion phase diagrams of the residuals were randomly distributed along the mean value 0, within 3, without particular rules, trends, or trend cycles. Regarding auto-correlation of errors, the Durbin-Watson statistics value of 2.050 was close to the reference value 2, indicating no auto-correlation problems. Its tolerance ranged from 0.441 to 0.986, which is above 0.1,

Table 4. Correlations between Empathy, Self-Esteem, Interpersonal Relationships, and Self-Efficacy (N=147)

Variable	Empathy	Self-esteem	Interpersonal relationships	Major satisfaction
Empathy	–			0.158 (0.057)
Self-esteem	0.453 (<0.001)**	–		0.281 (0.001)**
Interpersonal relationships	0.529 (<0.001)**	0.670 (<0.001)**	–	0.167 (0.043)**
Self-efficacy	0.270 (0.001)*	0.582 (<0.001)**	0.435 (<0.001)**	0.309 (<0.001)***

Data are presented as r (p-value).
*$p<0.05$, **$p<0.01$, ***$p<.001$.

Table 5. Factors Influencing Empathy (N=147)

Dependent variable	Independent variable	Unstandardized coefficients		Standardized coefficients	t-value	R^2 (adjusted R^2)	F-value
		β	Standard error	β			
Model 1	Grade	1.089	1.632	0.056	0.667	0.123 (0.001)	1.105
	Gender	3.109	2.223	0.116	1.399		
Model 2	Grade	0.455	1.589	0.023	0.286	0.292 (0.066)	4.457***
	Gender	4.260	2.177	0.160	1.957		
	Major satisfaction	3.426	1.033	0.271	3.318*		
Model 3	Grade	0.162	1.215	0.008	0.133	0.694 (0.459)	21.649***
	Gender	4.811	1.659	0.180	2.900**		
	Major satisfaction	1.710	0.822	0.135	2.080**		
	Self-esteem	0.643	0.153	0.385	4.196**		
	Interpersonal relationship	0.280	0.061	0.387	4.561**		
	Self-efficacy	0.130	0.083	0.121	1.564*		

Dummy variables: grade (1–2, 1; 3–4, 0) and gender (women, 1; men, 0).
*$p<0.05$, **$p<0.01$, ***$p<0.001$.

and the variation inflation factor ranged from 1.014 to 2.270, remaining below the standard of 10, thus confirming no problems with multicollinearity.

When the general characteristics variables were first included to determine the factors influencing participants' ability to empathize (Model 1), an explanation power of 0.1% was observed. When the variable of major satisfaction was additionally inserted to Model 1 (Model 2), the explanation power rose to 6.6%. Consequently, when the variables of self-esteem, interpersonal relationships, and self-efficacy were added to Model 2 (Model 3), the explanation power increased to 45.9%. In Model 3, the factors that influenced the ability to empathize were gender (β=0.180, p=0.004), major satisfaction (β=0.135, p=0.039), self-esteem (β=0.385, p<0.001), interpersonal relationships (β=0.387, p<0.001), and self-efficacy (β=0.121, p=0.034) (Table 5).

Discussion

This study attempted to examine nursing students' empathy, self-esteem, interpersonal relationships, and self-efficacy, in addition to identifying the factors contributing to their empathy. The mean empathy score of 3.44 is slightly higher than the "moderate" rating. These results are similar to those obtained by Chung [10] in his study of nursing students, which used the same tools, and obtained by Lee et al. [21] in their study that measured nurses' empathy levels. These findings suggest students' empathy is inadequate; thus, systematic education strategies to enhance nursing students' empathy levels are necessary.

In this study, empathy was significantly correlated with self-esteem, interpersonal relationships, and self-efficacy. That is, higher self-esteem and self-efficacy, and better interpersonal relationships, are associated with higher levels of empathy. This is consistent with previous studies that found higher self-esteem [22] and positive interpersonal relationships [9] can improve empathy. This underscores the need for interventions and supportive environments that improve students' self-esteem and self-efficacy and promote interpersonal relationships. Furthermore, Adler and Fagley [23] reported that educators' supportive language, encouragement, positive conversations, and manners, among other factors bolster students' self-esteem. Such supportive education methods can foster nursing students' self-esteem, interpersonal skills, and empathy.

Self-esteem, interpersonal relationships, self-efficacy, major satisfaction, and gender had significant influences on nursing students' empathy, contributing 45.9% of the variance. The most influential factor was interpersonal relationships. This is consistent with findings of Lim and Park [9] of an inverse relationship between stressful interpersonal relationships and empathy. Poor interpersonal skills and previous negative experiences can lead to negative reactions to others' thoughts and emotions. The resulting negative emotions can then inhibit empathic concerns [9]. Moreover, interpersonal relationships are related to communication, empathy, and self-esteem [24]. Communication skills are essential to forming positive interpersonal relationships, and both of them can improve with consistent and systematic education and training [12]. Furthermore, empathy involves understanding myriad patient experiences. This skill can be facilitated through discussions concerning diverse subjects and through extra-curricular activities [25]. According to Vanlaere et al. [12], methods that facilitate understanding others' experiences, such as role play and scenario-based simulation practice, can help students develop empathy more so than theory. Educators play an important role in fostering empathy. They need to provide students with opportunities to under-

stand others' emotions and circumstances, as well as opportunities to express empathy [26].

Empathy is an essential skill for forming treatment relationships with patients. It can be improved through systematic training and education. Nurses and nursing students can actively manage challenging clinical situations [26] and form positive interpersonal relation-ships when empathizing with others. Self-esteem and self-efficacy contribute to the development of empathy [9]. Thus, multilateral and multi-dimensional education programs and applications that can improve self-esteem, self-efficacy, interpersonal relationships, and empathy are necessary.

This study is significant because it identifies major satisfaction and interpersonal relationships as significant factors that affect nursing students' empathy. However, it has some limitations. The findings must be interpreted with caution, as the sample was selected from a single city, thus limiting its generalizability. Furthermore, the number of male participants was small. Follow-up studies with sufficient male samples are needed, so that gender differences can be verified. Third, since all the variables were measured using self-reports, these findings may not be representative of participants' responses in real-life situations.

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