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Investigating the Relationship Between Disposition Toward Critical Thinking and Empathy in Nurses Working in the Birjand Educational Hospitals

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Abstract

Background: Nursing empathy, as an ethical behavior toward the maintenance of human dignity of patients, has always been a concern of hospital managers and healthcare policymakers on healthcare issues. The aim of this study was to investigate the relationship between the disposition towards critical thinking (CT) and empathy in nurses of educational hospitals in Birjand.
Methods: The population of this correlational study included a total of 214 nurses who were working in the educational hospitals of Birjand and met the inclusion criteria. Participants were selected using the quota sampling method. Data collection tools included a demographic questionnaire and the California critical thinking disposition inventory (CCTDI) (Facione & Facione 1992) as well as and Jefferson's scale of empathy (1987), which was completed by nurses. Data analysis was carried out using the Spearman correlation coefficient, multiple regression, Mann-Whitney U, and Kruskal-Wallis tests in SPSS ver.15 at a significant level of 0.05.
Results: The results showed a positive and significant relationship between the total CT disposition and empathy tools and their components (except for the systematicity and maturity displayed in standing in the patient's shoes as well as truth-seeking with compassionate care components) ($P < 0.05$). The mean empathy score in female nurses was significantly higher than in male nurses ($P = 0.01$). However, the mean CT disposition score in male and female nurses was not significantly different. In addition, there was no significant difference between the mean CT and the empathy score in nurses based on their age ($P > 0.05$).
Conclusions: Based on the results of this study, it is recommended that the planners in the field of nursing management training should develop the critical skills of nurses through workshops or in-service training to promote empathy among nurses.

Keywords: Critical Thinking, Empathy, Nurses, Hospital

1. Background

Empathy is an important ability to connect one with the emotions and thoughts of others, binds them to the social world, set the stage for helping others, and prevent others from being harmed. Empathy stimulates social behavior that leads to team cohesion (1).

Considering the nurse-patient relationship, empathy is attributed to a type of recognition that includes the perception of the experiences and concerns of patients; this perception is applied to patients (2). Having empathy with patients not only affects the quality of care but also the treatment outcomes (2). Empathy is a powerful tool that makes individuals committed to the treatment process (3) and it enhances social behaviors such as assistance, altruistic behaviors, and reduces anti-social behaviors (4). Empathy is based on the understanding and consideration of the needs of others. An empathetic person understands others' needs in various ways, such as verbal and nonverbal behaviors, and tries to understand their feelings and emotions (5). Empathy plays an important role in distinguishing people in terms of altruistic behaviors. Some people are very affected by the discomfort of others, while others show indifference to the emotional state of others (6). The results of various studies have shown a positive and significant relationship between social problem-solving skills and job motivation with nurses' empathy (7, 8). In addition, the results of various studies indicate the relationship between ethical sensitivity (9), attachment style (10), and alexithymia (11) with nurses' empathy. Nurses make up the largest group of healthcare providers who are at the forefront of care and treatment, and any performance

failure can lead to irreparable outcomes in the health system (12). Critical thinking (CT) is a vital skill for nurses and other health care professionals and is essential for effective management of complex situations that require high speed and increased accountability. Clinical decision-making and problem-solving processes require advanced CT skills (13). There is no doubt that a dynamic and growing nursing system requires professional nurses with the appropriate functional skills, high CT power, clinical decision making, and clinical judgment. If the nurses have ethical reasoning, effective communication, and empathy with the patient, they can professionally handle this career (14). The results of the study by Paryad et al. (15), showed that some of the dimensions of problem-solving ability, including positive problem-solving orientation, having skills to generate solutions, and logical problem-solving style can explain 46% of nurses' empathy. CT is one of the factors that can possibly affect nursing empathy. CT is a thinking and problem-solving method that is the basis of effective decision-making and problem-solving process. It can also be defined as evaluation and interpretation of the available information before making any decision and taking any action (16). Nurses with CT disposition nurture the right way of thinking, strategies, and cognitive skills, which affects the decision-making process in different situations (17). It also enables them to make the right decisions toward the patient, provide the best services during the care process, better identify clinical indicators, assess care services, and improve conditions (15). CT enables an individual to provide unique and appropriate care in every situation. CT ability of nurses plays a very important role in providing patient care, solving problems, and making complex decisions. Therefore, CT should be taught to nurses due to the fact that it improves their effectiveness during problem-solving and problem-solving process (18). The CT dimensions include cognitive skills and emotional tendencies. This kind of thinking does not occur or manifests below the standard level in case of no CT disposition (emotional dimension), and thus, CT disposition is an essential part of this type of thinking (19). Individuals with CT disposition nurture the right way of thinking, strategies, and cognitive skills, which affects the decision-making process in socio-economic situations (17). Having a perception of patient's problems and sense of empathy will enable nurses to better manage their own emotions and those of others, including colleagues and patients. The aim of the present study was to investigate the relationship between CT dispositions with empathy in nurses of educational hospitals in Birjand.

2. Methods

The present descriptive-correlational study was carried out on 214 nurses who met the inclusion criteria and were selected using quota sampling method, and according to Morgan's table, from among 493 nurses working in educational hospitals of Birjand in 2017. The inclusion criteria included having a minimum BA in nursing, at least one year of work experience in educational hospitals, willingness to participate in the study, lack of history of mental diseases, a history of psychiatric medications, and severe stress during the last six months, such as the loss of a first-degree family. After obtaining the relevant permission from the authorities of the University of Medical Sciences and coordinating with the officials of educational hospitals, according to the number of nurses in each hospital and the sample size, the share of that hospital was determined, and the nurses were randomly selected and enrolled in the study. After explaining the study objective and obtaining informed consent, the demographic characteristics form (including gender, marital status, education, age, work experience, employment status and work shift) as well as the CCTDI and Jefferson's scale of empathy questionnaires were completed by the nurses.

2.1. Critical Thinking

California's critical thinking disposition inventory (CCTDI) was developed by Facione & Facione (1992), which includes 75 questions and 7 subscales of truth-seeking (12 questions), open-mindedness (12 questions), analyticity (11 questions), systematicity (11 questions), self-confidence (9 questions), maturity (10 items), and inquisitiveness (10 items). The scoring of this questionnaire is based on a 6-point Likert scale ranging from completely-disagree = 1 to completely-agree = 6. The possible score range is 75 to 450, with scores > 350, 280-350, 210-280, and < 210, indicating strong and stable, positive, shaky, and negative dispositions, respectively. Profetto-McGrath (20), reported a reliability coefficient of 0.90 for this questionnaire using Cronbach's alpha. The present study showed a Cronbach's alpha coefficient of 0.94 for total instrument and 0.69, 0.74, 0.63, 0.66, 0.73, 0.71, and 0.68 for truth seeking, open-mindedness, analyticity, systematicity, self-confidence, maturity, and inquisitiveness components, respectively.

2.2. Empathy

This scale was designed by Jefferson (1987), which consists of 20 statements and three sub-scales, including perspective taking (10 statements), compassionate care (eight

statements), and standing in the patient's shoes (two statements). Scoring of this questionnaire, as based on the 5-point Likert scale, range from completely disagree = 1 to completely agree = 5, with the statements 11 to 20 being scored inversely. The possible score range was also 20 - 100, with a higher score indicating more empathy. In this research, scores < 50, 50 - 75, and > 75 indicate low, moderate, and high empathy levels, respectively. Rafati et al. (21), also reported a reliability coefficient of 0.71 for this scale using Cronbach's alpha. The present study also showed a Cronbach's alpha coefficient of 0.88 for the total scale and 0.86, 0.78, and 46.4 the perspective taking, compassionate care, and standing in the patient's shoes dimension, respectively. Data analysis was carried out using SPSS ver.15. First, Kolmogorov-Smirnov test was used to determine data normal distribution. Since there was no normal distribution, Spearman's correlation coefficient, stepwise multiple regression Mann-Whitney, and U Kruskal-Wallis tests were used at a significance level of $P < 0.05$ (after identifying and deleting outliers using Mahalanobis distance).

3. Results

There were 169 (79%) female, 176 (82.2%) married subjects, and 204 (95.3%) subjects with a BA in nursing out of total 214 nurses studied. The mean age and years of work experience were 30.58 $\pm$ 6.48 and 6.97 $\pm$ 6.48 years, respectively. Other demographic characteristics are shown in Table 1. The mean CT and empathy scores of nurses were 288.34 $\pm$ 19.63 (higher than average) and 74.99 $\pm$ 10.29 (higher than average). The number of nurses with negative, shaky, positive, and strong and stable dispositions was 0, 46 (21.5%), 151 (70.6%), and 17 (7.9%), respectively. A total of 110 (51.4%) and 104 (48.6%) of them had moderate and high empathy levels, respectively. The results showed that the mean of empathy score in female nurses was significantly higher than male ones ($P = 0.01$), but there was no statistically significant difference between the two genders in terms of the mean CT score. The mean CT and empathy scores in nurses were not significantly different in terms of age, marital status, educational level, years of work experience record, type of employment, and workshift ($P > 0.05$) (Table 1). The results of Spearman's correlation coefficient showed a positive and significant relationship between total CT disposition and empathy tools and their components (except for the systematicity and maturity with standing in the patient's shoes and the truth-seeking with compassionate care components) ($P < 0.05$) (Table 2).

Stepwise multiple regression tests were used to determine the coefficient of empathy in nurses through critical thinking components. At first, outliers were identified and removed using Mahalanobis Distance, and then, the normality of the residuals was investigated. Based on the results, regression model errors had normal distribution. The assumption of independence of errors was established using the Watson camera test (1.57). Lack of multicollinearity between predictor variables was also evaluated using coefficients of tolerance (more than 0.1) and variance inflation factor (less than 5). The results of regression showed that the maturity component entered the equation in the first step. This component can alone explain 15% of empathy in nurses. In the second step, the analyticity component was introduced into the equation, which increased the coefficient of explanation to 21% and other components were eliminated from the equation (Table 3).

4. Discussion

Results showed a positive and significant relationship between total CT disposition and empathy tools and their components (except for the systematicity and maturity with standing in the patient's shoes, and the truth-seeking with compassionate care components). Gunaydin and Unsal Barlas showed a positive and significant relationship between the total CT score and the disposition toward empathy (22), which is consistent with the results of the present study, however, there was no significant relationship between the CT components with the disposition toward empathy, which is inconsistent with the results of the present study. This discrepancy can be due to differences in the individual characteristics, research population, and so on. In addition, the results of the study by Jeong showed a positive and significant relationship between CT and disposition to empathy (23), which is consistent with the results of the present study. Mousazadeh et al. (24), showed that CT disposition level in nursing students is higher than average. In addition, the results of the study by Wangensteen et al. (25), showed that the mean CT disposition is at a moderate level, which is consistent with the results of the present study. Vafadar et al. (8), showed that the level of empathy of nurses working in the armed forces was at a moderate level. Khodabakhsh also showed a moderate empathy level among nursing students (26), which is consistent with the results of the present study. The relationship between CT and empathy may not be obvious. It may even seem contradictory; however, CT leads to the maturity, inquisitiveness, analysis, and evaluation of multiple perspectives in a complex problem (22). On the other hand, empathy is one of the basic needs for identifying patients' problems. Interpersonal empathy is significantly

Table 1. Comparison of the Mean CT and Empathy Scores in Nurses in Terms of Demographic Variables

Variable	Frequency (%) (N = 214)	Critical Thinking (Mean ± SD)	Empathy (Mean ± SD)
Gender			
Male	45 (21)	286.82 ± 18.94	71.47 ± 10.63
Female	169 (79)	288.75 ± 19.85	75.93 ± 10.02
Mann-Whitney U test P-value	-	0.66	0.01
Age			
≤ 25 y	52 (24.3)	285.98 ± 16.36	73.42 ± 9.85
30-26 y	83 (38.8)	291.43 ± 21.85	75.33 ± 11.33
35-31 y	42 (19.6)	284.36 ± 19.36	75.00 ± 9.58
≥ 35 y	37 (17.3)	289.24 ± 18.39	76.46 ± 9.28
Kruskal-Wallis test P-value	-	0.24	0.50
Marital status			
Married	38 (17.8)	306.79 ± 34.19	76.49 ± 10.34
Single	176 (82.2)	302.62 ± 32.3	77.31 ± 9.84
Mann-Whitney U-test P-value	-	0.56	0.12
Level of education			
BA	204 (95.3)	303.14 ± 32.22	75.21 ± 10.19
MA	10 (4.7)	307.8 ± 41.35	70.7 ± 11.87
Mann-Whitney U-test P-value	-	0.95	0.23
Work experience			
1 to 2 y	55 (25.7)	307.25 ± 32.56	75.36 ± 10.48
3 to 5 y	66 (30.8)	299.55 ± 30.97	74.68 ± 9.37
6 to 10 y	54 (25.2)	301.63 ± 28.34	48.11 ± 7.75
≥ 10 y	39 (18.2)	306.72 ± 40.35	74.02 ± 10.07
Kruskal-Wallis test P-value	-	0.45	0.81
Type of employment			
Permanent	60 (28)	306.92 ± 35.63	76.10 ± 11.09
Contractual	81 (37.9)	298.36 ± 27.73	74.38 ± 9.78
Temporary-to permanent	14 (6.5)	299.71 ± 40.24	72.07 ± 11.82
Conscription law's	32 (15)	311.56 ± 33.95	74.09 ± 10.52
Company	27 (12.6)	302.63 ± 32.85	76.96 ± 8.86
Kruskal-Wallis test P-value	-	0.32	0.39
Work shift			
Consistent	40 (18.7)	301.05 ± 27.73	77.80 ± 10.91
Rotating	174 (81.3)	303.89 ± 33.67	74.35 ± 10.07
Mann-Whitney U-test P-value	-	0.48	0.07

effective in achieving and maintaining positive health behaviors (27) and higher empathetic ability of helping individuals achieve a better understanding and paying more respect to other cultures (28). In nursing, CT is an essential element for nurses. In this regard, one of the characteristics of nurses with CT potential is to have appropriate interpersonal communication skills. In this regard, Shahjooi et al. (29), concluded that there was a significant relationship between the CT disposition and interpersonal communication skills. In addition, the results of the study by Kim and

Table 2. Correlation Between CT and Empathy in General and Based on Their Components in the Studied Nurses

Variable	Perspective Taking	Compassionate Care	Standing in the Patient's Shoes	Total Empathy
Truth-seeking	0.20[b]	0.11	0.32[c]	0.19[b]
Open-mindedness	0.26[c]	0.20[b]	0.35[c]	0.27[c]
Analyticity	0.27[c]	0.29[c]	0.31[c]	0.31[c]
Systematicity	0.25[c]	0.31[c]	0.08	0.28[c]
Self-confidence	0.25[c]	0.19[b]	0.30[c]	0.25[c]
Maturity	0.40[c]	0.47[c]	0.07	0.44[c]
Inquisitiveness	0.27[c]	0.32[c]	0.18[b]	0.32[c]
Total CT	0.40[c]	0.40[c]	0.34[c]	0.44[c]

[a] $P < 0.05$.
[b] $P < 0.01$.
[c] $P < 0.001$.

Table 3. Regression Coefficients of CT and Empathy Components in Nurses

Variable	Non-Standard Coefficient		Standard Coefficient, β Value	T Value	P Value	Correlation Coefficient	Coefficient of Determination
	B Value	Standard Error					
Fixed	20.29	7.66			2.65	0.009	
Maturity	0.85	0.15	0.36	5.57	0.001 < 0	0.39	0.15
Analyticity	0.58	0.15	0.25	3.88	0.001 < 0	0.46	0.21

Han showed a significant relationship between the CT disposition and interpersonal communication skills among college students (30). Similarly, Kang et al. (31), stated that the goal of nursing education is to ensure creativity and critical thinking skills and nurses are expected to solve the patients' health problems through scientific problem-solving methods and acquisition of knowledge, attitudes, and necessary skills after the end of the training period. Nursing, as a stressful occupation, is always faced with serious challenges. Characteristics such as having hope in the face of failures and the belief in the solvability of all problems, as well as trust in personal abilities will help lead nurses to take advantage of positive outcomes of the issues and create a positive perspective on the problems. The positive effect of the above personal characteristics can be seen in nurses' empathetic ability (15). An empathetic person understands the needs and demands of other individuals in various ways, such as verbal and nonverbal behaviors, and tries to understand their emotions and feelings (5). The results showed that the mean empathy score in female nurses was significantly higher than males, however, the mean CT score in nurses was not significant in terms of gender. In a study, Alkan concluded that empathy in female nurses was higher than males (32), which was consistent with the results of our study. In addition, studies carried out by Ward et al., at Thomas Jefferson University (2), and Williams et al. (33), were consistent with the present study with regards to the mean empathy score in female nurses. According to Asadi et al.'s study, men show better disposition toward CT than women, which is not consistent with the results of the present research, however, there is no specific relationship between age and level of education with CT, which is consistent with the results of the present study (34). There was also no significant difference between mean CT, empathy scores, and age variable. Vafadar et al. (8), concluded that the mean empathy score in nurses was not significant in terms of gender and age, which is consistent with the results of the present study. Mousazadeh et al. (24), and Hunter et al. (35), concluded that the subjects' mean CT score was not significant in terms of gender.

In addition, the results of various studies showed no significant relationship between CT and age (25, 36), which is consistent with the results of the present study. However, increasing age and experience are expected to lead individuals to show more CT dispositions and empathy, and thus, use this skill more frequently. However, such results were not obtained in the present study, which may be attributed to the crowded work environment, lack of training in these skills, older personnel, and cultural differences. Adams et al. (37), also showed that the nursing CT level increases with increasing work experience, which is

inconsistent with the results of the current study. The results of Gunaydin and Unsal Barlas study showed a significant relationship between gender and age with CT. In addition, a significant relationship was found between age and empathy (22), which is inconsistent with the results of the present study. The results of Petrucci et al.'s study showed no significant relationship between disposition to empathy and age group ($P > 0.05$), which is consistent with the results of this study (38).

4.1. Conclusion

The results of the current study revealed that planners in the nursing management training field need to develop critical skills in nurses through workshops or in-service training so that they increase their level of empathy.

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