



## An analysis of the relationship between resilience and clinical competence in nurses: A descriptive-correlational study

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### Abstract

**Objective:** Resilience and clinical competence are two important components of providing nursing care to patients. The goal was to determine the correlation between clinical competence and resilience in the nurses at Babol University of Medical Sciences, Iran.

**Methods:** This descriptive and correlational study was conducted in 2019 and 2020. A total of 424 nurses working in the intensive care units and general wards of six hospitals affiliated with Babol University of Medical Sciences were selected using the stratified sampling technique. Liu's Nursing Clinical Competence Questionnaire was used to assess the clinical competence of the nurses, and Connor-Davidson Resilience Scale was used to assess the nurses' resilience. The descriptive statistics, Pearson's correlation coefficient, t-test, and one-way ANOVA methods were used in data analyses.

**Results:** The mean score on the seven dimensions of clinical competence was high ( $174.86 \pm 24.19$ ). The nurses had the highest mean scores on "clinical care" and "management and leadership" dimensions ( $4.77 \pm 31.50$  and  $4.7 \pm 28.61$ , respectively). They also had the lowest mean scores on the "mentoring and teaching" and "professional progress" dimensions ( $3.53 \pm 19.10$ ,  $3.41 \pm 19.14$ , respectively). The mean  $\pm$  standard deviation of the nurses' resilience score was  $73.36 \pm 12.66$ . The results of Pearson's correlation test indicated a positive significant relationship between all clinical competence dimensions and nurses' resilience ( $p < 0.001$ ,  $r = 0.493$ ).

**Conclusion:** Given the strong relationship between resilience and clinical competence, this study suggests that nursing managers should carry out proper

planning to improve the resilience of nurses as well as enhancing their clinical competence.

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**Key words:** clinical competence, resilience, nurse

## Introduction

Nurses are the largest group providing services in health systems, and nursing quality directly influences the efficacy of the health system.<sup>1</sup> Clinical competence refers to the wise and constant use of technical and communicative skills, knowledge, clinical reasoning, emotions, and values in the clinical environment.<sup>2</sup> Assessment of nurse performance plays an important role in guaranteeing high quality clinic care to achieve desired patient outcomes.<sup>3</sup> Clinical competence is the major challenge to patient care.<sup>4</sup> Currently, one of the most important problems is the lack of clinical competence among nurses, which has caused problems in the provision of nursing services<sup>5</sup>. In this regard, nurses lacking the necessary skills in health and treatment centers can pose a risk to society's health.<sup>6</sup> Hence, the use of competence measurement criteria not only improves nurses' and managers' understanding and awareness of competence but also reveals skill and cognitive deficiencies.<sup>5</sup> Zakeri et al. (2020) showed that compassion satisfaction has a positive relationship with clinical competence while stress and burnout have a negative relationship with compassion satisfaction<sup>7</sup>.

Building resilience is introduced as a strategy for fighting nursing challenges such as stress, a major challenge in the nursing profession. Nursing stressors include work overload, role conflicts, shortage of time, lack of self-care, weak interpersonal relationships with the profession, inability to provide high-quality care, competition, patient death, conflicts with physicians and colleagues, lack of support from superiors, and inadequate preparedness for meeting patient's and their families' emotional needs, which cause negative stress, vulnerability, or unpleasant incidents among nurses.<sup>8</sup> The COVID-19 pandemic has increased stress for nurses, indicating a need to build resilience through social

and organizational support.<sup>9</sup> Almost sixty percent of nursing graduates leave their jobs in the first year.<sup>10</sup> Resilience reduces stress and burnout in nurses.<sup>10,11</sup> Resilience enables nurses to deal with workplace problems and protect psychosocial health and performance.<sup>12</sup>

Resilience regulates levels of stress and disability under stressful conditions. In fact, resilience is a dynamic process of positively adapting to unpleasant and bitter experiences in life.<sup>13</sup> Resilience improves problem-solving skills in individuals. Resilient individuals show higher levels of mental health, self-actualization, and self-confidence and are less exposed to high-risk behavior.<sup>14</sup> Resilience enables nurses to negotiate healthcare system problems and improve their job satisfaction, health, and psychological well-being.<sup>15</sup> Studies have indicated that nurses with low resilience could not effectively cope with job challenges and recover from adversity. Strengthening self-efficacy, choosing active coping, decreasing job stress, and enhancing educational training can effectively improve their resilience. The factors which influence the resilience of nurses include self-efficacy, coping style, job stress, and education level.<sup>16</sup> Resilience is linked to nurses' clinical communication skills.<sup>17</sup> Thus, resilience is likely to be indirectly related to clinical competence. Resilience plays a key role in nurses' moral sensitivity and cultural competence.<sup>18</sup> A study by Orkaizagirre - Gómara et al. (2020) showed that nursing self-efficacy, general self-efficacy, resilience, and year of course degree predicted 34% of perceived competence scores among nursing students.<sup>18</sup> The development of resilience in nursing can influence their readiness to care.<sup>19</sup> If resilience can be shown to correlate with clinical competence, resilience can be developed among nursing students in order to enhance clinical competence.

Hence, this study was carried out to assess resilience and clinical competence of nurses at

Babol University of Medical Sciences and to determine the relationships between them.

## Methods

This descriptive-analytical study is a cross-sectional study conducted from November 2019 to December 2020. The study population included all the nurses (1147 nurses) working at six hospitals affiliated with Babol University of Medical Sciences. Babol University of Medical Sciences is a medical sciences university in Iran, Mazandaran, Babol. It has more than 3700 enrolled students in all faculties. Most medical staff in Babol are native to the region. They are all Muslims and culturally similar.

Samples were collected from the intensive care units and general wards. The sampling units for each ward were also selected in proportion to the number of nurses using the stratified random sampling technique. The research sample size was 350 at the 95% confidence level with a power of 80% and a minimum pairwise correlation of 0.15 for the variables. Therefore, 424 questionnaires were distributed given a 20 to 25% attrition rate. The inclusion criteria for the nurses included being directly involved in the provision of care to patients, and no managerial positions, the lack of a severe physical and mental crisis in the past six months, at least one year of clinical work experience, and having at least a BSc degree.

The research scales in this study were Liu's Nursing Clinical Competence Questionnaire (NCCQ) and Connor-Davidson Resilience Scale (CDRS). The demographic information of the participants was collected using 10 questions about the personal information (age, gender, marital status, education level, work experience, alternating shift type, ward type, average overtime, employment status, and job satisfaction). The questionnaires were provided to the nurses at the beginning of their shifts to complete them carefully and individually when they had more free time and deliver them to the researcher in the next shift.

The Nursing Clinical Competence Questionnaire (NCCQ) was developed by Liu et al. (2009).<sup>20</sup> This scale consists of 58 statements that

were validated in Macao, China. Based on the results of the confirmatory factor analysis, eventually three statements were ruled out and a 55-statement scale was introduced as a scale with adequate validity and reliability (the reliability of this scale was confirmed with the internal consistency approach with a general Cronbach's alpha of 90%, and it varied from 71% to 90% for the dimensions) to assess the competence of nurses in different clinical situations through self-assessments or assessments by colleagues. The NCCQ assesses nurses' competence with regard to 7 dimensions: clinical care (10 statements), management and leadership (9 statements), interpersonal relationships (8 statements), moral/legal performance (8 statements), professional progress (6 statements), mentoring and teaching (6 statements), and interest in critical research-thinking (8 statements). The statements in this scale are ranked based on a Likert scale from 0 to 4. Score 0 refers to a lack of competence, score 1 refers to slight competence, score 2 shows partial competence, score 3 indicates adequate competence, and score 4 shows high competence. The overall score on this scale ranges from 0 to 220. Higher scores show higher levels of competence. A high mean score in each dimension shows high competence in that dimension. For instance, a mean score higher than 3 (or a total score above 165–220) shows high competence, a mean score higher than 2–3 (or a total score above 110–165) shows average competence, and a mean score lower than 2 (or a total score below 110) shows low competence. The NCCQ is a standard tool for self-assessment of clinical competence. Self-assessment has been demonstrated to assist nurses in maintaining and improving their practice by identifying their strengths and areas that may need to be further developed.<sup>21</sup> Reflective practice has a role to play at all stages of the “novice to expert” continuum.<sup>22</sup> Professional competence profiles encourage them to take an active part in the learning process of continuing education.<sup>23</sup>

The reliability and validity of the Persian version of the NCCQ in the Iranian nursing population are confirmed by Ghasemi et al. (2014)

with a content validity ratio of 0.94 for the entire scale, a content validity ratio of above 0.83 for each statement, and a total reliability of 0.97. The reliability of the different dimensions also was confirmed in the range between 0.68 and 0.87.<sup>24</sup>

The Connor-Davidson Resilience Scale (CDRS) (2003) consists of 25 questions and the answer to each question is ranked based on a 5-point Likert scale.<sup>25</sup> For each alternative, scores 0 to 4 refer to fully correct (score 0), rarely correct (score 1), sometimes correct (score 2), often correct (score 3), and always correct (score 4). The score range varies from 0 to 100, and as the score acquired approaches 100, it shows more resilience. The cut-off point in this questionnaire is a score of 50. In other words, a score higher than 50 reflects a more resilient person. As the score increases above 50 points, the resilience level increases. The reliability of this CDRS instrument was reported by Abolghasemi in Iran with a Cronbach's alpha coefficient of 0.87.<sup>26</sup>

The Research Ethics Committee of Babol University of Medical Sciences approved this study (ethical code IR.MUBABOL.HRI.REC.13 97.170). The participants were given a thorough explanation about the study objectives.

The data resulting from this research was analyzed using descriptive statistics, independent sample t-test, analysis of variance, and Pearson's correlation coefficient methods. Values  $p < 0.05$  were considered statistically significant.

## Results

The average age of the nurses was  $34.37 \pm 8.42$  years, with an age range of 22 to 53 years. 370 (87.3%) of the participants were female and 54 (12.7%) were male. Most of the nurses were married (78.8%), had bachelor degrees (92%), had a work experience of less than 10 years (59.7%), and worked alternating shifts (86.3%). 44.8% of the nurses expressed average job satisfaction (Table 1).

Table 1. Demographic properties of nurses working at the hospitals of Babol University of Medical Sciences

Variables		n	%
Sex	Female	370	87.3
	Male	54	12.7
Marital status	Single	90	21.3
	Married	334	78.8
Level of education	Bachelor	390	92
	Master	34	8
Work experience(years)	< 10	253	59.7
	10-20	122	28.8
	20-30	49	11.6
Shift work	Fixed	58	13.7
	Rotating	366	86.3
Ward	General	285	67.2
	Specialty	139	32.8
Overtime hours per month	< 50	96	22.6
	50-100	175	41.3
	100-150	114	26.9
	> 150	39	9.2
Employment status	Employed	298	70.3
	Obligation	81	19.1
	Contractual	45	10.6

The clinical competence of the nurses showed a significant relationship with variables such as age, work experience, overtime, employment status, and job satisfaction. However, there was no significant relationship with gender,

marital status, education, shift, and ward type. The nurses' resilience showed a significant relationship with the variables of age, work experience, and job satisfaction. However, it did not have a significant relationship with other variables (Table 2).

Table 2. Relationship between nurses' demographic variables and clinical competence and resilience

Variables		Clinical competence (mean+/- SD)	p-value	Resilience (mean +/-SD)	p-value
<b>Age</b>	30>	174.12+/-66	<0.001	71.97+/-12.99	0.04
	39-30	181.16+/-96		72.83+/-13.97	
	49-40	177.05+/-19.37		74.95+/-9.79	
	50≤	185+/-22.03		84.82+/-11.94	
<b>Sex</b>	Male	176.82+/-23.57	0.79	73.78+/-12.77	0.7
	Female	161.42+/-24.29		70.44+/-11.54	
<b>Marital status</b>	Single	172.66+/-24.62	0.45	72.48+/-13.85	0.19
	Married	175.45+/-24.08		73.59+/-12.33	
<b>Level of education</b>	Bachelor	175.49+/-23.99	0.9	73.64+/-12.74	0.42
	Master	167.64+/-25.62		70.14+/-11.33	
<b>Work experience (years)</b>	10>	171.642 +/-25.45	<0.001	71.59+/-13.06	<0.001
	10-20	181.26+/-20.72		76.62+/-11.4	
	20-30	175.57+/-22.7		74.36+/-12.02	
<b>Shift work</b>	Fixed	188.43+/-19.69	0.27	79.44+/-11.59	0.59
	Rotating	172.71+/-24.16		72.39+/-12.56	
<b>Ward</b>	General	173.52+/-25.09	0.2	72.76+/-13.05	0.11
	Specialty	177.61+/-22.06		74.57+/-11.76	
<b>Overtime hours per month</b>	<50	170.5+/-26.09	0.03	72.42+/-11.48	0.1
	50-100	173.93+/-23.27		72.18+/-13.01	
	100-150	180.05+/-24.71		75.73+/-13.59	
	>150	174.61+/-19.6		73.97+/-10.17	
<b>Employment status</b>	Employed	176.79+/-24.14	0.02	73.36+/-12.37	0.11
	Obligation	168.4+/-22.52		71.59+/-13.09	
	Contractual	173.73+/-25.79		76.51+/-13.39	
<b>Job satisfaction</b>	I don't like	164.72+/-21.91	<0.001	56.56+/-69.52	<0.001
	Little	166.78+/-21.29		65.85+/-75.11	
	Medium	172.76+/-26.11		70.56+/-74.26	
	Much	179.01+/-22.17		75.14+/-78.62	
	Too much	184.29+/-19.56		69.86+/-78.29	

Based on the results, the total average score on the seven dimensions of the nurses' clinical competence was  $174.86 \pm 24.19$ , indicating that the nurses working at Babol hospitals assessed their competence as high. The nurses had the lowest mean scores on the skills linked to the "professional progress" and "mentoring and teaching" dimensions ( $19.14 \pm 3.41$  and  $19.10 \pm 3.53$ , respectively) while they gained the highest

mean scores on the "clinical care" and "management and leadership" skills ( $31.50 \pm 4.77$  and  $28.61 \pm 4.70$ , respectively). The mean and standard deviation of the nurses' resilience score was  $73.36 \pm 12.66$ . The lowest and highest resilience scores were also 32 and 100, respectively. Nurses' resilience correlated positively with all eight of the clinical competence dimensions ( $p < 0.001$ ,  $r = 0.49$ ) (Table 3).

Table 3. Relationship of all clinical competence dimensions with resilience in nurses working at hospitals of Babol Medical Sciences University

Areas of clinical competence	Mean +/- SD	Correlation of competencies with resilience	Significance level with paired t-test
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ical Care	31.5+/-4.77	r=0.34	<0.001
Management and leadership	28.61+/-4.7	r=0.39	<0.001
Interpersonal relationships	24.49+/-3.9	r=0.46	<0.001
Ethical / legal practice	27.66+/-4.05	r=0.35	<0.001
Professional development	3.41+/-19.14	r=0.41	<0.001
Coaching & Training	19.1+/-3.53	r=0.41	<0.001
Tendency to research – critical thinking	24.35+/-4.8	r=0.47	<0.001
General clinical competence	174.86+/-24.19	r=0.49	<0.001
Resilience	73.36+/-12.66	R=1	<0.001

Note. The numbers in the table are mean +/- standard deviation.

## Discussion

The results indicated a positive significant relationship between resilience and all the clinical competence dimensions in nurses in this setting in Iran. This is consistent with the results of the study by Min, which revealed the positive and strong relationship of resilience and adaptability with clinical competence and stress.<sup>27</sup> Therefore, improving nurses' resilience could be a strategy to improve their clinical competence. More clinically competent employees feel more comfortable at work and can endure professional hardships more than others.<sup>28</sup> Nurses who are more resilient are more inclined to learn because they are more tolerant of stressful situations and can focus on their own development.<sup>29,30,31</sup> As a result, the work environment becomes more enjoyable for him or her. It can be concluded that clinical competence and resilience have a positive effect on each other.

Nurses assessed their clinical competence high. However, in the study by Aliakbari et al., the mean performance scores of the samples on all the nine skills were lower than average.<sup>32</sup>

In the present study, the nurses achieved the highest mean score on the "clinical care" and "management and leadership" skills as compared to the other areas, while they had the lowest mean scores on the professional progress and teaching dimensions. This considerable difference between the scores on these dimensions could be attributed to the nurses' approach to clinical care. Nurses place a higher priority on the area most closely related to clinical care.<sup>33</sup>

In the study by Istomina et al. in Lithuania, the nurses assessed their ability to teach their colleagues and students as weak.<sup>34</sup> In the study by Mir Lashari et al., the nurses reported the lowest level of ability to teach others.<sup>35</sup> In a study by

Vosoghi et al., the students gained the lowest score on the teaching dimension,<sup>36</sup> which could be attributed to the use of fewer clinical nurses in training the nursing students.

This study indicates that the resilience level was high in the nurses studied, which is consistent with the findings of Shakerinia et al. that noted that the high resilience of nurses enables them to use their positive adaptive skills in coping with stress.<sup>37</sup> In a study by Amini (2013), there was an inverse significant relationship between burnout and resilience. In other words, with an increase in nurses' resilience, their burnout decreased.<sup>38</sup> In addition, in the study by Obeidavi et al., there was a significant inverse relationship between resilience and job stress.<sup>39</sup> The results of the research by Salimi et al. (2017) revealed that the nurses' resilience was relatively high while their intention to turnover was average.<sup>40</sup> A deeper understanding of resilience helps develop strategies that contribute to the establishment of resilience.<sup>41</sup> Stressing the improvement in resilience by professors during bachelor degree programs helps improve resilience.<sup>42</sup> An educational culture of trustworthiness appears to be a catalyst for the development of resilience in nursing students and could be achieved by educators modeling the values and interpersonal skills students are expected to demonstrate in their nursing practice. When thriving in an educational culture of trustworthiness, nursing students could carve out space for a movement beyond the routine, turning their attention beyond themselves. This develops the student's ability to be credible in their caring presence in the lives of others, recognized as a readiness to care.<sup>19</sup> Educational strategies should be developed in the nursing curriculum and a supportive learning environment

should be created to foster resilience in the students.<sup>43</sup>

In the present study, gender, marital status, education level, shift, and ward type (general and intensive care units) variables did not have a statistically significant relationship with the student's clinical competence. However, age, work experience, and job satisfaction showed a significant positive relationship with clinical competence. Clinical competence also had a significant relationship with hours worked and employment status. In the research by Kim, the clinical competence of married nurses who had longer work experience was more than others.<sup>44</sup> In sum, it seems clinical competence is multi-factorial. According to Benner, with an increase in age and work experience, their experience, mastery of their job, and adaptation to the environment increase, while their competence increases proportionally.<sup>45</sup>

In the aforesaid study, there was no significant relationship between resilience and variables such as age, marital status, education level, shift type, ward type, overtime, and employment type. However, resilience had a significant relationship with age, work experience, and job satisfaction. In a study by Salimi et al., resilience had a statistically significant relationship with education level, marital status, ward type, and shift, but it did not have a significant relationship with age, employment status, work experience, and service years.<sup>40</sup> Lee et al. showed that some of the demographic properties were linked to the nurses' resilience, which confirmed our findings.<sup>46</sup>

## Limitations

Our study has some limitations. First, the participants' psychological conditions at the time of completion of the questionnaires could have influenced the results, but these were not evaluated. The second limitation was the use of self-assessment questionnaires. But self-assessment assists nurses to maintain and improve their practice by identifying their strengths and areas that may need to be further developed. Professional competence profiles encourage them

to take an active part in the learning process of continuing education.<sup>25</sup> Third, the study was limited by the fact that the participants were excluded if they had any "physical or emotional distress" in the past 6 months and if they had less education than a bachelor's degree.

## Conclusion

The results of this study indicated that there is a positive significant relationship between all dimensions of clinical competence of nurses and their resilience. Therefore, it is recommended to develop official and nonofficial training programs to increase resilience in nurses and to particularly increase resilience in the nursing students.

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