

Short Communication



Relationship Between the Level of Critical Thinking and Managerial Skills in Nursing Managers: A Survey Study in Government Hospitals

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Abstract

Introduction: Nursing managers are responsible for effective leadership and decision-making in healthcare organizations, making critical thinking an essential competency for successful management. Therefore, this study aimed to investigate the relationship between critical thinking and managerial skills among nursing managers.

Methods: This descriptive-analytical study included 78 nursing managers. Data were collected using a demographic questionnaire, the California Critical Thinking Skills Test, and the Kaufman Management Skills Questionnaire. Finally, independent t-tests and Pearson correlation analysis were used for data analysis.

Results: The mean age of participants was 39.51 ± 5.55 years, and 69.2% were female. Managers with postgraduate education demonstrated significantly higher critical thinking and management skills than those with undergraduate education. Moreover, greater work experience (> 10 years) and participation in training programs were associated with higher scores, whereas gender, age, and managerial position showed no significant associations. Ultimately, critical thinking was positively but weakly correlated with management skills ($r = 0.28$, $P = 0.047$).

Conclusion: Higher education, professional training, and clinical experience contribute to stronger critical thinking and managerial skills, highlighting the importance of continuous education, mentorship, and reflective practice in nursing management.

Keywords: Critical thinking, Managerial skills, Nursing managers, Nursing education, Nursing

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Introduction

Management is a fundamental determinant of organizational success, contributing to the achievement of organizational goals and operational efficiency (1). In today's dynamic healthcare environment, managers are expected to plan, organize, lead, and make effective decisions while addressing increasingly complex challenges (2, 3).

Their effectiveness largely depends on possessing strong managerial competencies, which enable them to achieve organizational objectives efficiently (4). Managerial competence directly influences patient care quality and organizational performance in healthcare organizations, while nurses constitute the largest professional workforce, making nursing management particularly important (5, 6).

Specifically, nursing managers are responsible for workforce planning, decision-making, problem-solving, staff development, conflict management, quality improvement, and performance management (7). Effective execution of these responsibilities requires both

managerial competence and sound judgment (8).

Critical thinking is an essential competency for healthcare professionals and nursing managers. It involves reflective reasoning and evidence-based decision-making while encompassing dispositions such as curiosity, truth-seeking, open-mindedness, and analytical thinking. In nursing practice, critical thinking enables managers to prioritize problems, make sound decisions, and effectively respond to changing clinical situations (9).

Despite the recognized importance of these competencies, limited evidence exists regarding the relationship between critical thinking and managerial skills among nursing managers. Therefore, this study aims to investigate the relationship between critical thinking and managerial skills among nursing managers.

Materials and Methods

Study Design and Participants

This descriptive-analytical study was conducted between May and July 2023 among nursing managers working in governmental educational hospitals in Yazd, Iran. Based

on a 95% confidence level and an anticipated correlation coefficient of 0.50, the required sample size was estimated at 78 participants. In addition, 86 nursing managers were initially recruited to compensate for possible attrition. After excluding incomplete questionnaires, however, data from 78 participants were included in the final analysis (10).

The sample size was calculated using the following formula.

$$n = \frac{z_{1-\alpha/2}^2 \sigma^2}{d^2} \quad \sigma = .300$$

Furthermore, participants were selected using convenience sampling from Shahid Sadoughi, Afshar, and Shahid Rahnemoun Hospitals. Eligible participants included matrons, supervisors, and head nurses employed in governmental hospitals who were willing to participate in the study. Individuals who withdrew their consent during the study were excluded from the investigation.

Data Collection Instrument

Data were collected using a demographic questionnaire, the California Critical Thinking Skills Test (CCTST), and the Kaufman Management Skills Questionnaire.

The demographic questionnaire collected information on age, gender, educational level, managerial work experience, marital status, participation in management training courses, and organizational position.

Likewise, critical thinking was assessed using the CCTST developed by Facione et al. The instrument contains 34 multiple-choice items evaluating five domains: critical thinking: inference, interpretation, analysis, inductive reasoning, and deductive reasoning. Total scores range from 0 to 34, with higher scores indicating stronger critical thinking ability. In addition, scores ≥ 16 are considered indicative of strong critical thinking. The CCTST has demonstrated acceptable validity and reliability in previous international and Iranian studies, with reported reliability coefficients ranging from 0.62 to 0.85 (11).

Additionally, managerial skills were measured using the 18-item Kaufman Management Skills Questionnaire, which evaluates cognitive, human, and technical management skills. Items are rated on a five-point Likert-type scale ranging from 1 (Never) to 5 (Always), with higher scores reflecting better managerial skills. Previous studies have reported satisfactory validity and reliability for this instrument, with Cronbach's alpha coefficients ranging from 0.85 to 0.89 (12).

Procedures

Following approval by the institutional ethics committee, questionnaires were distributed among eligible nursing managers in the participating hospitals. It is noteworthy that participation was voluntary, and informed consent was obtained from all participants. To ensure confidentiality and minimize response bias, questionnaires were anonymously completed in a private

setting. Completed questionnaires were then reviewed for completeness before data entry and analysis.

Data Analysis

Data were analyzed using SPSS, version 22.0 (IBM Corporation, Armonk, NY, USA). Descriptive statistics, including frequencies, percentages, means, and standard deviations, were employed to summarize participant characteristics and study variables. The Shapiro–Wilk test and Levene's test were employed to assess normality and homogeneity of variances, respectively. Moreover, group differences were examined using the independent samples *t*-test. Finally, Pearson's correlation coefficient was used to evaluate the relationship between critical thinking and managerial skills. Statistical significance was also set at $P < 0.05$.

Results

The majority of participants were female (69.23%), with a mean age of 39.51 ± 5.55 years and an average work experience of 8.00 ± 4.5 years (Table 1). Most participants held a postgraduate degree (80.76%) and were married (64.10%). Furthermore, more than two-thirds of the respondents (70.51%) were employed as head nurses, and nearly all participants (92.30%) reported having previously attended professional training courses.

Among the 78 nursing managers, 63 (80.8%) demonstrated strong critical thinking, while 15 (19.2%) had weak critical thinking. Overall, participants showed a favorable level of management skills. Further, educational level, participation in management-related training courses, and more than 10 years of work experience were significantly associated with higher critical thinking and management skills scores ($P < 0.05$, Table 2). In addition, married participants had substantially higher critical thinking scores than single participants, whereas no significant difference was observed in management skills. Similarly, no significant differences in either critical

Table 1. Frequency Distribution of Demographic Characteristics

Variable		Mean $\pm$ SD
Age (years) ^a		39.51 $\pm$ 5.55
Job experience (years) ^a		8.00 $\pm$ 4.50
	Variable	N (%)
Gender ^b	Female	54 (69.23)
	Male	24 (30.76)
Marital status ^b	Single	28 (35.89)
	Married	50 (64.10)
Level of education ^b	Bachelor's degree	15 (19.23)
	Postgraduate	63 (80.76)
Types of nursing positions ^b	Head nurse	55 (70.51)
	Supervisor	23 (29.48)
Experience in participating in related courses ^b	No	6 (7.69)
	Yes	72 (92.30)

Note. SD: Standard deviation, ^a Data are presented as means $\pm$ SD. ^b Data are presented as frequencies (percentages).

Table 2. Comparison of Critical Thinking and Management Skills Scores by Demographics

Variable		Management Skills (Mean $\pm$ SD) ^a	P-Value ^{**}	Critical Thinking (Mean $\pm$ SD) ^a	P-Value ^b
Gender	Female	70.91 $\pm$ 10.40	0.250	16.25 $\pm$ 2.93	0.212
	Male	75.85 $\pm$ 6.52		20.68 $\pm$ 2.71	
Age category [*]	Less than 40 years	71.41 $\pm$ 5.83	0.524	16.34 $\pm$ 2.58	0.486
	More than 40 years	80.27 $\pm$ 9.65		19.78 $\pm$ 2.99	
Education	Bachelor's degree	60.00 $\pm$ 5.22	0.039	21.13 $\pm$ 2.64	0.010
	Postgraduate	81.60 $\pm$ 8.36		28.41 $\pm$ 2.80	
Marital status	Single	70.25 $\pm$ 4.06	0.085	19.00 $\pm$ 1.25	0.040
	Married	76.06 $\pm$ 8.09		27.58 $\pm$ 2.61	
Types of nursing positions	Head nurse	70.16 $\pm$ 8.27	0.220	16.72 $\pm$ 2.77	0.390
	Supervisor	72.56 $\pm$ 6.58		18.12 $\pm$ 2.00	
Experience in participating in related courses	No	60.80 $\pm$ 8.11	0.025	10.56 $\pm$ 2.70	0.030
	Yes	85.66 $\pm$ 3.72		22.33 $\pm$ 3.88	
Job experience [*]	Less than 10 years	52.53 $\pm$ 8.47	0.012	10.62 $\pm$ 2.86	0.032
	More than 10 years	79.62 $\pm$ 6.32		22.37 $\pm$ 2.61	

Note. SD: Standard deviation. ^a Data are presented as means $\pm$ SD. ^b P-values were calculated using an independent samples t-test. ^{*}For analytical purposes, age and job experience were categorized into two groups.

thinking or management skills were found with regard to gender, age, or managerial position ($P > 0.05$).

A weak positive correlation ($r = 0.28$, $P = 0.047$) was identified between critical thinking and managerial skills, suggesting that enhancements in critical thinking capacities are associated with incremental improvements only in management competencies.

Discussion

The findings of the present study revealed that professional development factors, including educational level, participation in management-related training, and work experience, were markedly associated with both critical thinking and managerial skills among nursing managers, whereas gender and age were not. These findings emphasize the importance of continuous education and professional development in strengthening nursing leadership competencies.

Based on the results, there were no significant differences in critical thinking or managerial skills in terms of gender or age. Although male and older participants showed slightly higher mean scores, these differences were not statistically significant. Accordingly, cognitive and managerial competencies are influenced more by educational and professional opportunities than by demographic characteristics. Similar findings have been reported in previous research, indicating that critical thinking is a learned competency that develops through education and clinical experience rather than inherent personal characteristics (13).

Educational level represented a significant positive association with both critical thinking and managerial skills. Moreover, nursing managers with postgraduate education demonstrated substantially higher scores than those with undergraduate education. This finding is consistent with the findings of previous research, showing that advanced academic preparation enhances critical

thinking, clinical reasoning, evidence-based decision-making, and leadership competence by providing greater opportunities for reflective learning and complex problem solving (14).

Additionally, participation in management-related educational courses and longer work experience were associated with significantly better critical thinking and managerial skills. More precisely, structured educational programs, professional development courses, and practical experience expose nurses to complex clinical and organizational situations that strengthen analytical thinking, decision-making, and leadership abilities. These findings support the importance of ongoing professional development and experiential learning in preparing effective nursing leaders (7).

Marital status was related to critical thinking but was not related to managerial skills. Given that the present study was cross-sectional, this finding should be cautiously interpreted, and additional research is required to clarify whether this association reflects differences in life experiences or other unmeasured factors. Furthermore, no significant differences were observed between head nurses and supervisors, implying that managerial competencies do not automatically develop with promotion or organizational position. Instead, leadership competence appears to depend on structured education, mentorship, and continuous professional development rather than job title alone (6).

Finally, a weak but statistically significant positive correlation was found between critical thinking and managerial skills. Although nursing managers with stronger critical thinking tended to demonstrate better managerial skills, the modest strength of the relationship indicates that managerial competence is influenced by multiple factors beyond cognitive ability alone. Likewise, professional experience, leadership training, communication skills, and organizational support are

likely to contribute to effective management (15).

Overall, these findings highlight the importance of investing in postgraduate education, professional development courses, and leadership training in order to strengthen both critical thinking and managerial competencies among nursing managers.

Strengths and Limitations

This study simultaneously evaluated critical thinking and managerial skills among nursing managers, providing useful evidence for nursing education and leadership development. However, the cross-sectional design limited causal inference, and the use of convenience sampling may have reduced the generalizability of the findings. In addition, the reliance on self-reported questionnaires may have introduced response and social desirability bias. Despite these limitations, the findings contribute to understanding factors associated with critical thinking and managerial competencies in nursing management.

Conclusion

In summary, this study contributes to the growing body of evidence that education, training participation, and experience are key predictors of critical thinking and managerial competence among nurses, while demographic characteristics such as gender and age have limited impact. Accordingly, promoting structured development pathways can enhance these competencies and, ultimately, the quality of healthcare delivery.

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Artificial Intelligence Disclosure

ChatGPT was solely used for editing the manuscript language and improving its readability. All scientific content, interpretations, and conclusions were developed and verified by the authors.

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Competing Interests

The authors report no conflict of interests regarding this study.

Ethical Approval

The project was approved by the Student Research Committee of the Faculty of Nursing and Midwifery, Shahid Sadoughi University of Medical Sciences, Yazd (IR.SSU.REC.1400.169). Moreover, written informed consent was obtained after explaining the study objectives and questionnaire completion. Participants were also informed about how to complete the questionnaires, and the questionnaires were then provided to them for completion.

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