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Relationship between critical thinking and moral distress in nurses: A cross-sectional study

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Abstract

Background: Nurses, as one of the key pillars of the healthcare system, constantly face complex ethical challenges that can impact the quality of care provided and their mental well-being. Enhancing critical thinking skills in this group may help them analyze ethical issues more effectively and make better decisions, ultimately reducing moral distress. Therefore, this study aimed to determine the relationship between critical thinking and moral distress in nurses.

Methods: This cross-sectional study involved the selection of 342 nurses from educational hospitals affiliated with Yasuj University of Medical Sciences in Iran in 2024, utilizing a systematic probability sampling method. Participants were required to have a minimum of one year of clinical experience and to be currently employed in hospital departments, ensuring a relevant background for the study. Data collection was conducted using the California Critical Thinking Skills Test – Form B and the modified 18-item Hamric Moral Distress Scale. The findings were analyzed employing both descriptive and inferential statistical tests, including the Kolmogorov–Smirnov test for normality, Pearson correlation, and multiple linear regression, which were used to examine relationships between variables utilizing SPSS version 27.

Results: The mean age of participants was 43.33 ± 10.7 years; 221 individuals (64.40%) were female, and 127 persons (37.10%) had 1 to 5 years of work experience. Nurses had an average critical thinking score of 21.25 ± 8.64 and a moral distress score of 116.08 ± 50.82. A significant negative correlation was found between critical thinking and moral distress scores ($r = -0.66$, $p = 0.001$). A multiple regression model significantly predicted moral distress, explaining 63% of its variance ($R^2 = 0.628$, $F = 29.787$, $p = 0.001$). Six predictors were significant. Overall critical thinking was the strongest negative predictor ($\beta = -0.396$, $p = 0.001$, 90% CI [-2.65, -1.69]). The analysis, inference, and induction components were also significant negative predictors. In contrast, the deduction component ($\beta = 0.197$, $p = 0.029$, 90% CI [0.24, 4.39]) and place of residence ($\beta = 0.072$, $p = 0.037$, 90% CI [1.01, 32.60]) were positive predictors of moral distress.

Conclusion: The findings suggest that as critical thinking skills improve, moral distress tends to decrease among nurses. Therefore, it is recommended to implement educational programs aimed at enhancing critical thinking skills in nursing practice, which could potentially alleviate feelings of moral distress.

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Highlights

What is current knowledge?

Nurses frequently experience moral distress due to ethical challenges in clinical settings, which negatively affects their psychological well-being and quality of care. Critical thinking is considered a core competency for nurses, enabling them to make better clinical and ethical decisions.

What is new here?

This study showed that nurses with higher critical thinking skills reported lower levels of moral distress in clinical settings.

Introduction

Nurses, due to their frequent exposure to a high volume of patients and the associated mortality, are at high risk of emotional conflict, and ethics plays a significant role in this profession (1). Moral distress is highly prevalent among nurses in hospital settings (2). In a study, it was shown that moral distress among nurses was high (3). Jameton introduced the term “moral distress” in the early 1980s in nursing, stating that it occurs when an individual knows the right course of action but institutional constraints make pursuing the right path nearly impossible (4). Studies have highlighted the detrimental effects of moral distress, with correlations found between higher levels of moral distress, negative perceptions of the ethical climate, and increased levels of compassion fatigue among nurses (4-6). One of the consequences of moral distress in nurses is that it makes them more prone to inappropriate reactions to morally distressing events or causes them to feel that they have lost the ability to distinguish right from wrong (7).

Therefore, methods should be employed to enhance decision-making in nurses, one of which is the use of critical thinking (8). In a study, it was shown that nurses working in intensive care units and medical-surgical wards have poor critical thinking skills (9). Scheffer and Rubenfeld stated that the ability to think critically in nursing includes analysis, applying standards, distinguishing, seeking information, logical reasoning, predicting, and transforming knowledge (10). Critical thinking is a core skill for graduate nurses. It enables nurses to apply, integrate, and understand the increasing differences between patient populations and the complex healthcare technologies

(11). "Capable nurses" are expected to have creativity and the ability to cope with the daily complexities of clinical practice, especially in managing unfamiliar situations. Professional capabilities are closely related to transferable generic skills such as critical thinking and problem-solving abilities. Capable nurses have greater confidence in their clinical judgment and are expected to possess advanced clinical reasoning (12). The modern healthcare environment requires nurses to possess the ability for independent judgment, decision-making, and autonomous practice in clinical settings (13).

Urhan et al. demonstrated that the levels of critical thinking among nurses working in clinical environments in public hospitals were at a moderate level. The type of hospital, work shift, professional and educational level, and role were significantly associated with the levels of critical thinking in clinical nurses (14). On the other hand, Tajalli et al. found that the intensity and frequency of moral distress among physicians and nurses working in neonatal intensive care units are at a moderate level. Therefore, addressing this issue and making efforts to reduce it are essential, as identifying the underlying factors of moral distress can help in adopting appropriate measures for its prevention and reduction (15).

Moreover, the complexity of ethical situations in healthcare environments and nursing is increasing, affecting not only nurses but also the quality of nursing (16).

Although numerous studies have investigated moral distress and critical thinking in various contexts, none have specifically examined the relationship between critical thinking and moral distress among nurses. There still appears to be a need for further research into the relationship between these two variables. Since supporting nurses in their primary responsibility-delivering high-quality nursing care-is crucial, this gap in the literature is evident and warrants further investigation. Therefore, this study aimed to determine the relationship between critical thinking and moral distress in nurses.

Methods

This cross-sectional study was conducted among nurses working in hospitals affiliated with Yasuj University of Medical Sciences in Yasuj, Iran, in 2024. A systematic sampling method was employed to select 342 nurses. Sample size estimation was conducted using G*Power 3.1.9.7, incorporating a Type I error rate of 0.05, a 95% confidence interval, and a statistical power of 80%, with a critical Z-value of -1.64, resulting in a required sample size of 342 participants.

The key inclusion criteria for this study were: holding at least an associate degree, having a minimum of one year of clinical experience, willingness to participate in the study, and being employed in hospital departments. Additionally, participants should have no history of participation in similar studies within the past six months and no self-reported psychiatric disorders. The exclusion criteria included incomplete responses to the questionnaires.

Data were collected using a tool consisting of a demographic information form (Including age, gender, education, work experience, marital status, work shift, department, type of employment, nursing position in hospitals, history of depression or other psychiatric disorders, presence of underlying or specific diseases, and economic status), the California Critical Thinking Skills Test (CCTST-Form B), and the 18-item Revised Moral Distress Scale (MDS-R) by Hamric et al.

California Critical Thinking Skills Test - Form B (CCTST-Form B): The CCTST-Form B was developed in 1992 by Peter Facione and consists of 34 items, with some having four response options and others having five. The test comprises five subscales: Analysis (9 items), Evaluation (14 items), Inference (11 items), Inductive Reasoning (14 items), and Deductive Reasoning (16 items). Among the 34 questions, 20 have four answer choices, while 14 have five answer choices. Since each item has only one correct answer, participants receive a score of 0 or 1 per item, resulting in a total score ranging from 0 to 34. The allocated time for completing the test is 45 minutes. Facione reported the reliability of this instrument to be between 0.68 and 0.70 using the K-$R_{2,3}$ coefficient (Or Cronbach's alpha) (17-19).

In the study by Khalili and Hosseinzadeh, the reliability of the test was examined using the internal consistency method and the KR-20 coefficient. The construct validity of the test was also evaluated through factor analysis, internal consistency, and group difference comparison. The results indicated that the test items possessed sufficient reliability to be used as a research instrument (19). In the study by Hariri and Bagherinejad (2012), the reliability coefficient of the instrument was measured using Cronbach's alpha, and it was reported to be 0.86 (20). In the present study, the reliability of the instrument was reassessed, yielding a Cronbach's alpha coefficient of 0.716.

Moral Distress Scale-Revised (MDS-R) - 18-item version: The 18-item MDS-R by Hamric et al. assesses moral distress through two dimensions: frequency and intensity. Each item is rated on a 5-point Likert scale, ranging from 0 (None), 1 (Low), 2 (Moderate), 3 (High), to 4 (Very high). The score for each item is obtained by multiplying the frequency and intensity ratings, resulting in a possible score range of 0 to 16 per item. To calculate the total moral distress score, the scores of all items are summed, yielding a total range of 0 to 288, with higher scores indicating greater moral distress (21-23). Khoshkbari et al. (2022) assessed the reliability of this scale using internal consistency, reporting a Cronbach's alpha of 0.73, demonstrating acceptable reliability (23). The instrument's reliability was reassessed in this study, with a Cronbach's alpha of 0.845.

The study was conducted in three hospitals. The total number of eligible nurses in each hospital was as follows: Hospital A (n = 224), Hospital B (n = 316), and Hospital C (n = 498). Using proportional systematic sampling, participants were selected from each hospital relative to its population size.

Data were collected using paper-based questionnaires. Nurses were approached directly by several researchers, who visited each hospital and invited them to complete the questionnaire. The data collection process lasted for three months. Participants were selected and thoroughly assessed for compliance with the inclusion criteria. A systematic sampling method was employed to select 342 nurses from a list of all eligible nurses (N = 1038) across the three hospitals. The list of eligible nurses was obtained from the nursing directors of the hospitals. The sampling interval was calculated by dividing the total number of eligible nurses by the desired sample size. After randomly selecting the first nurse using a simple random sampling method based on a random number table, subsequent participants were selected at regular intervals (k = 3) until the sample size was reached. After confirming eligibility, written informed consent forms were obtained. Subsequently, the participants completed the demographic information form, the CCTST-Form B, and the 18-item MDS-R by Hamric et al. for data collection.

Collected data were analyzed using SPSS software version 27. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to summarize the data. Inferential analysis was conducted using Pearson's correlation coefficient to examine relationships between variables after confirming the test's assumptions. Multiple regression analysis was utilized to identify the most significant variables associated with moral distress. A significance level of 0.05 was considered for all statistical tests. Before conducting Pearson's correlation analysis, the assumptions of normality, linearity, and absence of outliers were examined. Initially, the normality of continuous variables was assessed using the Kolmogorov-Smirnov test. The results indicated that the data distribution was normal ($p > 0.05$); therefore, parametric tests were employed for statistical analysis.

Results

In this study, a total of 342 nurses participated. The mean age of the participants was 43.33 ± 10.7 years, with an age range of 22 to 55 years. The majority of the participants were female, comprising 225 individuals (60.64%). Most participants, 127 individuals (37.10%), had 1 to 5 years of work experience. A significant number of nurses, 267 individuals (78.1%), held a bachelor's degree and resided in urban areas, totaling 325 individuals (95%). Additionally, 216 participants (63.2%) reported a moderate economic status. In terms of employment, the largest proportion were formally employed, accounting for 39.8%, and the majority held regular staff nurse positions, totaling 285 individuals (83.3%). The emergency department had the highest representation among work units, with 80 individuals (23.4%), while neurology had the lowest representation, with 20 individuals (2.3%). Additional characteristics are presented in Table 1.

Table 1. Comparison of demographic characteristics of participating nurses (n=342)

Variable	Category	Frequency	Percentage
Gender	Female	221	64.60
	Male	121	35.40
Marital status	Single	132	38.60
	Married	210	61.40
Work experience	1-5 years	127	37.10
	6-10 years	99	28.90
	11-15 years	116	33.90
Work shift	Fixed	85	24.90
	Rotational	257	75.10

The overall mean scores for critical thinking and moral distress among nurses were 21.25 ± 8.64, with a minimum score of 5 and a maximum score of 34. For moral distress, the mean score was 116.08 ± 50.82, with a minimum score of 18 and a maximum score of 251. These results suggest a high level of critical thinking and a low level of moral distress among the participants (Table 2).

There was a significant correlation between the overall score of critical thinking and the overall score of moral distress (p = 0.001, r = -0.66). The relationship between critical thinking and moral distress was negative, with a strong correlation. Additionally, moral distress showed a significant negative correlation with the subscales of analysis (p = 0.001, r = -0.68), evaluation (p = 0.001, r = -0.62), inference (p = 0.001, r = -0.64), inductive reasoning (p = 0.001, r = -0.67), and deductive reasoning (p = 0.001, r = -0.62) (Table 3).

The multiple regression analysis revealed that the model predicting moral distress had high explanatory power ($R^2 = 0.628$, F = 29.787, p = 0.001), accounting for approximately 63% of the variance in moral distress.

Among the variables included in the model, six showed significant effects: Overall critical thinking (β = -0.396, p < 0.001, 90% CI [-2.65, -1.69]) was the strongest negative predictor of distress, with each one-unit increase in critical thinking scores associated with an average 2.3-unit decrease in moral distress. The components of Analysis (β = -0.302, p = 0.001, 90% CI [-6.56, -2.71]), Inference (β = -0.221, p = 0.003, 90% CI [-5.65, -1.61]), and Induction (β = -0.217, p = 0.02, 90% CI [-5.27, -0.31]) also showed significant negative relationships with distress. In contrast, the Deduction component (β = 0.197, p = 0.029, 90% CI [0.24, 4.39]) and place of residence (β = 0.072, p = 0.037, 90% CI [1.01, 32.60]) had significant positive relationships with moral distress (Table 4).

Based on the findings from this study, no significant associations were found between demographic characteristics and the variables of moral distress and critical thinking (p > 0.05) (Table 4).

Table 2. Descriptive statistics of critical thinking, moral distress, and related subscales

Variable	Subscales	Mean	Standard Deviation	Achieved Minimum and Maximum scores
Critical thinking	Analysis	4.70	3.25	0-9
	Evaluation	8.72	4.02	1-14
	Inference	6.69	3.29	0-11
	Inductive reasoning	8.64	3.94	0-14
	Deductive reasoning	9.70	4.31	0-16
	Overall critical thinking	21.25	8.64	5-34
Moral distress	Frequency	38.60	11.64	12-65
	Intensity	37.52	11.71	8-60
	Overall moral distress	116.08	50.82	18-251

Table 3. Correlation between moral distress and its subscales with critical thinking and its subscales

Variable	Overall critical thinking		Analysis		Evaluation		Inference		Inductive reasoning		Deductive reasoning	
	r*	p-value	r*	p-value	r*	p-value	r*	p-value	r*	p-value	r*	p-value
Overall moral distress	-0.72	0.001	-0.68	0.001	-0.62	0.001	-0.64	0.001	-0.67	0.001	-0.62	0.001
Frequency	-0.70	0.001	-0.65	0.001	-0.59	0.001	-0.61	0.001	-0.63	0.001	-0.64	0.001
Intensity	-0.71	0.001	-0.64	0.001	-0.60	0.001	-0.64	0.001	-0.63	0.001	-0.64	0.001

* Pearson correlation test

Table 4. Results of multiple linear regression analysis for moral distress and critical thinking

Model	Standardized coefficients	CI 95%	Sig.
	Beta		
Constant	-	125.82 – 229.49	**0.001****
Age	- 0.05	-1.28 – 0.53	0.41
Sex	0.01	-6.33 – 8.74	0.75
Marital status	0.02	-6.13 – 11.20	0.56
Education	- 0.002	-8.34 –7.82	0.95
Work history	0.05	-3.96 – 10.81	0.36
Work shift	- 0.06	-16.21 – 2.14	0.13
Ward	- 0.005	-1.88 – 1.64	0.89
Type of employment	- 0.02	-4.01 – 2.15	0.55
Organizational position	0.05	-2.18 – 11.36	0.18
Place of residence	0.07	1.01 – 32.60	**0.03***
Economic status	0.04	-2.34 – 9.48	0.23
Analysis	- 0.30	-6.65 – -2.77	**0.001****
Evaluation	0.07	-1.25 – 3.18	0.39
Inference	- 0.22	-5.65 – -1.16	**0.003****
Induction	- 0.21	-5.27 – -0.31	**0.02***
Deduction	0.19	0.2 – 4.395	**0.02***
Overall critical thinking	- 0.39	-2.95 – -1.69	**0.001****

Discussion

This study aimed to investigate the relationship between critical thinking and moral distress among nurses. The study found that most nurses exhibited high critical thinking and low moral distress levels. A significant inverse correlation was observed between moral distress and critical thinking, including their subscales, indicating that enhanced critical thinking may alleviate moral distress. The present findings are consistent with the studies conducted by Ramos et al. (2020), who reported a positive association between moral distress and the supporting elements of moral deliberation in nurses (24), and Barry et al. (2020), who found a significant negative correlation between the total scores of professional self-concept and critical thinking (25). It appears that critical thinking is a skill that helps nurses experience less ethical conflict and make better decisions in morally challenging situations. These results suggest that while some ethical factors may increase psychological distress, an increased professional self-concept might negatively affect critical thinking. Therefore, a more detailed examination of the relationships between these variables and other underlying factors is necessary to better understand their role.

Although Álvarez-Huerta et al. (2022) focused on higher education students' disposition toward critical thinking and creative confidence, their findings highlight the important role of openness to diversity and challenge in enhancing critical thinking skills (26). This suggests that fostering such openness in nursing education could be beneficial for developing nurses' critical thinking abilities, which are essential for effective ethical decision-making and coping with moral distress in clinical settings. Moreover, Lake et al. (2022) demonstrated that moral distress during the COVID-19 pandemic had a significant impact on the mental health of hospital nurses. These findings highlight the importance of addressing environmental and organizational factors that can reduce moral distress. Specifically, effective leadership communication, a decrease in the number of COVID-19 patients, and adequate access to personal protective equipment were identified as key factors in alleviating moral distress (27). This indicates that improving working conditions and organizational support can play a crucial role in reducing nurses' moral distress and preventing psychological issues arising from ethical conflicts. Consequently, strengthening these factors can contribute to better mental health and professional performance among nurses, underscoring the importance of education and policy-making in this field.

Nurses must be capable of critical and comprehensive thinking to effectively navigate challenging and unpredictable situations, applying critical thinking in clinical decision-making and patient care (28). Additionally, they should develop critical thinking skills, empathy, and moral sensitivity to enhance their confidence in bedside care and foster nurse-patient relationships based on trust and respect (29).

Considering these aspects, a key finding of this study is that higher levels of critical thinking in nurses are associated with lower levels of moral distress. This relationship may be explained by the fact that nurses with enhanced analytical and evaluative abilities can better manage the pressures of ethical conflicts and make more ethically sound decisions.

In this regard, Qiang et al. (2020) found that students with a greater inclination toward critical thinking were more likely to perceive themselves as more creative. This sense of creative self-efficacy, in turn, contributed to improved performance in both academic and innovative domains (30), a finding that aligns with the present study.

Moreover, Xue et al. (2024) reported that psychological capital plays a significant role in moral distress and job burnout. They suggested that enhancing psychological capital in nurses can help mitigate moral distress and prevent burnout (31). One potential limitation of this study is the use of self-report scales to measure moral distress and critical thinking, which may introduce reporting biases among nurses. Additionally, external factors such as work conditions, social support, and environmental pressures-which can influence moral distress-were not controlled, representing another limitation of this study.

Conclusion

The findings of this study suggest that nurses with higher critical thinking skills may experience lower levels of moral distress. This underscores the importance of enhancing critical thinking in nursing education, as training in these skills can alleviate psychological pressures and ethical dilemmas faced by nurses. Those adept at analyzing complex ethical situations are likely to encounter fewer challenges and experience reduced stress in clinical settings. These insights can inform the development of educational programs aimed at strengthening critical thinking skills, ultimately improving healthcare quality and enhancing nurses' psychological well-being. To further explore this relationship, longitudinal studies and investigations into additional influencing factors are essential. Future research should assess the effectiveness of training programs focused on problem-solving and ethical decision-making, as these may bolster critical thinking and better equip nurses to navigate ethical challenges. Given the cross-sectional nature of this study, which limits causal inferences, future investigations should utilize longitudinal or interventional designs to more accurately evaluate the impact of critical thinking development on moral distress. Additionally, qualitative methods, such as in-depth interviews, are recommended to gain deeper insights into nurses' experiences with moral distress and critical thinking.

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Ethical statement

This study was approved by the Vice-Chancellor of Research and Technology at Yasuj University of Medical Sciences (Ethics Code: IR.YUMS.REC.1403.149). Informed consent was obtained from all participants. They were assured of the confidentiality of their information, and participation was entirely voluntary. The principles of research ethics were followed in accordance with the Declaration of Helsinki, ensuring that all ethical guidelines were actively implemented throughout the study.

Conflicts of interest

The authors declare no conflict of interest in this study.

Author contributions

M.L.R.: Providing the study idea and its guideline; M.S.M. and M.L.R.: Providing the study design; F.K., Z.M., and Z.Y.: Conducting the research process and interventions; M.M.Z.: Analyzing the data. The initial draft of the article was prepared by M.L.R. and M.S.M., and the revisions to the article were conducted by M.L.R. and M.S.M.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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