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The relationship between ethical leadership, moral sensitivity, and moral courage among head nurses

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Abstract

Background Moral courage is a key factor in accelerating the implementation of moral behavior. Effective ethical leadership can enhance head nurses' moral competence—particularly moral sensitivity, which serves as a cornerstone of the moral decision-making process. However, there is limited evidence on how ethical leadership influences moral courage. This study aimed to examine the mediating role of moral sensitivity in the relationship between ethical leadership and moral courage among head nurses in China.

Methods A cross-sectional study was conducted between April and May 2024. The study sample consisted of 202 head nurses who agreed to participate in the study. Data were collected using the Ethical Leadership Scale, the Moral Sensitivity Scale, and the Moral Courage Scale.

Results A total of 212 head nurses participated in this study. The total scores of ethical leadership, moral sensitivity and moral courage of Chinese head nurses were 92.66(16.34), 45.05(6.40) and 84.64(14.84), respectively. Ethical leadership was positively correlated with moral sensitivity ($r=0.16$, $P<0.05$), ethical leadership was positively correlated with moral courage ($r=0.32$, $P<0.01$), and moral sensitivity was positively correlated with moral courage ($r=0.31$, $P<0.01$). Process analysis showed that ethical leadership enhanced the moral courage of head nurses through moral sensitivity, which was a partial mediating effect model, and the total indirect effect accounted for 13.79%.

Conclusions This study demonstrates that ethical leadership significantly enhances head nurses' moral sensitivity and courage, with moral sensitivity serving as a critical mediating factor. The study reveals a cascade effect: the moral quality of senior managers shapes the ethical standards of head nurses, and then affects the behavior of clinical nurses, and ultimately forms the ethical organizational culture.

Clinical trial number Not applicable.

Keywords Ethical leadership, Moral sensitivity, Moral courage, Head nurses, Nursing ethics

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Background

Since the outbreak of the novel coronavirus pneumonia, the shortage of human resources in the healthcare system has clashed with the rising health needs of patients, including many moral and ethical conflicts. This clinical change has put forward higher requirements for head nurses in the field of ethics. Leaders and leadership styles play an important role in nursing practice, nurse behavior, and patient health [1, 2], the moral ability of leaders may also affect the moral behavior of head nurses. While extensive research has examined various dimensions of moral competence among nurses or nursing students, few studies have specifically investigated collective moral competence among head nurses, particularly regarding critical components such as moral sensitivity and moral courage in this leadership population. This study explores the association between head nurses perceived ethical leadership from superiors and their moral courage, and whether moral sensitivity moderates this relationship.

The term leader was first proposed by Morrison [3], which defined it as the process by which an individual or group influences others by changing their beliefs and motivating them to achieve a common goal. Chavez [4] defines nurse leader as influencing other members of the healthcare team to promote individual or collective efforts to achieve common clinical goals. Head nurses can influence nursing behaviors and professional values of nurse colleagues through their own influence and radiation ability [5, 6], and act as a bridge between clinical nurses and senior managers. At present, many studies focus on authentic leadership, transformative leadership, and transactional leadership, but these well-known leaders lack moral and ethical guidance for clinical nurses, and the emerging ethical leadership focuses on solving moral problems. Based on social learning theory, Brown [7] define ethical leadership as demonstrating normally appropriate behavior through personal behavior and interpersonal relationships and promoting such behavior to followers through two-way communication, reinforcement, and decision making. Trevino [8] proposed that ethical leadership is both an ethical person and an ethical manager. As moral people, moral leaders usually have the characteristics of honesty, integrity, fairness, and trustworthiness. As moral managers, moral leaders set an example and influence followers' clinical moral behavior through moral decisions and reward and punishment systems. According to the research of Li Ming et al. [9].and Zhao et al. [10], moral leaders influence subordinates' behavior by setting an example for subordinates through their long-term moral behavior and pay more attention to the influence of moral rules and on others, the society and the environment, which encourages subordinates to take altruistic behaviors, such as resource-saving and green behaviors and refusing to hide knowledge. Importantly, ethical leaders' decisions and behaviors are usually based on ethical guidelines, developing an ethical climate in department, and the moral sensitivity of subordinate nurses is influenced by a good ethical atmosphere [11]. While numerous studies have examined clinical nurses' perceptions of ethical leadership and its impacts, limited attention has been given to head nurse' perspectives on ethical leadership exhibited by senior healthcare executives and how such leadership influences head nurses' own moral behaviors. This research specifically investigates head nurses' experiences with executive-level ethical leadership and the consequent effects on their moral competence.

Rest [12] defines moral sensitivity as the ability of nurses to identify ethical issues and judge the potential impact of ethical choices on patients, families, and hospitals. The study found that nurses with more experience and older age had higher levels of ethical sensitives [13], and personal traits such as empathy [14] and EQ [15] have also been shown to promote moral sensitivity in nurses. Moral sensitivity has positive implications for clinical care quality and other aspects of moral competence. First, the researchers showed that a high level of moral sensitivity promotes the understanding and practice of ethical codes by nurses [16, 17], and are positively correlated with nursing quality and nursing efficiency [18, 19]. Second, moral sensitivity is a key factor in initiating ethical decision-making processes and ethical behavior, and it is an essential component of high-quality care [20]. Most studies have proved that there is a positive correlation between moral sensitivity and ethical decision-making level in nursing students [21, 22], and is positively correlated with moral courage [23], suggesting that the development of moral sensitivity promotes the advancement of other moral abilities, which has positive implications for both caregivers and clinical patients. At present, clinical nursing staff including nursing managers have been negatively affected by moral distress [24]. Moral distress seriously interferes with the psychological state of nursing staff and brings negative effects to the organization and patients at the same time (such as increased turnover rate, discontinuity of patient care, etc [25, 26]). Some scholars believe that there is a negative correlation between moral sensitivity and moral distress [27], that is, nurses with a high level of moral sensitivity have a low level of moral distress. Extensive research has shown that moral sensitivity yields significant benefits at multiple levels of the healthcare system, nurses, and patients. However, there are few empirical investigations on the moral sensitivity of head nurses and its relationship with other moral competences. As key middle managers, head nurses' ethical capabilities (including moral sensitivity, courage, and judgment) fundamentally shape departmental ethical climate and staff nurses' moral

performance, so it is necessary to investigate the level of ethical ability of head nurses.

Moral courage is a virtue and one of the basic professional ethics, nursing as a moral cause, the nurse as the patient's moral agent [26], the realization of moral behavior needs moral courage this virtue. Numminen [28] defines moral courage as the ability of nurses to act according to their own code of ethics or professional values, even though they have anticipated the adverse consequences of such behavior. Moral courage is one of the strategies to overcome fear and moral dilemmas during public health emergencies [29], and is therefore one of the important factors in the nursing profession. According to previous literature studies, age, work experience and educational background are the general personal characteristics that affect moral courage [30, 31], Ethical leadership, ethical atmosphere, moral education and moral sensitivity are the moral factors that affect moral courage [32–34]. Moral courage, as one of the moral abilities, has many positive effects on organizations and patients. Research shows that nurses with moral courage are more likely to expose ethical violations to provide an ethical work environment for organizations [35] and to provide safe care for patients [36]. Fidan [37] research shows that nurses with high levels of moral courage have high levels of compassion, high levels of empathy help nurses understand patient needs and provide humanistic care and complete care. Moreover, moral courage is directly proportional to the level of moral decision making and moral sensitivity [38], moral sensitivity, moral decision making and moral courage, as antecedent variables, are one of the solutions to moral distress [26]. Current evidence indicates that moral courage constitutes an essential ethical competency for clinical nurses when addressing ethical conflicts. However, existing research has predominantly focused on examining moral courage among staff nurses and nursing students, while largely neglecting investigations into this critical attribute among head nurses. As pivotal department leaders and central figures within clinical teams, head nurses' ethical competencies and moral standards exert direct influence on the ethical behaviors of their nursing staff. This leadership position renders the examination of moral courage levels within the nurse manager population both theoretically and practically imperative.

This study aimed to investigate the relationships among ethical leadership, moral sensitivity, and moral courage among head nurses in China. Furthermore, it seeks to develop a mediation model examining the intermediary role of moral sensitivity. By conducting this research, we intend to provide stakeholders, nursing administrators, and educators with novel perspectives and recommendations—specifically, on how to effectively deliver ethics education to head nurses and, through the indirect influence of moral sensitivity, strengthen their moral courage behaviors. Ultimately, this will help uphold the ethical integrity and reputation of healthcare professionals and medical institutions.

Theory and conceptual framework

Bandura's social learning theory [39] serves as the conceptual framework for this study. The core premise of this theory posits that learning occurs not only through direct experience but also by observing the behaviors of others in real-life contexts and their consequences (e.g., rewards or punishments)—that is, acquiring new behaviors through observation and indirect experience. According to Bandura, role models in social learning theory may include individuals in one's immediate environment, such as parents, teachers, peers, or supervisors. He further suggests that this theory can be applied to workplace training, where employees may reinforce their own behaviors by observing those of their colleagues or leaders. This theory provides a solid foundation for explaining how coworkers in a workplace setting enhance their cognition and modify their behaviors through interactions with the environment.

In this study, Bandura's social learning theory is employed to examine the relationships among ethical leadership, moral courage, and moral sensitivity. The framework provided by this theory helps explore the connections between these variables. Based on this, we hypothesize that head nurses can enhance their moral competence—specifically, moral sensitivity—by observing the moral behavioral traits of their superiors. This, in turn, strengthens their moral courage, enabling them to resolutely implement morally sound decisions.

Thus, the theory not only aids in understanding the behavioral mechanisms underlying moral courage but also offers insights and guidance for stakeholders, administrators, and educators in the healthcare field. Figure 1 illustrates the research model constructed based on social learning theory, highlighting the mediating role of moral sensitivity between ethical leadership and moral courage.

Methods

Aim

To investigate the level of ethical leadership perceived by the head nurse from the superior, and the impact on the moral sensitivity and moral courage of the head nurse. Secondly, it explores whether ethical leadership strengthens the moral courage of the head nurse through moral sensitivity.

Design

This is a cross-sectional study to explore the relationship between the level of ethical leadership, moral sensitivity

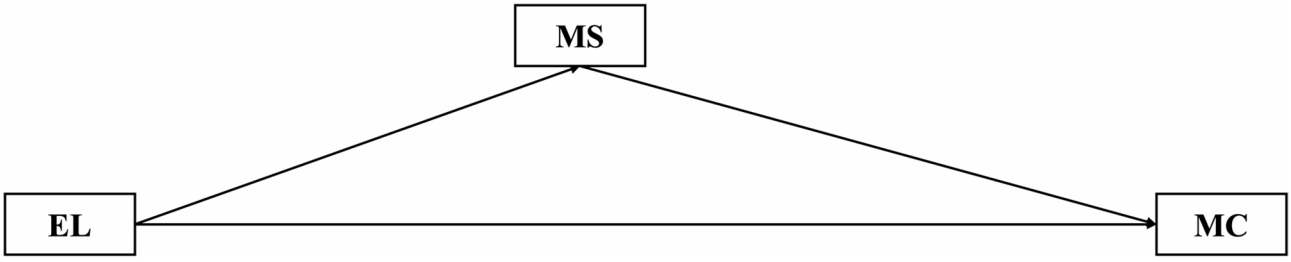

Fig. 1 Conceptual research model

and moral courage of senior managers perceived by head nurses in a healthcare system.

Settings/Participants

The study was conducted from April to May 2024, using convenience sampling to select head nurses from a number of municipal general hospitals in Shandong Province as the research object. The inclusion criteria of the study subjects were on-the-job head nurses who volunteered to participate in this study, and the exclusion criteria were head nurses who were absent due to sick leave, maternity leave, going out to study and other reasons.

According to the existing research literature, the correlation coefficients of moral leadership, moral sensitivity and moral courage are respectively (r1 = 0.42, r2 = 0.61, r3 = 0.17), assuming the significance level α = 0.05, Using Schoemann and Boulton complex mediation effect of sample size calculation method [40] (https://schoemanna.shinyapps.io/mc_power_med/) calculate sample size for 64, The test power (1-β) was 0.90. Considering the invalid response rate of 20%, the total sample size should not be less than 77, and 202 valid questionnaires were collected.

Data collection

The data was collected through the largest data platform, Wenjuanxing (https://www.wjx.cn/). Before the collectio n, the leaders of hospitals were contacted, and the questionnaire link was sent to each participant through the working group of WeChat platform. The homepage of the questionnaire indicated the content and purpose of the study, and informed participants to participate voluntarily, and indicated the contact information of the researcher. If you have any questions, you can ask the researcher.

Measures

General population information questionnaire

The general demographic questionnaire includes gender, age, education level, work experience, working hours, whether they have participated in ethics training, and the number of times they have participated in ethics training.

Ethical leadership questionnaire

The ethical leadership scale ELM, designed and verified by Chinese Zhu Weichun et al. [41] in 2017, adds Confucianism in Chinese culture. The scale has 16 items, which are divided into the following four dimensions: The first two factors of moral characteristics, moral cognition, moral example, and the creation of ethical atmosphere are classified as the "moral person" of ethical leadership, and the last two factors are classified as the "moral manager" of ethical leadership. Each dimension contains four items, each of which is rated on a scale of one to seven, with one being "strongly disagree" and seven being "strongly agree", for a total range of 16 to 112 points, with 16 to 48 being low, 49 to 80 being medium, and 81 to 112 being high. A higher total score indicates a better assessment of ethical leadership. The Cronbach's α coefficient of this study was 0.978, and the Cronbach's α coefficient of this study was 0.980, which had high reliability and validity.

Moral sensitivity questionnaire

The moral sensitivity questionnaire was compiled by Lutzen et al. [42] and Huang et al. [43] (2015) to measure the level of moral sensitivity of research subjects. The scale contains the following two dimensions: moral responsibility and power (5 items), and moral burden (4 items). Each item was scored on a 6-level Likert scale, with the answers ranging from "completely disagree" to "completely agree" ranging from 1 to 6 points with a total score of 9 to 54 points, with less than 24 points as low level, 25–39 as medium level, and 40–54 as high level. The higher the score, the higher the level of moral sensitivity of the subjects. The Cochrane '**α** of this scale was 0.820, in this study the Cronbach's α coefficient is 0.815, which has high reliability and validity.

Moral courage questionnaire

The Moral Courage Questionnaire was developed by Numminen et al. [44] and revised by Siyao Wang in 2019 to measure the level of moral courage of study subjects. The scale contains the following four dimensions: Moral conduct (7 items), commitment to good patient care (5 items), compassion and genuine presence with the patient (5 items), and moral responsibility (4 items),

each item using a 5-level Likert scale, with answers ranging from "totally inconsistent" to "totally consistent" on a scale of 1 to 5, with a total score of 21 to 105 and a low level of 21 to 49. A score of 50 to 77 was considered moderate, and 78 to 105 was considered high. The higher the score, the higher the level of moral courage of the subjects. The Cochrane '**α** of the questionnaire was 0.905, in this study the Cronbach's α coefficient is 0.957, which has high reliability and validity.

Quality control measures

First, regarding sampling, this study adopted a single-center, multi-site approach by recruiting participants from hospitals of different tiers across multiple cities in Shandong Province, China. This strategy enhances the representativeness of the sample. Second, to address potential response bias—such as socially desirable answers due to participants' concerns about expectations—the study ensured anonymity and explicitly informed respondents that their responses would not be shared with management. Additionally, all participants provided informed consent and signed confidentiality agreements, mitigating self-reporting distortions. Third, the questionnaire was developed through a rigorous process: A research team collaboratively designed it based on a literature review. It was pre-tested with a group of head nurses to refine clarity and relevance. The final version was reviewed and modified by an ethics expert to ensure validity. The instrument demonstrated good reliability in this study, reducing measurement and researcher-induced biases. These measures collectively strengthen the study's methodological rigor and data credibility.

Data analysis

The SPSS 26.0 software package was used for statistical analysis. General data are described in terms of frequency and component ratio (%). Total scores for moral courage, moral sensitivity, and ethical leadership, as well as scores for each dimension, are described as average ± standard deviation. The Pearson coefficient analyzed the correlation between these three factors, and the significance level was set at $P < 0.05$. We used Harman's single factor test to assess the common method variance (CMV) and found that six eigenvalues exceeded 1, with the factor with the highest eigenvalue accounting for only 36.26% (less than 40%) of the data variance. In this study, the Process program provided by Hayes was used to test the mediating effect, which was based on ordinary least-square regression and self-lifting sampling method. In this study, model 4 in the PROCESS was used to estimate the mediating effect, and 5000 times of bootstrap resampling was conducted to calculate the 95% deviation-corrected confidence interval (BCI). In the model, ethical leadership is the independent variable, moral sensitivity is the mediating variable, and moral courage is the dependent variable. The total effect of ethical leadership on moral courage is divided into direct effect and indirect effect. When the 95% deviation-corrected confidence interval (BCI) does not include 0, the assumed direct and indirect effects are considered significant.

Human ethics and participation consent statement

This study has obtained ethical approval from the Ethics Committee of the School of Nursing and Rehabilitation at Shandong University (Approval No.2023-180R) and complies with the Declaration of Helsinki. Prior to the survey, all participants were informed of the study's methodology and purpose. Anonymous questionnaires were completed only after obtaining signed informed consent forms. All research data were encrypted and stored by the investigators solely for academic purposes. Participants were assured that their data would not be disclosed to their employing hospitals and could withdraw from the study at any time if concerned.

Results

Demographic characteristics of the sample

A total of 202 head nurses participated in this study, most of whom were female ($n = 197$,97.50%), aged 41–50 years ($n = 137$, 67.80%), with bachelor's degree ($n = 165$,81.68%), and working in tertiary hospitals ($n = 172$,85.15%). Head nurses with more than 11 years of work experience ($n = 182$,90.10%), most of them worked 40 to 48 h per week ($n = 143$,70.79%) and did not work night shifts ($n = 177$,87.62%), 152 of them had received ethics training ($n = 152$,75.25%). 93 head nurses participated in one or two times of ethics training ($n = 93$, 46.04%), 63 head nurses participated in more than three times of ethics training ($n = 61$,30.20%). (shown in Table 1)

Head nurses' scores of ethical leadership, moral sensitivity, moral courage

The results show that the score of ethical leadership is 92.66(16.34), the score of moral person dimension is 46.27(8.17), and the score of ethical managers is 46.39(8.56). The score of moral sensitivity was 45.05(6.40), the score of moral strength and responsibility was 27.00(3.30), and the score of moral burden was 18.05(4.16). The total score of moral courage was 84.64(14.84), the score of moral time dimension was 28.30(5.01), the score of good care dimension was 19.64(3.94), the score of compassion dimension was 20.62(3.56), and the score of moral responsibility dimension was 16.07(3.24). (shown in Table 2)

Table 1 General demographic characteristics ($n=202$)

Item		N (%)
Sex	Male	5(2.48)
	Female	197(97.50)
Age(years)	21–30	5(2.48)
	31–40	60(29.70)
	41–50	137(67.80)
Education background	associate bachelor	2(0.99)
	bachelor	165(81.68)
	Master	35(17.33)
Hospital grade	Tertiary hospital	172(85.15)
	Second-class hospital	27(13.37)
	First-class hospital	3(1.49)
Years of clinical experience	1∽5	4(1.98)
	6∽10	16(7.90)
	> 11	182(90.10)
Hours of work per week(h)	< 40	15(7.43)
	40∽48	143(70.79)
	> 49	44(21.78)
Number of night shifts per week	1 night	12(5.94)
	2 nights	9(4.46)
	> 3 nights	4(1.98)
	No night shift	177(87.62)
Have received ethics training	Yes	152(75.25)
	No	50(24.75)
Number of ethical trainings received(time)	No ethics training	48(23.76)
	1∽2 times	93(46.04)
	≥ 3times	61(30.20)

Table 2 Ethical leadership, moral sensitivity, moral courage, and scores of each dimension ($n=202$)

Item	Mean(SD)
EL	92.66(16.34)
Moral Pearson	46.27(8.17)
Moral manager	46.39(8.56)
MS	45.05(6.40)
Moral strength and responsibility	27.00(3.30)
Sense of moral burden	18.05(4.16)
MC	84.64(14.84)
Moral conduct	28.30(5.01)
Good care	19.64(3.94)
Compassion	20.62(3.56)
Moral responsibility	16.07(3.24)

Note: EL, ethical leadership; MS, moral sensitivity; MC, moral courage; SD, standard deviation

Table 3 Correlation analysis of ethical leadership, moral sensitivity, and moral courage ($n=202$)

Item	1	2	3
EL	1		
MS	0.16*	1	
MC	0.32**	0.31**	1

Note: EL, ethical leadership; MS, moral sensitivity; MC, moral courage; *, $P<0.05$; **, $P<0.01$

Table 4 Mediation analysis

Item	MS		MC	
	β	t	β	t
EL	0.06	2.32*	0.25	4.23**
MS			0.61	4.04**
MC				
R	0.16		0.41	
R^2	0.03		0.17	
F	5.4		20.45	

Note: EL, ethical leadership; MS, moral sensitivity; MC, moral courage; *, $P<0.05$; **, $P<0.01$

Table 5 Path analysis

Path	β	95%CI	
		Lower limit	Upper limit
Indirect effect	0.04	0.03	0.09
Direct effect	0.25	0.13	0.37
Total effect	0.29	0.17	0.41

Note: CI, confidence interval

Correlation analysis of ethical leadership, moral sensitivity, and moral courage

The results showed that ethical leadership was positively correlated with moral sensitivity ($r=0.16$, $P<0.05$), ethical leadership was positively correlated with moral courage ($r=0.32$, $P<0.01$), and moral sensitivity was positively correlated with moral courage ($r=0.31$, $P<0.01$).(shown in Table 3).

Mediation analysis

The results showed that the total effect of ethical leadership on moral courage was significant (c = 0.29, $P<0.01$), the direct effect was significant (c '=0.25, $P<0.01$), and the intermediate effect was statistically significant (β=0.04, 95%CI: 0.03 to 0.09), this model is a partial intermediary effect model, and the total indirect effect accounts for 13.79%.(shown in Table 4 and Table 5 and Fig. 2).

Discussion

Grounded in social learning theory, this research explores the psychological mechanisms whereby head nurses' ethical leadership perceptions affect their moral courage, with moral sensitivity as a critical mediator. These insights may reshape current paradigms in nursing ethics education and leadership training. Findings reveal a virtuous cycle: head nurses who observe ethical leadership from superiors are more likely to develop moral sensitivity and courage, which in turn positions them as ethical exemplars for their nursing staff. This ripple effect suggests healthcare administrators should prioritize ethical leadership development at all management levels to foster organization-wide moral competence.

Unlike the findings of Ozden et al. [45, 46], where ethical leadership was rated lower, our study found

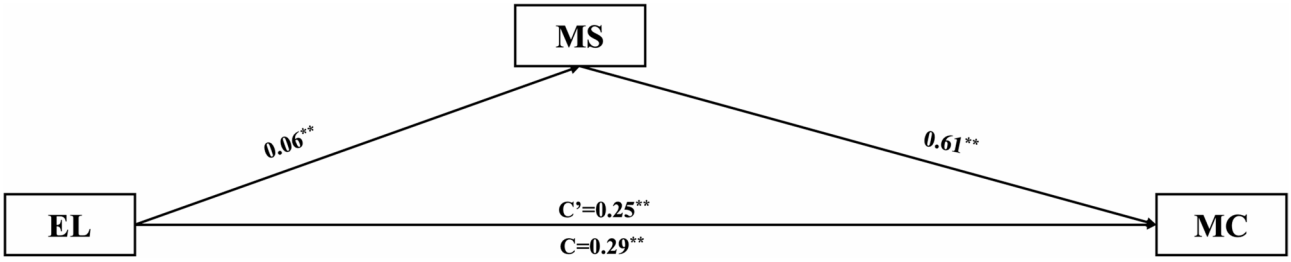

Fig. 2 Model of the moderating effects of moral sensitivity. Note: EL, ethical leadership; MS, moral sensitivity; MC, moral courage; *, $P<0.05$; **, $P<0.01$

a moderate level, possibly due to cultural differences related to Confucian values. The research was conducted in the birthplace of Confucianism. The local people were deeply influenced by Confucianism, and the Confucian culture consisted of 12 virtues such as benevolence, righteousness, propriety, wisdom, faith, and filial piety [47]. Among them, benevolence embodies the highest level of Confucius' ethics and morality, which is reflected in the political rule of virtue, which may be one of the reasons for the high score of ethical leadership in this study. In addition, nursing itself is a moral cause. All the workers in the nursing industry have received the training and education on the code of ethics for nurses, so they have higher moral requirements for themselves. Especially, as the leader of the department, the head nurse strictly abides by the code of ethics. As the middle manager of the hospital, the head nurse is the indispensable middle force to complete the bottom-up unified management of the hospital. The ethical leadership style perceived by the head nurses from the senior managers of the hospital promotes the development of their own moral ability, which encourages the head nurses as middle managers to pass on the ethical leadership style to every nurse through the management of clinical nurses, which is conducive to the formation of a good moral atmosphere in the department.

In this study, the score of moral sensitivity was above the medium level, which was higher than that of Kovanci [27] and Chen [15]. Several factors may account for this difference: First, the discrepancy may be attributed to different study populations. While Kovanci and Chen examined general nursing staff, our study focused specifically on head nurses. Typically, head nurses are selected through rigorous screening processes and generally possess higher comprehensive competencies, including moral literacy. However, nurses may lack such comprehensive quality, only reaching the standard in nursing skills, lacking moral awareness and humanistic care. Second, as suggested by researchers [48, 49], moral sensitivity is related with cultural variations. Therefore, cultural differences may represent another contributing factor to the observed variations in results. Third, the appointment of head nurses usually goes through the selection mechanism of the unit, and the candidates of head nurses usually have a high title, working years and working experience, and must go through a series of assessments. Research has shown [50] that age, female and work experience are protective factors for moral sensitivity, so the level of moral sensitivity in this study is higher than the score of moral sensitivity in other studies. In addition, head nurses who actively participated in the assessment had a higher sense of responsibility and love for nursing career than other general nurses, which may be another reason for higher scores than general clinical nurses. Finally, the study revealed that although head nurses exhibit high levels of moral strength and responsibility, their scores on moral burden dimensions were relatively lower. This discrepancy may stem from their managerial position's inherent characteristics - the substantial administrative workload inevitably reduces clinical patient contact, thereby diminishing their direct perception of patient needs. Healthcare institutions should address this challenge through comprehensive organizational reforms, including streamlining administrative workflows, implementing mandatory minimum clinical hours for head nurses, redistributing clerical work to nurses, and creating additional leadership positions - all aimed at restoring the vital connection between head nurses and patient care.

Our results demonstrated that moral courage scores were above average and higher than those reported in Sonay's [31] and Huang's [34] studies. First, this discrepancy still attributed to differences in study populations. As head nurses frequently encounter more complex ethical dilemmas in their leadership roles, they develop stronger moral competencies, including moral courage. Second, most participants in our study were head nurses with decades of clinical experience and specialized training. Multiple studies have identified age, work experience, and ethics education as protective factors for moral courage [34, 51, 52], which explains the higher moral courage scores observed in our research. Furthermore, Wang Xuan et al.'s study [53] demonstrates a positive correlation between ethical leadership and nurses' moral courage, indicating that exemplary moral management by senior leaders enhances nursing staff's moral courage.

This finding suggests that head nurses, when exposed to strong ethical leadership, may similarly develop heightened moral courage - a plausible explanation for the elevated moral courage scores observed among head nurses in our investigation.

This study takes head nurses as the research object, and there are few relevant studies to compare, so it is compared with the research on clinical nurses. The results of this study show that ethical leadership is positively correlated with moral courage, which is consistent with the results of Awad [32], and ethical leadership is positively correlated with moral sensitivity, which is inconsistent with the results of Zhang's unrelated study [11]. The specific reasons are discussed below. This result is related to two characteristics of ethical leadership: moral leader and moral manager. As moral people, they are responsible, kind, and possess ethical awareness and moral decision-making ability. As moral managers, they manage the moral behavior of their subordinates by example and reward and punishment system [8, 54]. Studies have shown that ethical leadership is positively correlated with the ethical climate [55]. Leaders occupy the core position and have influence in the organization and are the objects to be followed and imitated by their subordinates. Their behaviors that consider moral and ethical principles in everything form a strong ethical climate. According to Principle of social learning theory [39], knowledge and behavior can be acquired not only through direct learning but also through environmental learning by imitating others and through indirect experience. Therefore, the nurse not only obtains moral sensitivity by imitating and learning the moral behavior of head nurses, but also indirectly cultivates moral sensitivity through the strong moral atmosphere in the organization. Second, senior managers with ethical leadership style have the trait of sharing power [8], and give subordinates enough space to participate in moral decision-making. The sharing of power and the increasing frequency of autonomous moral decision-making may have some positive implications for shaping moral courage. In addition, the research object of this study is the head nurse, who is the manager of the department, and the opportunity, experience and reserve knowledge of decision-making may be much higher than that of ordinary nurses. Therefore, the head nurse may possess a high level of moral courage under the leadership of senior managers, and the two are mutually promoting. Last, Ogunfowora's study [56] also proposed that ethical leadership can help middle managers cultivate moral autonomy and sense of organizational obligation to cultivate moral courage. Our results demonstrating above-average ethical leadership and moral courage scores and their positive association serve to validate and extend Ogunfowora's research conclusions.

The results of this study showed that ethical leadership positively predicted the moral sensitivity and moral courage of head nurses, and moral sensitivity also positively predicted the moral courage of head nurses, and the influence of ethical leadership on moral courage was significantly increased with the intervention of moral sensitivity. This indicates that moral sensitivity plays a partial mediating role between ethical leadership and moral courage. According to Rest moral behavior model [12], moral sensitivity is the premise and basis of moral behavior. A head nurse lacking moral awareness does not possess basic moral ability and will not start the moral behavior program. As time goes on, the virtue of moral courage gradually weakens or even disappears in her career. The moral and leadership attributes of the ethical leadership style drive and cultivate the moral sensitivity of subordinates and cultivate the moral autonomy of the head nurse by sharing the right to make moral decisions, to give the head nurse confidence and courage to deal with moral problems. Social exchange theory [57] posits that all human interactions are governed by reciprocal exchanges aimed at obtaining rewards and maintaining beneficial relationships. In this study, the ethical leadership style improves the moral courage of the head nurses by influencing their moral consciousness and power sharing of moral decision making, which further promotes the moral ability and clinical performance of the head nurses, and the moral courage of the head nurses who receive positive feedback also increases. In a word, drawing upon social exchange theory and social learning theory, we propose the following recommendations: first, regarding senior leadership development, healthcare systems should incorporate assessments of moral competence and ethical literacy into the selection criteria for top-level executives while implementing ongoing ethics training programs; second, for middle management including head nurses, ethically qualified senior leaders should positively influence this group to establish a sound ethical climate at the leadership level, which will then enable head nurses to shape the ethical environment within their departments and gradually transform the moral conduct of staff nurses; consequently, this creates a pyramid-style three-tiered ethical management structure at the organizational level, with this systematic approach ensuring the sustained dissemination of moral standards throughout the entire organization.

At present, most studies focus on clinical nurses and nursing students to explore moral competence and intervention measures. However, as the core of the team, the behavior of head nurses will have a subtle impact on clinical nurses, affecting the moral behavior, nursing quality and even patient satisfaction of nurses. Therefore, this study believes that it is urgent for the health care system to pay attention to the moral competence of head nurses.

The organization should actively develop and improve the moral code of conduct of nurse leadership, provide a moral example for clinical nurses, and maintain the moral reputation of the health care system.

Strength and limitations

This study focuses on the head nurse group and complements the relevant literature on nursing ethics development by measuring their moral competence and perceived ethical leadership style of senior managers. However, there are still some limitations in this study. First, this study is a cross-sectional design, only represents the situation of a specific time range, cannot explain the causal relationship between variables; Secondly, all the research tools are self-reported, and the answers of the research subjects may be influenced by culture, self-consciousness, and social expectations. Third, while our study incorporated participants from diverse geographical regions within the province, the inherent gender distribution characteristics of the nursing profession resulted in a predominantly female sample. This demographic concentration introduces potential selection bias and may constrain the generalizability of our findings to more gender-balanced healthcare leadership populations. Finally, both the moral sensitivity questionnaire and the moral courage questionnaire are universal scales for nurses and lack specific scales for nurses' leadership. It is suggested that relevant scholars pay attention to the moral ability of nurses to lead this group and develop relevant scales.

Conclusions

This study adopted a convenience sampling approach to examine clinical head nurses' perceptions of senior administrators' ethical leadership styles and their status of moral sensitivity and moral courage. The research established a theoretical framework and evidence for the relationships among these three variables, confirming the mediating role of moral sensitivity. These findings provide insights and a framework for nursing administrators and educators to develop ethical support systems. For instance, healthcare organizations should emphasize cultivating moral competencies among both head nurses and senior leaders, while leveraging leadership influence to foster positive ethical climates that enhance staff nurses' moral performance. Additionally, future studies are recommended to explore factors influencing head nurses' ethical behaviors from diverse perspectives and dimensions, thereby enriching ethics training programs for head nurses. Last, it is commanded that subsequent research could employ mixed methods approaches to conduct qualitative and quantitative analyses of head nurses' ethical experiences, recognizing that leaders in different departments may encounter unique ethical challenges. Such investigations would further expand the applicability and generalizability of research findings.

Abbreviations

EL	Ethical leadership
MS	Moral sensitivity
MC	Moral courage
SD	Standard deviation
CI	Confidence interval

Supplementary Information

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Supplementary Material 1

Supplementary Material 2

Supplementary Material 3

Supplementary Material 4

Supplementary Material 5

Supplementary Material 6

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Author contributions

Corresponding author Xiaoling Guo provided data, financial support, and ideas for this study, and first author Meng Juntong made significant contributions to processing the data and writing the first draft.

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Data availability

The datasets generated and/or analyzed during this study are not publicly available but are available from the corresponding authors upon reasonable request.

Declarations

Ethics approval and consent to participate

This study has received ethical approval from the Ethics Committee of the School of Nursing and Rehabilitation, Shandong University under the approval number (2023-180R) and complies with the Declaration of Helsinki. All participants were informed and signed informed consent before completing the questionnaire.

Human ethics and content to participate

This study was approved by the School of Nursing and Rehabilitation of Shandong University, and the approval number was 2023-R-180.

Consent for publication

Consent for publication was obtained from the participants.

Competing interests

The authors declare no competing interests.

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