J Caring Sci, 2023, 12(4), 241-247
doi: 10.34172/jcs.2023.30501
https://jcs.tbzmed.ac.ir

Original Article

The Relationship between Moral Intelligence and Patient Safety Culture in Nurses

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Article Info
Article History:
Received: June 16, 2021
Accepted: October 9, 2021
ePublished: September 3, 2023

Keywords:
Moral intelligence, Patient safety culture, Nurses

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Abstract

Introduction: Ethical issues are among the first concerns and important issues in the daily care of nurses, so that nurses always try to maintain and observe them in order to provide better and more basic care to patients. Moral intelligence (MI) can provide a framework for the proper functioning of nurses. The main purpose of this study was to determine the relationship between patient safety culture and the MI of nurses working in hospitals in Iran, Guilan province.

Methods: In the present study which was descriptive and correlational research, the sample was 400 nurses from Iran. Data were collected by a standardized and modified questionnaire "Hospital Survey on Patient Safety Culture (HSOPSC)", and "Lennick & Kiel's Moral Intelligence Scale". The collected data were analyzed by Spearman correlation and Friedman test via SPSS software version 13.

Results: The findings of the study showed that the relationship between the patient safety culture and MI, was significant, and the total MI score ($P<0.0001$ and $r=0.30$).

Conclusion: There is a positive correlation between MI of nurses and patient safety culture. Therefore, planning to increase the MI of nurses can lead to improve patients' safety culture.

Introduction

The primary goal of the health system is to maintain and promote the health of the people and society.[1] In this regard, the World Health Organization (WHO) also emphasizes the evaluation of the functions of the health system.[2]

Patient safety is an essential component of providing quality healthcare services.[3] That means to avoid any harm to the patient during the clinical process.[4] Medical errors are one of the five most common causes of death in the world.[5]

The Patient Protection and Affordable Care Act (in the USA) was informed by the Institute for Healthcare Improvement's Triple Aim framework and includes reporting requirements along four dimensions: improved health outcomes, prevention of hospital readmissions, improved patient safety, and reduction of medical errors, and promotion of wellness and health.[6] Cooper says the most fundamental obstacle to improving patient care safety is the safety culture of healthcare organizations and a safety culture is an important factor in improving patient safety.[7]

The patient safety culture is related to the organizational culture, and it is defined as a set of values, attitudes, perceptions, beliefs, and common behaviors that reinforce the safe interaction of people's activities in health centers.[8]

The indices of a powerful safety culture include management commitment to learn from mistakes, encouraging and practicing teamwork, identifying potential risks, using a system of reporting and analyzing adverse events that occurred at the hospital concerning patient safety, and assess of patient safety culture among staff.[9] Wherever the patient safety culture is below the standard level, mistakes will also occur more often.[10]

While many of the efforts have done to improve safety, some efforts are reaction aspects and those seek to resolve the problem after it has been created. For this reason, efforts to identify and eliminate hazards before they occurred, lead to a high potential to improve significantly the safety.[11]

Moreover, today, hospitals are involved in a situation called moral rage. In today's dynamic world, managers and personnel of hospitals must consider moral principles.[12] The emphasis on moral considerations in individual, and social aspects has always been considered and has been studied as one of the important philosophical issues.[13]

Observing ethical principles like honesty, accountability, and commitment to providing the best care is mainly influenced by moral standards. Nurses with these ethical features can improve appropriate interaction between patients and themselves.[14]

The concept of moral intelligence (MI) refers to the ability for diagnosing correctly from false (error), having strong moral beliefs, and appropriate behavior.[15] For the first time, this concept was introduced by Borba who proposes seven principles or virtues for it including, empathy, alertness, self-control, attention and respect, patience and tolerance, and fairness.[16]

This principle, it is very meaningful and important to know and recognize the existing variable relationships between MI and their effects on the development of patient care services. Thus, this research aimed to investigate the relationship between MI and patient safety cultures among the nurses of Iran (Guilan) hospitals which can help these center for improving organizational culture and also clinical safety levels.

Materials and Methods

This study was conducted in 2020 in the city of Iran (Guilan). The population of the study included all nurses who worked in the hospitals of Iran (Guilan) province. They had more than 10 years of experience with the formal employment format, and worked in the surgical, internal medicine, gynecology, pediatric, emergency, intensive care, and nursing offices. The two-stage cluster was used for the sampling method. In the first phase, the lists of the cities, units of the hospitals, as well as the number of staff members in them were determined. To employ a large number of nursing staff across the province's hospitals, 10 cities were randomly chosen based on random numbers (this study was conducted in public hospitals). given to the average of active nurses in each city, the number of employed active nurses was selected randomly (40 people per cluster were selected based on the table of random numbers. In this research, the city was considered as a cluster). After that, in the selected hospitals, sampling was randomly done in all three shifts according to the number of employed nurses.

In compliance with ethical considerations, the researcher explained the purpose of the study to the nurses. Participation in the study was voluntary and nurses' informed consent was obtained. Questionnaires were filled by nurses anonymously, and they were assured that their information would stay confidential. Moreover, the authorities of the research center were informed that, if they wished, the results would be presented to them. All questionnaires were completed in the presence of the researcher for 20 minutes in a quiet room. In addition, this study's ethics code was IR.IAU.RASHT.REC.1395.30 (some delays regarding data collection and analysis happened).

To collect data, the MI scale and the Hospital Survey on Patient Safety Culture (HSOPSC) questionnaire were used. Data were analyzed using SPSS-14.

The research questionnaire is a valid and reliable tool that was developed by the US Agency for Healthcare Research and Quality in 2004 to assess the hospital safety culture and its reliability and validity have been confirmed in several studies. In Iran, the questionnaire has been translated into Persian and its reliability and validity have been confirmed in various studies.[7]

Moral Intelligence Scale

This questionnaire contained 40 questions with a Likert spectrum in five scales including, "never, rarely, sometimes, most of the times, all times". Based on the scoring, score 1 was assigned for the "never" option, and eventually score 5 was assigned for the "all times". The MI scale was developed by Lennick & Kiel for measuring ten dimensions within a moral framework. The dimensions are: Acting consistently with principles, values, and beliefs; Telling the truth; Standing up for what is right, Keeping promises; Taking responsibility for personal choices; Admitting mistakes and failures; Embracing responsibility for serving others; Actively caring about others, Ability to let go of one's own mistakes; Ability to let go of others' mistakes.[17]

The minimum acquired score was 40 and the maximum acquired score was 200. On the other hand, to convert the acquired score to the maximum level of 100, the total score was divided into 2. Finally, MI was ranked based on acquired scores as follows: the score between 90-100 is very high, the score between 80- 89 is high, the score between 60- 79 is medium, and the score between 59-40 is low.[18] This questionnaire was used in previous studies[7] and had evaluated from reliability and perspicuous viewpoint. In the present study, to acquire more sureness, the reliability and perspicuous of this questionnaire were evaluated again.

Hospital Survey on Patient Safety Culture (HSOPSC)

This questionnaire is a valid and reliable tool in 2004, the Agency for Healthcare Research and Quality (AHRQ) released the HSOPSC, a staff survey designed to assist hospitals assess the safety culture in their institutions. After that, hundreds of hospitals across the United States and internationally have implemented the survey. This questionnaire was translated and modified to suit the Iranian system. So far, several studies have been performed with this tool to assess the safety in the United States and other countries.[19] The different dimensions of the HSOPSC questionnaire included: "Teamwork within units" (4 items); "Supervisor/manager expectations and actions promoting safety" (4 items); "Organizational learning-continuous improvement" (3 items); "Hospital management support for patient safety" (3 items); "Overall perceptions of safety" (4 items); "Feedback and communication about error" (3 items); "Communication

openness" (3 items); "Frequency of event reporting" (3 items); "Teamwork across units" (4 items); "Staffing" (4 items); "Hospital handoffs and transitions" (4 items); "Non punitive response to error" (3 items).

The questionnaires used in this research have been used in previous research. In this study for more reliability, the validity and reliability of this questionnaire were assessed. To determine the validity of extra in the study population, for the second time, the questionnaire was presented to 10 expert nursing domains (5 Ph.D. and 5 top nursing staff) that have experience in both clinical and research aspects. The mentioned questionnaire was designed in two types: (a) Content validity index (CVI), and (b) Content validity ratio (CVR). Their reliability was calculated at 90% by using the internal correlation coefficient (Cronbach's alpha).

After collecting the questionnaires, to answer the research questions Statistical Package for Social Sciences (SPSS) software was used as the statistical tool for analyzing the data of the study. In the statistical method to describe data, the frequency, the frequency percentage, the mean, the Spearman correlation coefficient, and the Friedman test were used to investigate the relationship between moral competency and safety culture.

Finally, factor analysis (attempts to identify underlying factors) was used to determine the most important dimension (or factors) of the patient safety culture by the exploratory method.

Results

The Demographic Status of Participants

The findings showed that the majority of the participants (working nurses) were female; the mean age of the participants was 34.28 and were employed in the emergency department (Table 1).

In this study, the mean and standard deviation of the employment duration at the hospital in which they have provided health services was for the working experience of the samples and this number was for the duration of employment in the service unit. Also, the mean and the standard deviation of the employee working hours per week were, and this number was for the duration of employment in the nursing care issue per year. The highest percentage of samples (60%) had MI at a moderate level, and the least percentage of samples (4%) had a low level of MI.

Based on the communalities index, "Staffing" (0.779), "Teamwork within units" (0.771), and "Feedback & communication about error" (0.737) with the highest loading, respectively, were recognized as the most important dimensions of the patient safety culture (Table 2).

Table 1. The demographic characteristics of participants (working nurses)

Variable	N (%)
Gender	
Male	19
Female	81
Age	
<34	26
34-38	43
>39	31
Ward	
Surgical	13
Internal medicine	23
Gynecology	10.5
Pediatrics	15.5
Emergency department	16
ICU	11.5
Nursing office	10.5

The Factor Analysis Results (The Main Dimensions)

Teamwork within Units

The correlation between "Teamwork within units" dimensions with all of the other moral dimensions was positive and significant correlation. Also, this correlation was meaningful with the total MI score and it had a medium positive relationship ($r=0.357$ and $P<0.0001$). "Supervisor/manager expectations and actions promoting patient safety" dimension had a significant and positive relationship with all the other MI. Also, this relationship had signified with the total MI score ($r=0.289$ and $P<0.0001$). "Organizational learning-continuous improvement" dimension correlated positively and significantly with all of the MI dimensions. Also, this correlation had signified with the total MI score and it had a medium positive relationship ($r=0.417$ and $P<0.0001$) (Table 3).

Management Support for Patient Safety

In relation to the "Management support for patient safety", this dimension had a positive and meaningful correlation

Table 2. The primary share of the different dimensions of the patient safety

Communalities	Initial	Extraction
Teamwork within units	1.000	0.77
Supervisor/manager expectations & actions promoting patient safety	1.000	0.31
Organizational learning—continuous improvement	1.000	0.70
Management support for patient safety	1.000	0.58
Overall Perceptions of patient safety	1.000	0.60
Feedback & communication about error	1.000	0.74
Communication openness	1.000	0.52
Frequency of events reported	1.000	0.67
Teamwork across units	1.000	0.61
Staffing	1.000	0.78
Handoffs & transitions	1.000	0.54
Nonpunitive response to errors	1.000	0.72
Extraction Method: Principal Component Analysis		

Table 3. The correlation between patient safety and moral intelligence dimensions

	Mean (SD)		Teamwork within units	Supervisor/manager expectations & actions promoting patient safety	Organizational learning—continuous improvement	Management support for patient safety	Overall perceptions of patient safety	Feedback & communication about error	Communication openness	Frequency of events reported	Teamwork across units	Staffing	Handoffs & transitions	Non-punitive response to errors
			12.00(3.29)	12.16(2.78)	9.32(2.54)	8.60(2.16)	11.79(1.98)	8.53(2.89)	8.54(1.71)	7.58(2.96)	12.39(1.85)	11.33(2.82)	13.52(3.31)	9.35(2.54)
Acting consistently with principles, values, and beliefs	14.89(2.44)	*r*	0.352*	0.291*	0.369*	0.188*	0.247*	0.320*	0.178	0.303*	0.131	0.269*	-0.116	0.306
		P	0.000[α]	0.000[α]	0.000[α]	0.008[α]	0.000[α]	0.000[α]	0.012[α]	0.000[α]	0.064	0.000[α]	0.103	0.000
Telling the truth	14.63(2.28)	*r*	0.314*	0.275*	0.395*	0.115	0.227*	0.298*	0.143	0.333*	0.118	0.247*	-0.200*	0.380
		P	0.000[α]	0.000[α]	0.000[α]	0.106	0.001[α]	0.000[α]	0.043[α]	0.000[α]	0.097	0.000[α]	0.005[α]	0.000
Standing up for what is right	14.08(2.20)	*r*	0.250*	0.215*	0.314*	0.073	0.214*	0.204*	0.069	0.224	0.033	0.251*	-0.139*	0.268
		P	0.000[α]	0.002[α]	0.000[α]	0.303	0.002[α]	0.004[α]	0.328	0.001	0.643	0.000[α]	0.049[α]	0.000
Keeping promises	15.24(2.31)	*r*	0.375*	0.299*	0.371*	0.186*	0.190*	0.338*	0.230	0.302*	0.130	0.291*	-0.148*	0.306
		P	0.000[α]	0.000[α]	0.000[α]	0.009[α]	0.007[α]	0.000[α]	0.001	0.000[α]	0.067	0.000[α]	0.036[α]	0.000
Taking responsibility for personal choices	14.9(2.2)	*r*	0.228*	0.191*	0.343*	0.059	0.177*	0.256*	0.202	0.277*	0.044	0.237*	-0.202*	0.271
		P	0.001[α]	0.007[α]	0.000[α]	0.403	0.012[α]	0.000[α]	0.004	0.000[α]	0.533	0.001[α]	0.004[α]	0.000
Admitting mistakes and failures	15.493.09	*r*	0.359*	0.274*	0.396*	0.205*	0.256*	0.312*	0.208	0.344*	0.122	0.294*	-0.182*	0.330
		P	0.000[α]	0.000[α]	0.000[α]	0.004[α]	0.000[α]	0.000[α]	0.003	0.000[α]	0.084	0.000[α]	0.010[α]	0.000
Embracing responsibility for serving others	15.08(2.25)	*r*	0.297*	0.202*	0.355*	0.192*	0.254*	0.236*	0.170	0.310*	0.122	0.255*	-0.100	0.262
		P	0.000[α]	0.004[α]	0.000[α]	0.006[α]	0.000[α]	0.001[α]	0.016	0.000[α]	0.084	0.000[α]	0.158	0.000
Actively caring about others	15.17(2.32)	*r*	0.287*	0.231*	0.420*	0.187*	0.253*	0.301*	0.197	0.342*	0.086	0.190*	-0.007	0.191
		P	0.000[α]	0.001[α]	0.000[α]	0.008[α]	0.000[α]	0.000[α]	0.005	0.000[α]	0.224	0.007[α]	0.922	0.007
Ability to let go of one's own mistakes	15.15(2.25)	*r*	0.311*	0.242*	0.280*	0.067	0.187*	0.148*	0.049	0.151	0.023	0.233*	-0.077	0.313
		P	0.000[α]	0.001[α]	0.000[α]	0.343	0.008[α]	0.037[α]	0.487	0.033	0.744	0.001[α]	0.277	0.000
Ability to let go of others' mistakes	14.69(2.13)	*r*	0.216*	0.195*	0.257*	0.061	0.121*	0.066	0.045	0.182	-0.044	0.168*	-0.128	0.150
		P	0.002[α]	0.006[α]	0.000[α]	0.391	0.087[α]	0.356	0.523	0.010	0.533	0.018[α]	0.071	0.034

*Spearman's correlation coefficient, [α]$P<0.05$

with "Acting consistently with the principles, values, and beliefs ($P<0.008$ and $r=0.188$), Keeping promises ($r=0.18$ and $P<0.009$), Admitting mistakes and failures ($r=0.205$ and $P<0.004$), Embracing responsibility for serving others (r = 0.19 and $P<0.006$) and Actively caring about others ($r=0.186$ and $P<0.008$)" MI dimensions. Also, this correlation had signified with the total MI score and it had a positive relationship ($r=0.17$ and P < 0.01). In the study of "Overall perceptions of patient safety" dimension, it showed that this dimension correlated positively and significantly with all of the moral dimensions. Also, this relationship was a positive and significant relation with total MI score ($P<0.0001$ and $r=0.30$).

Feedback & Communication about Error

Concerning the "Feedback & communication about error" dimension, it had a positive and significant correlation with all of the moral dimensions, except the "Ability to let go of others' mistakes" ($r=0.06$ and $P<0.35$). Also, this correlation was significant with the total MI score and it had a medium positive relationship ($r=0.30$ and $P<0.0001$). There was a positive and meaningful correlation between the "Communication openness" dimension and all of the moral dimensions, except for "Standing up for what is right ($r=0.06$ and $P<0.32$), Ability to let one's own mistakes ($r=0.04$ and $P<0.48$) and Ability to let go of others' mistakes ($r=0.04$ and $P<0.52$)" dimensions. Also, this correlation was significant with the total MI score and it had a positive relationship ($r=0.17$ and $P<0.01$).

Frequency of Events Reported

In Spearman's study, the "Frequency of events reported" dimension had a positive and significant correlation with all of the moral dimensions. Also, this correlation was significant with the total MI score and it had a medium positive relationship ($r=0.338$ and $P<0.0001$). Also, "Teamwork across units" had no significant relationship with any of the moral dimensions and the total MI score.

Staffing

The "Staffing" dimension had a positive and significant correlation with all of the moral dimensions. Also, this correlation was significant with the total MI score and it had a positive relationship ($r=0.291$ and $P<0.0001$).

Handoffs and Transitions

Concerning the "Handoffs and transitions" dimension, there was a significant inverse relationship with "Telling the truth ($r=-0.200$ and $P<0.005$), Standing up for what is right ($r=-0.139$ and $P<0.049$), Keeping promises ($r=-0.148$ and $P<0.036$), Taking responsibility for personal choices ($r=-0.202$ and $P<0.004$) and Admitting mistakes and failures ($r=-0.182$ and $P<0.010$)" MI. Also, this correlation was not significant with the total MI score ($r=-0.130$, $P<0.066$). Also, the "Nonpunitive response to errors" dimension did not have a significant relationship with most of the moral dimensions and the total MI score.

Discussion

According to the results, the highest percentages of the samples had moderate MI. MI as a predictor of behavior can provide a good framework for the better functioning of human beings.[20] Researches show that nurses with higher MI can perceive patients better and do their activities more correctly.[21] In the previous research, the MI of most of the nurses was at an intermediate level, which indicates that their moral capabilities should be improved and they should be trained in essential steps on the base of their behavior.[21,22]

A recent study finds that the education program regarding ethical concepts can improve nursing students' attitudes about patient safety.[23] Also patient safety culture of nurses was significantly related to marital status, workplace, and overtime hours.[24]

Majorly, nurses' safety performance was relatively desirable in the fields of medical drugs spelling to avoid medication errors and performance of correct medical procedures but regarding hand hygiene, it was weak following the WHO standards.[25]

Research findings showed that for improving the level of patient safety culture which helped nurses for avoiding medical errors, the moral competencies and the total moral competency inventory score are significant.

The previously research has shown that the MI of most nurses was at the medium level, which should be considered to increase their moral abilities and capabilities, and in accordance with it, the necessary education are trained to them.[21] Given the critical role of MI in the quality of care and patient satisfaction, nursing authorities should establish in-service training for improving this factor.[26]

Also, MI as a supportive agent can improve nurses' psychological safety and reduce work-related harm.[27]

In analyzing the relationship between the moral competencies one by one dimension of the patient safety culture, the multiple analysis showed that "Keeping promises" is predictor of patient safety culture in the "Teamwork within units, Supervisor/manager expectations and actions promoting patient safety, Organizational learning-continuous improvement, Feedback and communication about error and Communication Openness" dimensions.

On the other hand, the necessity for secrecy is not an absolute issue, for example, conditions may occur in which a physician and nurse breach the secrecy oath. The essence of nursing clinical practice is to provide comfort and health to the patients.[12]

Also, "Actively caring about others" was another competency of MI that was considered as a predictor of patient safety culture in the "Management support for patient safety, overall perceptions of patient safety, Feedback and communication about the error, Frequency

of events reported, and Handoffs and transitions". So, increase the patient safety culture increases by increasing the MI of nurses in the mentioned domain. Researches show that nursing is a continuum activity professional that requires a sense of responsibility, accuracy, and alertness. Thus, any lack or insufficient service to patients, certainly, will affect the quality and quantity of the health services and patient safety.[28]

The domain of the ability to not insist on one's mistakes was another area of MI and was considered a predictor of patient safety culture in the field of management support for patient safety. So that increasing the level of MI of nurses in this area increases the patient's safety culture.[21]

The domain of the ability to forgive the mistakes of others was another area of MI that was considered a predictor of patient safety culture in the field of feedback and informing others about errors and the field of non-punitive response to errors and mistakes. So that increasing the level of MI in these areas increases the patient's safety culture.[29] Training in error prevention, group training, proper planning for treatment, and development of appropriate treatment methods for specific patients, is effective in reducing medical errors.[30]

Researches show that teaching prevention ways, educating teamwork, proper planning for treatment, proceeding, and developing appropriate therapies for specific patients are effective in reducing medical errors.[30] Findings confirm this point that the waiver of mistakes does not mean that an individual can justify or excuse his unacceptable behaviors, but it is necessary to consider it as important.[18]

Limitations of this study were the effect of participants' mental health status (nurses) on how to answer the questionnaire questions.

Conclusion

The present study showed that the majority of the patient safety culture dimensions have a positive and significant correlation with MI, so increasing MI can improve patient safety culture.

Acknowledgments

The authors would like to thank all administrators of nursing services and dear colleagues working in Iran (Guilan) hospitals for their sincere cooperation. We sincerely thank the Islamic Azad University of Rasht to fund the project.

Authors' Contribution

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Research Highlights

What is the current knowledge?

- The MI of most of nurses is at an average level.
- MI as a predictor of behavior can provide a good framework for the better functioning of human beings.

What is new here?

- Increasing MI can lead to increase patient safety culture in the nurses.
- Improving the level of patient safety culture which helped nurses for avoiding medical errors.

Competing Interests

The authors declare no conflict of interest.

Data Availability Statement

Based on the request data will be available.

Ethical Approval

To observe ethical considerations, the researcher explained the purpose of the study to the nurses. Participation in the study was voluntary and nurses' informed consent was obtained. In addition, this study ethics code was IR.IAU.RASHT.REC.1395.30.

Funding

The research was funded by Rasht Branch, Islamic Azad University.

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