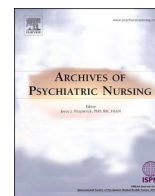




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The role of spiritual intelligence in predicting the empathy levels of nurses with COVID-19 patients

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ABSTRACT

Aim: Given the prolongation of the newly emerging COVID-19 pandemic and the significance of caring for the patients by nursing staff, investigating and planning for the different psychological dimensions of this group is of paramount importance. Hence, this study investigated the role of spiritual intelligence in predicting nurses' empathizing with COVID-19 patients.

Methods: This descriptive-correlation study was conducted in 2021 on nurses caring for COVID-19 patients in three public hospitals. The researchers used two standard questionnaires, including the Jefferson Scale of Empathy (JSE) and Spiritual Intelligence (SI), for data collection. The collected data were analyzed in SPSS16 using descriptive statistics and the following: The Mann-Whitney *U* test, Kruskal–Wallis test, Regression, chi-square test, and Pearson and Spearman correlations.

Results: The statistical population consisted of 338 nurses with an average age of 34 and ten years of work experience. There was a significant positive relationship between the empathy scores and spiritual intelligence scores of the nurses caring for COVID-19 patients ($P < 0.05$). It was also concluded from the regression analysis that, spiritual intelligence affect empathy. Mean score of empathy was higher in hospitals where more nursing staff had MSc degrees. There was a significant difference between the empathy scores of the three hospitals ($P < 0.05$).

Conclusion: The results indicated that there is a positive relationship between empathy and spiritual intelligence. Therefore improving spiritual intelligence is the appropriate strategy to ameliorate empathy during the COVID19 pandemic. At the same time, study indicated attention to the issue of nurses' mental health. Hence, it was suggested to incorporate these issues in the training programs and national/international decisions.

Introduction

In December 2019, a new variant of coronavirus led to novel coronavirus disease (COVID-19) in Wuhan, China, affecting many

communities and systems. Health systems, composed of the nursing staff, have been some most critical systems affected thus far. The nursing personnel are engaged at the front line in the battle against COVID-19 and caring for patients (Raofi et al., 2020). Uncertain conditions due

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to COVID-19 have essentially highlighted the attention to nurses' mental health issues and the factors that affect or are affected by them as well (Al Thobaity & Alshammari, 2020).

Also, the nature of nursing requires that the staff must be had particular abilities and skills as well as intelligence traits to can keep the balance between their work and the associated stresses with it and personal life (Natividad, Aljohani, Roque, & Gamboa, 2021). These traits effected on effective and high-quality caring relationships. Spiritual intelligence is one of form of intelligence that it is essential for preparing nurses to confront stressful problems and conditions.

Spiritual intelligence

Spiritual intelligence refers to a set of activities that generate self-awareness and a deep insight into life besides ensuring compassion and flexibility in behavior, giving life quality of purposefulness in a way that draws the goals beyond the material world. This process allows the individual to properly adapt to the environment to satisfy others. Implementing spirituality in the workplace and social organizations improves efficiency and productivity (Khodabakhshi Koolae, Chaeichi Tehrani, & Sanagoo, 2019). The definition of spiritual intelligence suggests that it can refer to cognitive-motivational actions that introduce sets of adaptive skills and resources that facilitate problem-solving and accomplishment of goals. Given the impact of spiritual intelligence on the individual, it can direct the behavior toward success (Bahmei, Moghimi zare, Bahrami, & Asadi, 2018).

Today, research on spirituality is progressing in various disciplines, such as medicine, psychology, anthropology, neurology, and cognitive sciences (Bayrami, Movahedi, & Movahedi, 2014), suggesting a significant positive correlation between spiritual intelligence components and quality of life among nurses (Barghandan & Khalatbari, 2017). Also, relevant research has indicated a significant positive, linear correlation between spiritual intelligence and quality of care ($r = 0.231$) (Miri, Keshavarz, Shirdelzadeh, & Parsa, 2015).

Empathy

Empathy is another key component influencing the therapeutic relationships (Wilkinson, Whittington, Perry, & Eames, 2017; Wu, 2021) that apparently has proved to have gained a more notable prominence in COVID-19 pandemic (Sharma, Pohekar, & Ankar, 2020; Stevens et al., 2020). Empathy is the founding rock of the nurse-patient relationship and is considered as the core competency for medical personnel; it also is a necessity for desired outcomes in patient care. Empathy is a multidimensional and complex concept that consists of emotional and cognitive aspects. Emotional empathy refers to experiencing the feelings of others, while cognitive empathy is the ability to comprehend the experiences and feelings of others and re-convey them (Kerasidou, Baroe, Berger, & Brown, 2020) (Matsuhisa et al., 2021). Empathizing with patients by medical staff can be lead to many beneficial results. It can lead to patient satisfaction, improving the precision of medical diagnosis, reducing patient anxiety and stress, improving the quality of life of the patient (s) and better treatment results (Eltaher, Rashid, Mahdy, & Lotfy, 2020; Kerasidou et al., 2020; Lyness et al., 2021; Moudatsou, Stavropoulou, Philalithis, & Koukouli, 2020).

Many studies have discussed the effective performance of empathy. For instance, Eltaher et al. (2020) concluded that empathy affects diabetic patients' adherence to treatment. Reynolds, Scott, and Jessiman (1999) reported the positive relationship between empathy and patient responses in terms of alleviation of pain, regulating the number of breaths and pulse, and reducing patient stress and anxiety.

Literature review about association between empathy and emotional intelligence

A literature review showed that the association between empathy

and spiritual intelligence has been studied in different ways. In other words, authors identified two categories of studies.

The first categories were studies that examined the association between spiritual intelligence and emotional intelligence. In these studies, the role of empathy as one of the important factors of emotional intelligence was considered. Also, Studies showed a correlation between emotional intelligence and empathy (Hajibabae, Farahani, Ameri, Salehi, & Hosseini, 2018). According these studies, empathy is one of emotional intelligence abilities identified as key components in spiritual well-being (Beauvais, Stewart, & DeNisco, 2014).

The second categories were studies that investigated the association between spiritual intelligence and empathy. For example, King, Mara, and DeCicco (2012) investigate associations between spiritual intelligence with empathy based theorists and studies. Their study indicated no significant association with either spiritual intelligence or any of its components. Barkhordari and Nadian (2020) also indicate there was no association between spiritual intelligence with empathy and caring behavior of nurses.

But, some of the theorists proposed empathy as a spiritual ability set and an integral part of spiritual intelligence (King et al., 2012). Siswanti et al. discussed that high spiritual intelligence can strengthen harmony and empathy with the others based on their needs and circumstances (Siswanti, Khairuddin, & Halim, 2018).

Literature reviews indicated that there was doubt about association between empathy and spiritual intelligence. Studies suggested that it is needed additional research to explore a potential relationship between them (King et al., 2012). Our study expanded upon their findings and filled a gap of exploring spiritual intelligence as a predictor of empathy.

Purpose of study

According to literature review that conducted by authors of the current study, no studies reported association between empathy and spiritual intelligence in nurse who were caring for COVID-19 patients. Therefore, exploring the relationship between spiritual intelligence and empathy in caring for patients, especially COVID-19 patients, can enhance treatment processes and the quality of health care. Furthermore, given the current knowledge on the issue and insufficiency of research on this relationship, more research seems necessary. Accordingly, this study intended to explore the role of spiritual intelligence in predicting nurses' empathy with COVID-19 patients.

Materials and methods

Study context and sampling

This descriptive correlation study was conducted at Mazandaran University of Medical Sciences, Sari, Iran in 2021. The statistical population consisted of the nurses working in public hospitals affiliated to the university mentioned. The study samples consisted of the nurses working at the following hospitals: Hazrat Fatemeh Zahra Hospital in Sari, Imam Khomeini Sari, and Razi in Ghaemshahr, Iran. The inclusion criteria encompassed the nurses "strictly" active in caring for COVID-19 patients. The exclusion criteria involved nurses in outpatient clinics, accident & emergency (A&E) departments, and their reluctance to participate in the study. Researchers were prepared the list of COVID-19 wards and nurses "strictly" active in caring for COVID-19 patients for each hospital (N: 543). Then, participants were selected using the Cochran formula and simple random sampling method based on a lottery. The serial number of each participant on the list was his/her number to participate in the lottery. Due to the working conditions caused by Covid-19 and the possibility of high sample loss, 340 people were invited to participate in the study, 338 returned a completed representing, a response rate of 99.41%.

Instruments

For data collection, the researchers used two standard questionnaires with confirmed validity and reliability. Demographic variables included sex, Age, Years of work experience, Marriage status, Education and Employment status. The Jefferson Scale of Empathy (JSE) questionnaire comprises 20 items answered on a 7-point Likert-type scale (1 = Strongly Disagree, 7 = Strongly Agree). The English version of this questionnaire was sent to Iran by Dr. Mohammad Reza Hojjat, the designer of the questionnaire. The questionnaire was translated into Persian by Pro. Reza Shahpurian, compared against the original text and verified by the questionnaire designer.

The reported reliability score of this questionnaire in the study by Shariati was a Cronbach's alpha of 0.88 and a reliability coefficient of 0.94 (Shariat & Kaykhavoni, 2010). King's Spiritual Intelligence Questionnaire, developed by King in 2008 to measure spiritual intelligence, has twenty-four items and four subscales, including critical existential thinking, personal meaning production, transcendental awareness, and conscious state expansion. Higher scores indicate higher spiritual intelligence. Each item is scored on a 4-point Likert-type scale. The final score ranges from 0 and 96. Hossein Charry et al.'s estimated reliability in this paper was 0.88 based on Cronbach's alpha coefficient (Hosseinjari & Zakeri, 2010; Khodabakhshi Koolae et al., 2019).

Following the proposal confirmation by the ethics committee at Mazandaran University of Medical Sciences (ethics code: IR.MAZUMS.REC.1399.7775) and gaining the necessary permissions from the educational and therapeutic centers, the necessary information regarding the nurses who were caring for COVID-19 patients was collected. The questionnaires were administered to the nurses following the COVID-19 health protocols using email. The data of the answered questionnaires were entered into SPSS16. The data were analyzed using descriptive statistics (mean and standard deviation) and analytical statistics, including the Mann-Whitney test, Kruskal-Wallis, chi-square test, Pearson and Spearman correlation.

Results

The participants included 338 nurses caring for COVID-19 patients at three hospitals, including Fatemeh Zahra Hospital: 86, Razi: 144, and Imam Khomeini: 108. Most participants were female (277), married (255), had a bachelor's degree (318), and were fully contracted (113). The average age of participants was 34 years, with an average work experience of 10 years. Tables 1 and 2 illustrate the demographic information of the participants (Tables 1, 2).

The K-S test results indicated that the normal distribution of data was not normal ($p < 0.05$). Therefore, nonparametric tests were used for data analysis. As presented in Table 3, the nurses caring for COVID-19 patients displayed a median empathy score of 92 and a median spiritual intelligence score of 64.50 (Table 3).

The Pearson correlation coefficient analysis results indicated a significant positive relationship between empathy and spiritual intelligence ($P < 0.05$). In contrast, no statistically significant relationship between work experience and empathy and spiritual intelligence was reported ($P > 0.05$). The chi-square test results indicated no significant relationship between gender and empathy, gender and spiritual intelligence, marital status and empathy, marital status and spiritual intelligence, employment status and empathy, employment status, and

Table 1

Average age and years of service of nurses caring for Covid-19 patients in each hospital.

Characteristics	Fatemeh Zahra	Razi	Imam Khomeini
	Mean ± SD	Mean ± SD	Mean ± SD
Age	33.88 ± 7.16	32.26 ± 7.08	37.09 ± 8.19
Years of work experience	9.47 ± 6.67	7.90 ± 6.31	12.11 ± 7.10

Table 2

Demographic characteristics of nurses caring for Covid-19 patients in each hospitals.

Characteristics		Fatemeh Zahra	Razi	Imam Khomeini
Sex	Female	74	130	73
	Male	12	14	35
Marriage status	Married	68	112	75
	Single	18	32	33
Education	B.Sc	77	142	99
	M.Sc	9	2	9
Employment status	Full time	35	30	48
	Fixed-term	11	20	9
	Contractual	7	35	30
	Company-based	22	25	18
	Project-based	11	34	3
Total		86	144	108

Table 3

Mean score of empathy and spiritual intelligence of nurses caring for Covid-19 patients in each hospitals.

Variable	Fatemeh Zahra	Razi	Imam Khomeini
Empathy	95	94	88.50
Spiritual intelligence	65.50	65.50	64

spiritual intelligence ($P > 0.05$).

Furthermore, the results of Spearman correlation coefficient analysis indicated a significant positive relationship between education level and empathy ($P < 0.05$). The Mann-Whitney test results showed that the difference was significant, and the staff with an MSc degree had a higher empathy score than those with a BSc degree. The Kruskal-Wallis test results did not indicate any significant difference between the spiritual intelligence score of the three hospitals ($P > 0.05$). In contrast, the three hospitals significantly differed in terms of the empathy score ($P < 0.05$). Also, as shown in Table 4, the mean rank analysis indicated that the Fatemeh Zahra Hospital had the highest empathy score and the Imam Khomeini Hospital had the lowest empathy score (Table 4).

Analysis of variance confirmed the validity of regression analysis in empathy prediction ($F = 62.352$) at a significant level (0.001). Table 5 shows the regression coefficient of spiritual intelligence and its effect on the regression equation. B and β represent non-standard and standard regression coefficients, respectively, and they show how much the empathy variable will change by changing a unit in the spiritual intelligence variable ($Y = 64.641 + 0.470 X$). Thus, by keeping other conditions constant, a unit increase in the score of spiritual intelligence increases empathy by a factor of 0.396.

Discussion

This study aimed to investigate the role of spiritual intelligence in

Table 4

Kruskal-Wallis test results on spiritual intelligence and empathy in the hospitals.

Variables	Hospital	Number	Mean Rank	df	K-W test	Sig
Empathy	Fatemeh Zahra	86	195.78	2	11.328	0.003
	Razi	144	169.73			
	Imam Khomeini	108	148.27			
Spiritual intelligence	Fatemeh Zahra	86	162.97	2	0.748	0.688
	Razi	144	169.16			
	Imam Khomeini	108	175.15			

Table 5
Results of simple linear regression of empathy prediction by spiritual intelligence.

Predictor variable	B	SE	β	T	P
Constant	64.461	3.814	–	16.900	0.001
Spiritual intelligence	0.470	0.59	0.396	7.896	0.001
Attention:	R = 0.396	R ² = 0.157	ADJ.R ² = 0.154		

predicting the nurses' empathy with COVID-19 patients. Data analysis indicated that mean score of empathy was high. While, the empathy score had a significant positive relationship with the spiritual intelligence score, it was also concluded from the regression analysis that, spiritual intelligence effect on empathy. Results indicated a positive relationship between education level and empathy. Also, there was significant difference in the empathy scores of the three hospitals. The following discussion is based on these findings.

Relationship between empathy and spiritual intelligence

A review of published studies in non-COVID19 conditions demonstrated that current findings are consistent or contrary with some of studies. As an example, [Mahmoodi, khani, and Ghaffari \(2017\)](#) reported a significant direct effect of empathy, spiritual intelligence, and social responsibility on the attitude of the nursing staff toward maintaining patient rights. Furthermore, they stated that improving empathy, spiritual intelligence, and social responsibility of nurses can improve the attitudes of the nursing staff toward respecting patient rights. These findings are consistent with current study. However, [Barkhordari and Nadian \(2020\)](#) study indicated that there wasn't relationship between spiritual intelligence, empathy and caring behavior of nurse that is contrary to the findings of current study.

In Addition, empathy and spiritual intelligence are important variables to provide quality care. It has been investigated their relationship with other variables in some of studies. For example, a study ([Sunaryo, Nirwanto, and Manan, 2017](#)) in Indonesia demonstrated that spiritual intelligence had negative effect on occupational burnout and positive effect on caring behavior. According to their study, spiritual intelligence outperformed emotional intelligence in predicting occupational burnout and caring behavior. Also, [Kaur, Sambasivan, and Kumar \(2013\)](#) stated that spiritual intelligence affects emotional intelligence and psychological ownership.

Relationship between education level and empathy

Current study indicated a positive relationship between education level and empathy. The staff with MSc degree had higher empathy scores than those with a BSc degree. [Kesbakhi, Rohani, Mohtashami, and Nasiri \(2017\)](#) identified a significant positive relationship between nurses' education level. Similarly, [Shahab, Rejeh, Nasiri, and Rad \(2014\)](#) also referred to a significant relationship between empathy score and education level. [Håkansson Eklund et al. \(2019\)](#) indicated that the empathy score of nursing students in the sixth semester was higher than those in the 2nd semester and MSc students. However, this finding is contrary to the [Kim \(2018\)](#) study, who did not report any association between empathy and educational level. According to current findings, it can be interpreted that mean score of empathy was higher in hospitals where more nursing staff had MSc degrees.

However, Literature review showed that there is also a relationship between education level and spiritual intelligence. For example, [Turi, Rani, Abidin, Mahmud, and Al Adresi \(2020\)](#) study indicated that PhD degree holders had more spiritual intelligence than MSc and BS degree holders. Therefore, we should be cautious to this association. Further exploration is required that related to the complexity and vagueness

relationship between educational level with spiritual intelligence and empathy.

Differences in the empathy scores of the three hospitals

This study showed that there was a significant difference between score of empathy in three hospitals. It can be attributed to the number of COVID19 patients, the specialized admission of COVID19 patients, and the duration of engaging with these patients in the hospital. Razi hospital is an infectious center where is considered as the main referral center for Covid-19 patients in the province. *Imam Khomeini Hospital* is the largest public hospital in the province, which has the largest capacity of admission of Covid-19 patients. It is considered as the second hospital for admitting Covid-19 patients. *Fatemeh Zahra Hospital* is a specialized heart center. It is often considered for admitting Covid-19 patients at the peak of COVID-19 when it is necessary to be active all hospitals. Therefore, these hospitals were different in terms of the number of patients, the specialized admission of COVID19 patients, and the duration of engaging with COVID-19.

With the highlighting of these three factors in each hospital, its empathy score was also affected, which it can interpreted the fatigue and mental health issues of the nursing staff associated with the COVID-19 patients. Literature review showed clinical nurses who work directly with COVID-19 patients, is particularly vulnerable in terms of mental and psychological ([Usher, Jackson, Durkin, Gyamfi, & Bhullar, 2020](#)). This can be caused by various issues or factors such as fear of becoming infected and infecting others with Covid-19 ([Mo et al., 2020](#)), constant changes in COVID-19 protocols, increased patient workloads([Goh et al., 2021](#); [Leng et al., 2021](#)). [Labrague \(2021\)](#) study indicated that Philippine nurses experienced moderate fatigue related to the COVID-19 pandemic. He suggested resilience-promoting interventions may be necessary to effectively support frontline clinical nurses' mental health.

[Vévodová, Vévoda, Vetešňková, Kisvetrová, and Chrastina \(2016\)](#) also demonstrated a relationship between occupational burnout syndrome and empathy, reporting a weak positive and significant correlation between empathy and emotional exhaustion in general ward nurses working in emergency departments.

Hence, paying attention to that issue is of paramount importance, especially under the COVID-19 pandemic and the urgent need for these two variables, both for the medical personnel, patients, and their companions.

Limitation

This study was conducted at one university and country. Another limitation of the research was study population that focused only on nurses "strictly" active in caring for COVID-19 patients. These limitations could be addressed as the future research guidance in this area. Therefore, it is suggested to compare several countries. It is also recommended to compare different nursing groups (such as emergency nurses, nurses of the internal care ward, nurses of the infectious ward, nurses of the ICU ward, etc.).

Conclusion

With reviewing the findings of this study (in COVID-19 pandemic) and similar studies findings (pre-COVID-19 pandemic) allows for concluding that there is a positive relationship between empathy and spiritual intelligence. Improving spiritual intelligence can improve nurses' empathy levels as expected. Hence, it is suggested to incorporate this perspective into the continuing and vocational nursing training programs. In addition, due to the difference in the level of empathy of nurses based on hospitals, it can be inferred that there is a need to pay attention to issues related to mental health of nurses in pandemics and emerging diseases and should be taken national and international planning and decisions in this regard.

Ethics approval and consent to participate

This research is approved by Mazandaran university of Medical Sciences Research Deputy (design code: 7775; ethics code: IR.MAZUMS.REC.1399.7775). All participants were above 22 years of age. After orally coordinating with the participants and sending the information sheet to them, written informed consent was provided by all participants. All methods were performed in accordance with the relevant guidelines in accordance with the Declaration of Helsinki.

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Ethics approval and consent to participate

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Authorship contribution statement

Study design: PK, AZ, MY, AF, MS.
Data collection: MS, FN, NN, AF, M Gh, MF.
Data analysis: AZ, HM, MY.
Study supervision: PK, AZ
Manuscript writing: AZ, PK, HM.
Final approval of the version: All authors.

Declaration of competing interest

No.

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