Changes in the level of nursing students’ empathy during four years education

Maryam Sedaghati Kesbakhi
Islamic Azad University, Tonekabon

Camelia Rohani (cameliarohani@yahoo.com)
Shahid Beheshti University of Medical Sciences

Research article

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Abstract

Background: A review of previous studies on nursing students’ empathy showed contradictory results with reducing or increasing empathy in nursing students and other students in the healthcare field during academic years of education at the university.

Methods: The descriptive study with comparative design was conducted to determine the level of empathy and its changes in 122 undergraduate nursing students from the first to the fourth year of study. The data were collected using Jefferson Scale of Physician Empathy Nursing Student Version-R (JSE-NS version R). Data were analyzed with descriptive and analytical tests by SPSS version 20.

Results: Results showed that the mean score of empathy in all nursing students was 91.8 ± 28.7 (range: 20-140). Changes of empathy across the academic education years indicated that it was significantly declined in the fourth year of education, compared to the first year (p<0.001). The mean score of empathy in more than 76% of nursing students in the fourth academic education year was set at less than 50th percentile. Conclusions: Based on this significant reduction, it is recommended that the reasons are explored by qualitative studies. Also, empathy is introduced to the nursing students, as one of the standards of clinical competency using strategies, such as education for empathic communication with the patient in training programs, and in the core courses of the nursing profession.

Introduction

The communication style and communication with health care providers, including nursing students, is an important topic that affects the patient and family hope (1). An important aspect of nursing care is communication with patients, the main tasks of nurses and nursing students are not only information about illness and treatment, but also the establishment of an effective therapeutic relationship by examining patients' concerns, understanding, empathy, and providing comfort and support (2). Empathy is one of the communication skills. This skill is used to control, sharpen, support, understand, rebuild, and reflect the perception of the patient's thoughts and feelings. This skill is created through long-term trust and communication (3). Empathy communication skills development for nursing students is necessary because these skills directly contribute to patient satisfaction and promotion of health outcomes (4). Empathy Theory has a very long history and goes back to the late nineteenth century. Latin word the empathy has been adapted of the German word Enifuhlung, to means the perception of beauty and Greek word Empatheia, which means understanding the factors beyond itself (5). Empathy makes
aware of the feelings of others and anticipates it and is the key to the growth and preservation of human relationships (6). Empathy is an important ability to fit the person with the feelings and thoughts of others, link him to the social world, help others, and prevent harm to others. It also recognizes empathy as a stimulant for social behaviors that leads to team cohesion (7). Researches on empathy during the past thirty years have created serious discussions about the domination of emotional or cognitive mechanisms in this structure (8). Cognitive empathy means sensation and awareness of the emotions and feelings of others, while the purpose of emotional empathy is to properly perceive the thoughts and feelings of others, to show a suitable response to them, and a kind of emotional bond with emotions and emotional experiences of others (9).

A review of previous studies shows contradictory results in reducing or increasing empathy in nursing students (10, 11) and other students in the healthcare field during academic years of education (12, 13). Nevertheless, most of them indicate a decline in empathy with the increase in academic years of education (10, 12, 13). Since the authors have found only one study in the country (14) after an extensive search at internal and external databases), they decided to design a new study in this area.

There is currently a worrying extreme growth in the focus of nursing programs on evidence-based practice and the development of nursing student's technological skills to prepare them for healthcare environments (15). At present, nursing students in Iran are trained by nursing educators through theoretical courses in the field of effective communication with patients (16). Regarding the important role of nursing students to learn and to do empathic communication with patients, the authors aimed to determine the level of empathy and its changes in a sample of undergraduate nursing students from the first year to the fourth year of education in one of the Medical Sciences Universities at north of X.

**Methods**

This descriptive study with comparative design was carried out on 122 undergraduate nursing students in different academic years at a medical university located in north of X.
The empathy levels of nursing students were compared with each other during the four years of academic education at the university. This research is part of the larger Project License for the implementation of the project was received from the Research Ethics Committee of the X University with the code of SBMUZ.REC.1394.55. Before conducting the study, all necessary permissions were obtained. The number of all attending undergraduate nursing students at the university from the first to the fourth year of academic education, was 176. The study sample was evenly drawn from each academic education year from the first to the fourth by simple random sampling method. Using the sampling formula with 95% confidence level and the relative error estimation of 1, the number of samples for our study was determined (n=122). According to the experiments of the first author and dropout rate, 10% of the additional samples were estimated and the number of samples increased (n=134).

\[
n \geq \frac{z_{1-\alpha/2} \times \sigma^2}{d^2}
\]

\[1-\alpha = 0.95 \rightarrow z_{1-\alpha/2} = z_{0.975} = 1.96\]

\[\text{deviat} = 1\]

To collect data, after explanation of the objectives of the study and getting a written consent form, all questionnaires were distributed among 134 nursing students, but 12 questionnaires were removed due to incompleteness, and only 122 completed questionnaires were used for data analysis.

**Measurements**

**Demographic Information Sheet**
Students' demographic information sheet, including age, gender, marital status and students' work experience, were filled out by all students before answering the Jefferson empathy Scale.

Jefferson Scale of Empathy Nursing Student Version-R (JSE-NS version R)

Jefferson Scale of Empathy Nursing Student Version-R (JSE-NS version R) is based on the Jefferson Physician Empathy Scale and consists of 20 Items with 7-point Likert scale. Each item is assigned a score of between 1 (strongly disagree) to 7 (strongly agree). The version of the Physicians' empathy has three sub-scales; “perspective taking” with 10 items, “compassionate care” with 8 items and “standing in patient’s shoes” with 2 items. In this scale, 10 Items are scored in reverse order with numbers 1, 3, 6, 7, 8, 11, 12, 14, 18 and 19. Persian version of the JSE-NS version R have been studied in terms of validity and reliability in a previous study and the results have shown that this is a valid and reliable scale in Persian language (17). However, in the psychometrics study of the Persian version of the scale, four factors were identified, i.e., “perspective taking”, “compassionate care”, “standing in patient’s shoes”, and "metacognitive" (17). Although from the English version of the scale was extracted three-factor, “perspective taking”, “compassionate care”, “and standing in patient’s shoes”. Therefore, the present study is based on the overall score of the empathy scale. The total score of the scale is in the range of 20-140. Higher scores show more empathy with the patient. The reliability of the original version of the scale has been confirmed by the internal consistency of the scale and calculating the Cronbach's alpha coefficient of 0.77 in a sample of American nursing students (18). In the present study, the reliability of the JSE-NS version R in 122 nursing students was calculated using Cronbach's alpha coefficient of 0.93.

Data analysis
The normal distribution of the main variable of the study (level of empathy) was determined by Kolmogorov-Smirnov test. The result showed that the distribution of this variable was normal (P>0.05). Data analysis was done using SPSS version 21. Descriptive statistics and independent t-test, Analysis of Variance (ANOVA) and Tukey Post Hoc test were used for data analysis.

**Results**

Generally, the mean age of nursing students in all academic years was 21.6 ± 2.5 years. The majority of them were female (89.3%) and single (85.2%) (Table1). None of the students mentioned student work experience.

**Table 1 Place**

The mean scores of nursing students’ empathy by the JSE-NS version R across different academic years and in all academic years has been reported in Table 2. The mean score of empathy in the first year students was more than the rest of the academic years (112.9 ± 10.10). While the fourth year students' empathy score was lower than the other academic years (45.5 ± 1.8) (Table2).

**Table 2 Place**

Also, the classification of students' empathy scores on percentiles showed that the empathy score in 76.7% of nursing students was in the less than 50 percentile across the fourth year of education. Only 32.3% of the first year students, 27.6% of the second year students and 25% of the third year students were between percentiles of 50 and 75, respectively. While the empathy score of the fourth year students was not in this range.

**Table 3 Place**

Independent t-test results showed that the empathy of students aged 20 years and older, single and female, is higher than that of students under the age of 20 years, male and married. The results of ANOVA showed that students' empathy was higher in the first year of education than in other years. The Tukey Post Hoc test showed that the empathy of the
second year students was less than the first year, and the students' empathy in the fourth year of education was lower than the first, second and third years (Table 4).

**Discussion**

The aim of this study was to determine the level of empathy and its changes in undergraduate nursing students across different academic education years. The overall results showed that the average reported empathy by nursing students in all the years of education was 91.8 ± 28.7 (range: 20-140). The changes in empathy level showed that nursing students reported the highest level of empathy with patients during the first year of education. While in the fourth year of education, the level of empathy was less than the percentile 50, in more than 76 percent of students. The average empathy of nursing students in our study was different from other studies with similar scales. The research results with nursing students in US showed that their average empathy was 114 ± 11.5 (18). In a similar study with the purpose of psychometric analysis of the JSE-NS version R in 598 American nursing students, their average empathy was 114.5 ± 10.9 (19). In addition, the mean level of midwifery students' empathy was reported 107.3 ± 13.7 at a university in Australia (20). While the average empathy of nursing students in Greece was reported 88.6 ± 8.9 (21). Also in another study, the mean level of empathy among medical students was reported 100.5±14.8. (22). Perhaps the difference between average empathy of nursing students in the current research with reported studies, can be related to reasons like the different social context and cultural backgrounds in students, students' clinical experience, students experiences across different years of education, accessing to good role models in the clinical settings, having tutors with higher levels of emotional perception, as well as receiving inherent or acquired empathy in the family. The results of this study showed that with increasing students' academic year, their empathy declined. These results were in line with a study which was longitudinally conducted from the first to the fourth year of education at the University of Thomas Jefferson. The results of the study showed that with the passage of time and more interaction of nursing students with patients, their empathy decreased. The authors reported that the reason can be related to continuous communication of students with patients at a clinical environment, having more autonomy
and less supervision by clinical faculties in the second and third years of education, compared to the first year (10). In another study in UK, it was found that the empathy of third year nursing students was lower than the first year (23). Also, contradictory results were found in earlier studies. In a study which was conducted at Medical University of Guilan-Iran with nursing students, the results showed that there was no statistically significant difference between the level of empathy of first year students with fourth year (14). Nevertheless, nursing students in fourth academic year of education from the University of Ordu in Turkey reported empathy scores higher than the first year students (11).

Similarly, studies with medical students showed that the score of students’ empathy decreased during the third year of education (12, 22, 24, 25). The results of our research showed that empathy of the third year nursing students, is more than the second year students. However, the results of a study with pharmacology students in Malaysia revealed that third and fourth year students, reported lower empathy in comparison with the first and second year students (26). But, the empathy of third year students of pharmacology in the UK was significantly higher than that of the first year students (23). Two other studies in India and in the Us showed that with increasing academic education years, students’ empathy reduced (27, 28). In two other studies with medical students at Medical University of US and Shiraz-Iran, it was concluded that with increasing academic education year, the empathy of medical students decreased (12, 13).(29), discussed about the following factors which may reduce medical students’ empathy; lack of appropriate role models, negative attitudes toward clinical competencies, long-term presence in the clinical setting, threatening or risky educational environments, heavy educational responsibilities or clinical duties, and negative reactions of patients to students’ empathy. In Rosen et al. study (2006), these factors were raised; different aspects of stressful practices such as long hours of clinical work and sleep deprivation, dependence on technology for diagnosis, short-term hospitalization of the patients, and limited interactions between students and patients (30). But, the focus on the demographic characteristics of nursing students and their empathy scores in our study showed that the empathy of students aged 20 years and older, single
and female, is higher than that of students under the age of 20 years, male and married. Australian research results in undergraduate paramedic/nursing students indicated that students aged 30-36 years old and 31-35 years earned a higher score than their younger classmates (31). One of the reasons for higher empathy in older students can be linked with more experience in life, which in turn increases their empathy (18). Also, the acquisition of experiences such as love, loss, regret, entanglement, pain and loneliness leads to more attention to the effects of these experiences throughout the life on others (31). In a study conducted with another scale of empathy, “Empathic Tendency Scale”, to measure the empathy of nursing students, the authors concluded that the empathy of nursing students younger than 20 years was lower than those aged 21-30 years (11). While (32), found that increasing the age of Brazilian nurses had no effect on the level of their empathy.

A review of gender-focused empathy research has also shown that women are generally more empathetic than men (18, 22, 27, 33-35). Findings of a research in Chicago showed that the average empathy of female pharmacology students was significantly higher than that of male students (36). Another study showed that the empathy of Bangladeshi female medical students was higher than that of male students (37). Although, the number of male nursing students was not sufficient in the current study, the results are consistent with previous studies. It can be argued that female students, due to the inherent nature of the desire to care for individuals and interest in this area, are likely to be less influenced by the factors that lead to diminished empathy. Furthermore, the high level of empathy among female students may also be due to their better management of confronting with life stressors, compared to men (38). This gender difference in the empathy between men and women can also be due to sexual bio-evolutionary characteristics, interpersonal care styles, socialization, and gender role expectations (39). The results of a study show that women have a better understanding of emotional support that is important in developing interpersonal communication with the patient (12). In the present study, the empathy of single nursing students was higher than the married ones, but in a similar study with oncology nurses in Iran, the marital nurses' empathy was higher (40). However, in another study on oncology nurses in Turkey, marital status did not show a correlation with nurses'
empathy (41). It seems that the low number of married students in our study influenced on this result.

**Limitations**

Self-report questionnaires bring the risk of respondents providing invalid answers either by mis-remembering or by giving unsuitable responses. **Something like intrinsic empathy in nursing students is also important**, and can influence on the results. It is suggested that future research would be conducted with more samples in a longitudinal design.

**Implications**

According to the results of this research, necessity for teaching of clinical empathy in educational program of nursing students is obvious. Although some researchers believe that empathy is an intrinsic characteristic, research results have shown that empathy can be enhanced in the cognitive dimension through proper education (40, 42, 43). Considering the significant decline in the empathy of fourth year nursing students compared to the first year, in order to maintain and enhance the empathic communication of nursing students with patients, future studies should focus on the causes of this decline across the different years of nursing academic education. Thus, empathy with patients should be introduced as a standard skill of clinical competence to the nursing students through strategies, such as empathic communication training in nursing courses program. Literature shows other strategies during academic nursing education at the university can be useful, such as practice for creative writing in nursing, attention to the literature and art, the use of appropriate role models in clinical settings, supervision of students' clinical practice, and encouragement of nursing students to use skill of empathy in dealing with patients (44).

**Conclusions**

In a general conclusion, considering the significant decline in the level of empathy among nursing students, from the first to the fourth year of academic education years at the
university is very important. In the future research, it is recommended that the reasons for this reduction are explored over the different years of academic education years by longitudinal and qualitative study designs. But in general, in order to develop the level of empathy in nursing students, it is suggested to establish theoretical and practical courses at the university and in training programs at hospitals.

Abbreviations

JSE- NS version R: Jefferson Scale of Physician Empathy Nursing Student Version-R.

Declarations

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Authors' contributions

CR and MSK designed the study. The data were collected, analyzed, and interpreted by CR and MSK. Both authors contributed to drafting, revising and approved the final manuscript.

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Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Ethics approval and consent to participate
This study is part of a larger project. License for the implementation of the project was received from the Research Ethics Committee of the Shahid Behesht University of Medical Sciences with the code of SBMUZ.REC.1394.55. Also, verbal and written informed consent was obtained from all the nursing students prior to participate in the study. In addition, nursing students were assured from confidentiality of the data and voluntary participation in the study.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interest associated with this work.

Author details

1Department of Nursing, Faculty of Medical Science, Tonekabon Branch, Islamic Azad University, Tonekabon, Iran. 2Department of Community Health Nursing, School of Nursing and Midwifery, Shahid Behesht University of Medical Sciences, Tehran, Iran.

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Table 1. Demographic characteristics of nursing students according to education year (n=122)
| Variable          | Classification | Education year 1 n (%) | Education year 2 n (%) | Education year 3 n (%) | Education year 4 n (%) | Sum (%) |
|-------------------|----------------|------------------------|------------------------|------------------------|------------------------|---------|
| Age (year)        | <20            | 21(67.7)               | 4(13.8)                | 0(0)                   | 0(0)                   | 25(20.5) |
|                   | ≤20            | 10(32.3)               | 25(86.2)               | 32(100)                | 30(100)                | 97(79.5) |
| Gender            | Male           | 0(0)                   | 5(17.2)                | 8(25)                  | 0(0)                   | 13(10.7) |
|                   | Female         | 31(100)                | 24(82.8)               | 24(75)                 | 30(100)                | 109(89.3) |
| Marital Status    | Single         | 30(96.8)               | 27(93.1)               | 27(84.3)               | 20(66.7)               | 104(85.2) |
|                   | Married        | 1(3.2)                 | 2(6.9)                 | 5(15.7)                | 10(33.3)               | 18(14.8) |

Table 2. Mean and standard deviation (SD) of the Jefferson Scale of Empathy-Nursing Student Version R (JSE-NS version R) in nursing students according to education year (n=122)
| Education year | JSE-NS version R M±SD | Median | Minimum | Maximum |
|---------------|------------------------|--------|---------|---------|
| First         | 112.9±10.0             | 113    | 90      | 135     |
| Second        | 101.7±13.9             | 105    | 70      | 121     |
| Third         | 105.7±11.9             | 105    | 77      | 128     |
| Fourth        | 45.5±1.8               | 46     | 43      | 48      |
| All years     | 91.8±28.7              | 101.5  | 43      | 135     |

* The range of the scores for the JSE-NS version R is between 20-140

Table 3. Distribution of nursing students’ empathy score according to the Jefferson Scale of Empathy-Nursing Student Version R based on percentiles
| Empathy score on Percentiles | Education year 1 n (%) | Education year 2 n (%) | Education year 3 n (%) | Education year 4 n (%) |
|-----------------------------|------------------------|------------------------|------------------------|------------------------|
| <25                         | 7 (22.6)               | 6 (20.7)               | 8 (25.0)               | 8 (26.7)               |
| 25-50                       | 9 (29.0)               | 9 (31.0)               | 8 (25.0)               | 15 (50.0)              |
| 50-75                       | 10 (32.3)              | 8 (27.6)               | 8 (25.0)               | 0 (0)                  |
| >75                         | 5 (16.1)               | 6 (20.7)               | 8 (25.0)               | 7 (23.3)               |

Table 4. Classification of demographic characteristics according to empathy score by the Jefferson Scale of Empathy-Nursing Student Version R in nursing students (n=122)
| variable       | Classification | Number (%) | Empathy score M±SD | p value |
|----------------|----------------|------------|--------------------|---------|
| Age (year)*    | <20            | 25 (20.5)  | 81.6±30.9          | P<0.001 |
|                | ≤ 20           | 97 (79.5)  | 108.0±14.1         |         |
| Gender *       | Male           | 13(10.7)   | 90.6±29.9          | P<0.01  |
|                | Female         | 109(89.3)  | 102.1±12.6         |         |
| Education year**| 1              | 31(25.4)   | 112.9±10.0         | P<0.0001|
|                | 2              | 29(23.8)   | 101.7±13.9         |         |
|                | 3              | 32(26.2)   | 105.7±11.9         |         |
|                | 4              | 30(24.6)   | 45.5±1.8           |         |
| Marital Status | Single         | 104(85.2)  | 83.9±10.3          |         |
|                | married        | 18(14.8)   | 79.3±12.1          | P=0.499 |

*Independent t -test

**F test