

Design and Psychometrics of the Mentoring Questionnaire among Bachelor's Degree Students in Nursing

Abstract

Background: Regarding the importance of mentoring in nursing and lack of attention to this issue, as well as the lack of a suitable questionnaire to assess mentoring, this study was carried out to design and analyze psychometric properties of mentoring among bachelor's degree students in nursing. **Materials and Methods:** In a mixed method study, the validity and reliability of the Mentoring Questionnaire were measured after designing it. The study sample included all undergraduate nursing students of one of the nursing schools in Tehran, Iran. In the qualitative phase, item generation, face, and content validity were performed. In the quantitative phase, construct validity and reliability were performed. The Cronbach's alpha coefficient and Interclass Correlation Coefficient (ICC) test were exploited for data analysis and reliability assessment, respectively. **Results:** The number of items designed for the Mentoring questionnaire was twenty. Finally, the Mentoring Questionnaire was designed with 16 items. The Cronbach's alpha coefficient of the Mentoring Questionnaire was 0.96. In addition, the results of the ICC showed the high reliability of the Mentoring Questionnaire (ICC = 0.99). The indices derived from Exploratory Factor Analysis (EFA) revealed that the Mentoring Questionnaire had appropriate construct validity. **Conclusions:** Given the results of this study, as well as the importance of mentoring measurement among nursing students and the lack of access to a valid questionnaire, it can be concluded that the Mentoring Questionnaire is a useful tool for bachelor's degree nursing students.

Keywords: Mentoring, nursing, psychometrics, students

Introduction

Mentoring is a process in which a relationship is created between two individuals, one serving as a mentor and the other one as a mentee in their profession. In this process, the mentor is more experienced than the mentee. Mentorship is employed as a way to enhance active learning, create a suitable learning environment, prevent anxiety and confusion, increase self-esteem, and raise the level of interaction among students.^[1] Naturally, individuals tend to accumulate knowledge and experience in their minds. However, conveying knowledge and experience, if performed appropriately, can be valuable and contribute to professional and organizational growth. The advantages of mentoring include increased job satisfaction and preservation and enhancement of knowledge in the mentor and mentee.^[2] The term *mentor* has a Greek root and is referred to as a

supporter.^[3] Mentoring was proposed by Smith (2000) and Frei Burger (2002) and studied^[4,5] to solve the training problems of nursing students, especially at the bedside. In a study, Demir *et al.* showed that the use of a mentor for freshman nursing students was effective in reducing their stress and helping them adapt to the new environment and nursing profession.^[6] Yaghoubian *et al.* examined the effect of the implementation of the mentoring program on the stress factors of the clinical environment among nursing students. The results of this study indicated that the implementation of the mentoring program among nursing students in the second semester diminished the stress factors. Therefore, they recommended the use of mentoring programs in nursing education.^[7]

Today, mentoring is one of the most important aspects of educational experience and a major lifelong process for professional enhancement and psychological

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support.^[8] To be a role model is one of the important functions of nursing educators that takes place through suitable performance. The ability to create motivation, decision-making skills, role model, and mentoring are of the hallmarks of good leadership in teaching.^[9] Over time, the supportive relationship between the mentor and student has been reciprocal and the formation of mutual communication was possible. An effective mentor helps students modify the misconceptions in their minds, form questions in their minds, and provide facilities for working with the patient in a safe environment.^[10]

Several roles have been portrayed for mentors over time.^[11] The mentor's roles are divided into two categories of psychosocial and specialized functions. The psychosocial function of the mentors focuses on self-value and possessing supportive features including counseling, intimacy, acceptance, confirmation, and behavioral patterns. As a consultant, the mentor supports students and provides them with advice on patient care and develops their social contacts. Supporting/encouraging and socialization features are among the mentor's most important roles.^[10]

Currently, the implementation of mentoring is one of the most important aspects of the educational experience and a major lifelong process for professional advancement and psychological support.^[8] Despite all this, very little training has been conducted on mentoring and mentee management procedures. There is also no tool and questionnaire that can be used to explain the role of the mentor in nursing, and most mentoring programs are optional and not compulsory.^[12] In addition, in the searches performed, there was no useful questionnaire in Persian in this regard. Therefore, the research team conducted this study with the aim of validating and verifying the reliability of the Mentoring Questionnaire among undergraduate nursing students.

Materials and Methods

This investigation was a mixed method study that was done in two semesters of 2018. This study was carried out in two parts: quantitative and qualitative. In the qualitative phase, the item generation in the questionnaire was conducted in a deductive manner through reviewing texts and studies associated with mentoring (21 articles) and a description of the duties of the mentor advised by the Ministry of Health and Medical Education, and interviewing the faculty member of one of the nursing schools in Tehran, Iran. Then, the questions pool was created from questions related to the concept of mentoring.^[1-3,6-8,13-26] At the end of this phase, the initial questionnaire was prepared with 20 questions.

Usually, in designing a questionnaire, the face and content validity method is used for apparent adaptation and determining the content scope of the questionnaire.^[27] In the face validity method, experts in the desired fields

were asked to examine the statements and items of the instrument or questionnaire in terms of appearance, clarity, and transparency and declare their views.^[28-30] In this regard and to determine the face validity of the Mentoring Questionnaire, the primary questionnaire with 20 questions was given to 12 undergraduate students studying at one of the nursing schools in Tehran and they were asked to read the questions and give their opinion on whether the question was understandable for them in terms of appearance and clarity as well as transparency; 6 of the students were asked to send their comments on the questions via Telegram. Moreover, 6 of them inserted their comments in the questionnaire and delivered them to the researcher. This part was performed qualitatively.

In content validity, the Content Validity Ratio (CVR) and Content Validity Index (CVI) were used. In CVR, the necessity of the presence of an item was examined from experts; however, in the CVI, the proportionality, clarity, ambiguity, and relevance of the items about the study objectives were considered.^[27] In this study, the researcher asked 15 specialists to provide feedback on the questionnaire based on the criteria. Finally, from among the 20 questions of the questionnaire, 3 questions (questions 3, 4, and 18) were eliminated and a total of 16 questions remained in the questionnaire. Content validity was first examined qualitatively, and then, quantitatively.

Construct validity is a degree in which evidence regarding the instrument's scores confirms the inference that the structure correctly reflects.^[31,32] This validity addresses the extent to which a measuring instrument reflects the structures associated with a phenomenon.^[33] After the formation of the Mentoring Questionnaire in this study, the demographic information including the first and last name (optional), the name of the supervisor (optional), age, sex, marital status, history of clinical work and field of study were also added to the questionnaire. The Exploratory Factor Analysis (EFA) was exploited for the 16 items of the questionnaire; in addition, the Promax rotation was used to determine the structure of the factor of all items. The Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity were utilized for sampling adequacy.

The sample size at the factor analysis stage was 3-10 times the number of items of the questionnaire.^[34] Since the questionnaire included 17 items, 102 (6 times the number of the items of the questionnaire; $17 \times 6 = 102$) questionnaires were distributed among nursing students of a nursing school in Tehran to be completed. To obtain the reliability of the questionnaire, the Cronbach's alpha coefficient, which indicates the group proportionality of items of a structure, was exploited.^[35] Moreover, the Interclass Correlation Coefficient (ICC) test was employed to measure the reliability (external stability) of the Mentoring Questionnaire. To measure the reliability of the Mentoring Questionnaire, the questionnaire was delivered

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to 30 undergraduate nursing students (semester six) in one of the nursing schools in Tehran to be filled in.

Ethical considerations

All relevant studies were attempted to be included in the study. All of the students participating in this study received the written informed consent. The ethics code of research is IR.BMSU.REC.91001992 91001992.

Results

Out of the 20 items designed for the Mentoring Questionnaire, after reviewing the CVR and CVI, 3 items (3, 4, and 18) were rejected (number of respondents was 15 in each stage). Moreover, the students regarded questions 3 and 4 as unrelated to the duties of the supervisor and mentor, and incomprehensible. Finally, the Mentoring Questionnaire was designed with 16 items. In the construct validity, Table 1 indicates the results of the sampling adequacy test for factor analysis and the rejection of the null hypothesis of data sphericity based on Bartlett's test of sphericity ($p < 0.05$). Therefore, in general, EFA has presented a suitable model for the current data, demonstrating the sampling adequacy.

Among the students, 4 did not consider item 3 of the questionnaire ("Is a good model for me in terms of religion") as a duty of the mentor. In the case of item 4 of the questionnaire ("Is a good model for me in terms of accepting management roles"), 2 students considered this item to be ambiguous and 2 others suggested the replacement of the term "management" with "accountability". In other questions (items), the students did not have a particular opinion, indicating that other questions were clear and understandable.

The faculty member views about the 20 items were as follows: It is better to replace the term *always* with *often* in item number 13. It is better to change item 17 to: Informs me of the date of necessary and consultation meetings. In item number 18, the phrase "*in practice, we encounter difficulties*", should be eliminated. In place of the item "*Causes professional satisfaction in me*", it is better to write: "*Makes me interested in my field of study*".

The screen graph [Figure 1] depicts the difference between the two factors loaded and other items in terms of eigenvalues. The examination of internal consistency showed that two factors were adequate to explain the factor structure, the items of the Mentoring Questionnaire for bachelor's degree nursing students. The items of the Mentoring Questionnaire for bachelor's degree nursing students were divided into two guiding and emotional areas given the nature of the items, factor load, and consultation with the members of the research team [Table 2].

The emotional area included questions 1-4 and 12, and the guiding area included questions 5-11 and 14-17. Question 13 was also omitted due to the lack of obtaining

a suitable score in this test. In total, 16 questions remained in the final questionnaire. The total score of the Mentoring Questionnaire could vary from 0 to 64, with the scores of the emotional and guiding areas in the ranges of 0 to 20 and 0 to 44, respectively. The reliability test results revealed

Table 1: Sampling adequacy results for factor analysis

Sample adequacy test (KMO*)	0.86
Chi-square	974.79
Bartlett's sphericity test	Degree of freedom 136
	Significance level <0.001

*Kaiser-Meyer-Olkin

Table 2: Factors extracted from maximum likelihood using Promax rotation

Question number	Component	
	1	2
*Q7	0.90	
Q16	0.90	
Q15	0.79	
Q17	0.76	
Q9	0.72	
Q10	0.67	
Q8	0.65	
Q14	0.64	
Q11	0.56	
Q6	0.51	
Q5	0.51	
Q13		
Q2		0.97
Q1		0.90
Q3		0.85
Q4		0.67
Q12		0.50

*Q: LQuestion

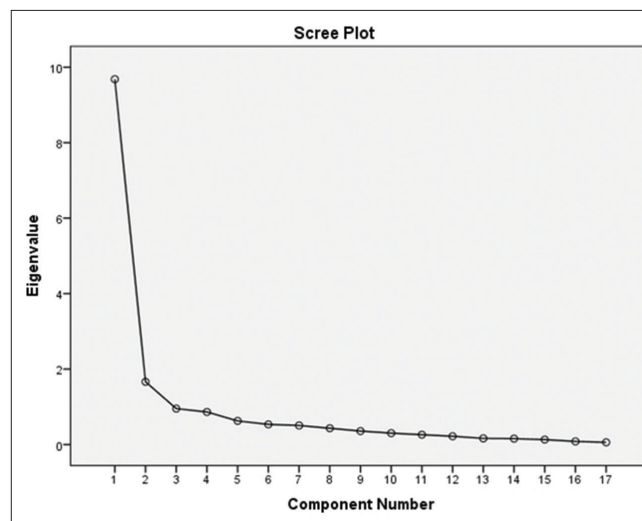


Figure 1: Scree plot of items of the Mentoring Questionnaire for bachelor's degree nursing students to determine the number of constructing factors of the questionnaire

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Table 3: The Cronbach's alpha coefficient of the questionnaire

Item Area	Number of items	α
Emotional	5	0.90
Guiding	11	0.95
Total	16	0.96

Table 4: Correlation level of scores of the Mentoring Questionnaire (Reliability)

Area	Item	Mean (SD)	ICC*	CI (0.95)	SEM**
Guiding	11	29.12 (10.03)	0.996	0.97-0.99	1.58
Emotional	5	15.30 (3.73)	0.993	0.96-0.99	0.59
Total	16	47.32 (13.92)	0.997	0.98-0.99	2.20

*Interclass Correlation Coefficient. **Standard Error of Mean

that the reliability of the questions in the specified areas of the Mentoring Questionnaire was acceptable [Table 3]. Furthermore, the ICC results were indicative of the high reliability of the Mentoring Questionnaire [Table 4].

Discussion

This study was performed to design a questionnaire on mentoring in nursing for the first time. In the studies carried out so far, no questionnaire was found on mentoring. The findings in this study indicated the high validity and reliability of the Mentoring Questionnaire for bachelor's degree students (16 items). According to the results, the Mentoring Questionnaire was divided into two emotional and guiding areas. Studies on mentoring in nursing have also indicated a kind of guiding and emotional role in relation to mentoring. Kristen *et al.* considered the role of the mentor in planning and establishing methods in which education could be developed and student training and guiding could be performed appropriately.^[36] In addition, Katherine *et al.* introduced the mentor as a facilitator and a supporter of learning. From their point of view, providing feedback and gaining knowledge of the mentee's conditions were considered to be among the principles of mentoring.^[23]

Based on the Mentoring Questionnaire, encouraging students and motivating them to learn and creating interest among them, facilitating learning, and being a model for them are of the important duties of the mentor. Based on a study on the characteristics of an ideal mentor from the viewpoint of clinical professors by Mohammadi *et al.*, the most important characteristics of a mentor were motivation (creating an interest in deep learning), facilitating learning, and exemplification.^[8] Cervera *et al.* (2017) in a study entitled Questionnaire to Measure the Participation of Nursing Professionals in mentoring Students, mentioned three dimensions: Implication, Motivation, and Satisfaction.^[37] In the motivation factor, this two studies are similar.

In a mentoring program conducted for nursing students, Foster *et al.* showed that the feeling of the need for

counseling was increased among students after the implementation of the program. Moreover, the amount of support they received from the mentor was also increased after the implementation of the program. They also considered supporting, motivating, training, and explaining roles to be necessary for the mentor.^[17] Therefore, this is in agreement with items 2, 8, and 16 of the Mentoring Questionnaire. In Bachmann study (2019) entitled Failing to Fail nursing students among mentors: A confirmatory factor analysis of the Failing to Fail scale, The confirmatory factor analysis confirmed a five-factor structure of the "Failing to Fail" scale with the adequate model fit. The factors were named as: (a) Insufficient mentoring competence; (b) Insufficient support in the working environment; (c) Emotional process dominates the assessment; (d) Insufficient support from the university; and (e) Decision making detached from learning outcomes. In support factor, these two studies are similar.^[38]

Miller considered the mentor's roles as exemplification, guiding and counseling, personal, emotional, and social supporter, student preparation for future roles, activating the student's management role, and time management.^[12] This is in accordance with the specifications of the mentor in items 6, 4, and 16. In general, the results of the present study demonstrated that the Mentoring Questionnaire, as a relevant, acceptable, repeatable, and reliable questionnaire for assessing mentoring, can be used among undergraduate students. Given the effect of cultural and social factors on mentoring, it is recommended that a careful and extensive study be carried out to find out the effects of these variables. The limitation of this study was the use of a nursing faculty student. Regarding the different implementation of mentoring in nursing schools and implementation of the present questionnaire in one nursing school in Tehran, use of several nursing schools is recommended in future studies.

Conclusion

Given the importance of mentoring in nursing and the results of its proper implementation, attention to it is important. The lack of questionnaires and appropriate tools in the searches is an issue that has been neglected. However, most studies have referred to Mentor characteristics. It can be concluded that the Mentoring Questionnaire, as a valid and reliable tool, can be used for studying and evaluating mentoring in undergraduate nursing students in Iran.

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Conflicts of interest

Nothing to declare.

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