Archives of Psychiatric Nursing 53 (2024) 130–137

Contents lists available at ScienceDirect

Archives of Psychiatric Nursing

journal homepage: www.elsevier.com/locate/apnu

Validity and reliability of the scale for determining nursing students' perceptions of stigmatization

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ARTICLE INFO

Keywords:
Nursing
Student
Stigmatization
Validity
Reliability

ABSTRACT

Introduction: Stigmatization can negatively affect the relationship between the patient and health professional.
Aims: The aim of this study was to develop the Scale for Determining Nursing Students' Perceptions of Stigmatization.
Methods: The population of the study consisted of 403 nursing students. A literature review and qualitative interviews with 24 students were conducted to generate the initial items. Confirmatory factor analysis and exploratory factor analysis were applied to examine the construct validity of the scale. The reliability of the scale was evaluated with Cronbach's alpha reliability coefficient and item-total score correlation coefficients.
Results: After confirmatory factor analysis, the Scale for Determining Nursing Students' Perceptions of Stigmatization was finalized with 19 items and five sub-dimensions. In the confirmatory factor analysis, the goodness of fit values of the scale was determined as χ^2/sd: 2.957; GFI: 0.902; AGFI: 0.869; IFI: 0.906; TLI: 0.937; CFI: 0.905; RMSEA: 0.070; SRMR: 0.063. The reliability of the scale over time was evaluated with the test-retest method, and it was found that the agreement between the responses was very good (ICC: 0.980; $p < 0.001$). The Cronbach's alpha reliability coefficient of the scale was 0.824.
Conclusions: It was determined that the Scale for Determining Nursing Students' Perceptions of Stigmatization is a short, easy-to-understand, and psychometrically sound measurement tool that can be safely applied to nursing students. Nursing students' perceptions of stigmatization can be determined using this scale. The nursing education curriculum can be restructured in line with the findings obtained.

Introduction

Stigmatization may be defined as the process by which false information, prejudice, and discrimination (Thornicroft et al., 2008) are used by others in ways that denigrate and trivialize a person or group of people (Goffman, 1986). Stigmatization develops concurrently with and may also involve actions such as labeling, stereotyping, ostracism, loss of status, and discrimination (Link & Phelan, 2006). Whether individuals engage in stigmatizing behavior is affected by their past experiences and perceptions (Scambler, 2009). Stigmatization leads to a variety of negative consequences and inequality of opportunity in the lives of individuals who are stigmatized (Goffman, 1986). The World Health Organization reported that stigmatization "affects people's self-esteem, disrupts family relationships, and limits their ability to socialize and their access to housing and employment" (WHO, 2001).

It has been argued in the literature that stigmatization is prevalent among healthcare professionals, whether consciously or unconsciously (Bates & Stickley, 2013; Copeland, 2022; Simpson et al., 2020; Tyerman et al., 2020). Stigmatization is, however, considered as a violation of professional nursing values and the ICN Code of Ethics for Nurses (Copeland, 2020; Copeland, 2022; The ICN Code of Ethics for Nurses, 2021). This code provides a statement of the ethical values, responsibilities and professional accountability expected in nurses and nursing students and it is important that nursing students' activities follow its precepts. The ICN Code provides guidance on the roles, duties, responsibilities, conduct, professional judgments and ethical issues that nurses face in their relationships with patients, other persons receiving nursing care, their colleagues and other professionals. The values and obligations stipulated therein apply for nurses in all environments, roles and areas of practice (The ICN Code of Ethics for Nurses, 2021).

Nursing by its very nature involves respect for human rights, particularly with the right to live, and the right to be treated with dignity

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https://doi.org/10.1016/j.apnu.2024.10.016
Received 21 May 2024; Received in revised form 10 August 2024; Accepted 13 October 2024
Available online 15 October 2024
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and respect. Nurses should respect patients regardless of their age, gender, race, nationality, ethnicity, culture, language or politics, their disabilities or diseases, as well as their religious or spiritual beliefs. Nurses are obliged to provide nursing care to everyone without discriminating based on any of the above criteria or their patients' economic or social status. The primary purpose of academic programs on nursing is to train nurses who will adopt professional ethical codes and values as a matter of principle (The ICN Code of Ethics for Nurses, 2021).

Stigmatization has been reported to adversely affect the relationship between the patient and the health care professional (Hokkanen & Kesti, 2022), to cause patients to self-stigmatize and therefore avoid applying to and attending health care institutions (Hokkanen & Kesti, 2022), to cause health inequalities (Copeland, 2020), to result in suboptimal nursing care and poor patient outcomes (Copeland, 2022), and to cause negative psychosocial consequences for the individual (Mak et al., 2015).

It has been further emphasized in the literature that stigmatization has not been sufficiently investigated in some populations, including health care professionals, students, and social care professionals. Therefore, it is very important to conduct further research on stigmatization (Xu et al., 2018) and to confront this issue in a measured way (Copeland, 2020; Copeland, 2022). After graduation, nursing students are expected to provide nursing care to diverse patient groups, including those who are frequently stigmatized, such as those with mental illness, those with disorders due to alcohol and substance use, those diagnosed with HIV/AIDS, those suffering from obesity, and individuals with criminal convictions. The quality of care provided by nursing students after graduation may be affected by their own stigmatizing attitudes and behavior (Abuhammad et al., 2019; Copeland, 2022). Nursing students' perceptions of stigmatization may prevent them from developing the ability to provide unbiased, empathic, and person-centered care (Abuhammad et al., 2019).

By determining nursing students' perceptions of stigmatization, students can be encouraged to think about their conscious and unconscious biases and their perceptions regarding stigmatization. Determining students' perceptions of stigmatization can help them assess how to change their own practices to improve care (Dion, 2019). It is crucial to emphasize holistic care in nursing education and to provide students with professional knowledge and skills as well as helping them to develop professional attitudes (Abuhammad et al., 2019).

It is vital that nursing education curricula are able to ensure that students to have positive attitudes, can internalize knowledge and are able to deliver a person-centered care approach (Tee & Özçetin, 2016). Determining students' perceptions of stigmatization can enable nurse educators to review training curricula and methods. They will then be able to identify and implement strategies to strengthen students' nursing philosophy, ethics, and values during the vocational education process. Since student nurses' perceptions of stigmatization cannot be easily assessed in clinical care settings, it is necessary to use a valid and reliable measurement tool developed specifically for this topic. The operational definitions of the terms and concepts used in this study were as follows:

Nursing students: This term refers to students studying in a higher education program that provides a four-year academic education in nursing after their 12 years of basic compulsory education.
Stigmatization: Stigmatization is the process of "deeply disgracing" a person or group through social rejection (Phelan et al., 1997). This study investigated students' perceptions of stigmatization as measured by the Scale for Determining Nursing Students' Perceptions of Stigmatization, possible causes of stigmatization, factors affecting the nursing students' perceptions of stigmatization, the groups who they think may potentially be stigmatized, and their thoughts about the consequences of stigmatization.

Aim of the study

The aim of this study was to develop the Scale for Determining Nursing Students' Perceptions of Stigmatization.

Methods

Study design

This research was conducted between 27 November 2020 and 03 November 2022. In this study, the students were selected using the simple random sampling method, one of the probability sampling methods, in which individuals have an equal chance of being selected from the population (Erdoğan et al., 2015). In determining the sample size of the study, the formula used to determine the number of individuals to be sampled in cases where the population is known was utilized. The sample size was calculated as 219 with a 4 % error at a 95 % confidence limit. Considering the possibility of data loss, the data collection process was completed after reaching 403 nursing students. The inclusion criteria of the study were defined as being a student actively enrolled in the nursing department, agreeing to participate in the study, having participated in clinical practice for at least one semester, not having any mental health problems, and filling out the survey fully. During the data collection process, no students refused to participate in the study or filled out the survey form incompletely. Three students who were actively enrolled in the first year of the nursing department were not included in the study as they had not yet started their clinical practice.

Ethical considerations

The study was initiated after obtaining the approval of the Ethics Committee of the University. In order to collect the data, written permission was obtained from the Faculty of Health Sciences, and verbal informed consent was obtained from the nursing students included in the study.

Data collection

The data of the study were collected using an Introductory Information Form for the nursing students and a draft of the Scale for Determining Nursing Students' Perceptions of Stigmatization. The data collection forms were filled in by the nursing students on a voluntary basis before or after their courses. During data collection, the principle of voluntariness was taken into consideration by acting in accordance with the principles of scientific ethics. The nursing students were informed that the decision on whether to participate in the study was entirely their own and that the data to be collected from this study would only be used within the scope of the research.

Qualitative interviews were held with 24 students to develop the items in the draft scale. Before conducting qualitative interviews, the purpose of the study was explained to all classes and the students were invited to focus-group interviews. Verbal consent was obtained from the students who met the inclusion criteria and who had contacted the researchers to participate in the interviews. The students were thus fully informed before the interviews were audio-recorded with a voice recorder. Research data were collected by the first author (G.K.) using a semi-structured interview form via face-to-face focus-group interviews held with four or five participants. In order to ensure internal validity throughout the interviews, feedback was obtained regarding whether the students had correctly understood the statements by summarizing their answers and repeating them back to them. The second author (Z. K.) confirmed consistency by checking whether all the questions were asked to the students participating in the interviews, whether the interviews were conducted in the same environment, and whether the researcher was impartial. She further reported the students' behaviors

and reactions and group interactions during the group interviews.

The semi-structured interview form consisted of open-ended questions prepared by the authors. The form was then presented to two experts who had previously worked on this subject to seek their opinions and suggestions. The participants were also asked further questions in addition to those on the semi-structured interview form in order to obtain more detail about the relevant data or to complete any points that had been missed during the interview. Some of the questions asked in the semi-structured interview form were as follows:

- How would you define stigmatization?
- What do you think are the possible reasons underlying the stigmatization of some individuals? Could you please explain these further?
- What do you think are the negative effects of stigmatization on individuals? Could you please explain this further?
- Are there any specific patient groups that you believe may be stigmatized within the health care delivery system?
- Have you witnessed the stigmatization of any patient during your clinical practice? If so, could you please tell us about this?
- Is there any patient group that you refrained from providing care and treatment to during your clinical practice? If so, could you please tell us why?
- How do you think stigmatizing an individual affects the care provided and the communication with the patient?
- What would you recommend to prevent stigmatization from occurring within the health care system?

The interviews were held in a quiet, sufficiently illuminated and warm room within the department where students were able express themselves comfortably. The principle of data saturation was taken into account in individual interviews and the interviews with students were terminated when the answers given began to be repetitive. The mean interview duration was between approximately 45 and 60 min.

After the interviews, both authors listened to the audio recordings several times and transcribed them. The authors then examined the transcripts of the interviews, taking notes in order to determine common aspects and scale items. Throughout this review, the interviews were reread analytically and critically to examine what the data actually meant. Then, the authors together reviewed the draft scale items developed from the student interviews. The draft scale items were then presented to two experts working on this subject who were asked to critically examine the raw data and to give feedback. An item pool was created for the 50-item Scale for Determining Nursing Students' Perceptions of Stigma. After finalizing the item pool, a confirmation meeting was held in which the scale items were shared with all students and they were asked to evaluate them.

Data collection tools

Introductory information form

This descriptive information form consisted of questions about the students' socio-demographic characteristics (age, gender, marital status, family type, family structure, and residential unit), and professional characteristics (which year, willingness to study nursing, liking the nursing profession).

Scale for determining nursing students' perceptions of stigma

The process to test the validity and reliability of the Scale for Determining Nursing Students' Perceptions of Stigmatization is shown in Fig. 1. An item pool was created with 50 items for the Scale for Determining Nursing Students' Perceptions of Stigma in line with the literature review and qualitative interviews. First, the content validity of the scale was examined. Content validity is used to determine whether a measurement tool is sufficient to measure the desired concept in terms of quantity and quality. Content validity is a form of item statistics performed to confirm whether items should be included in a scale or not

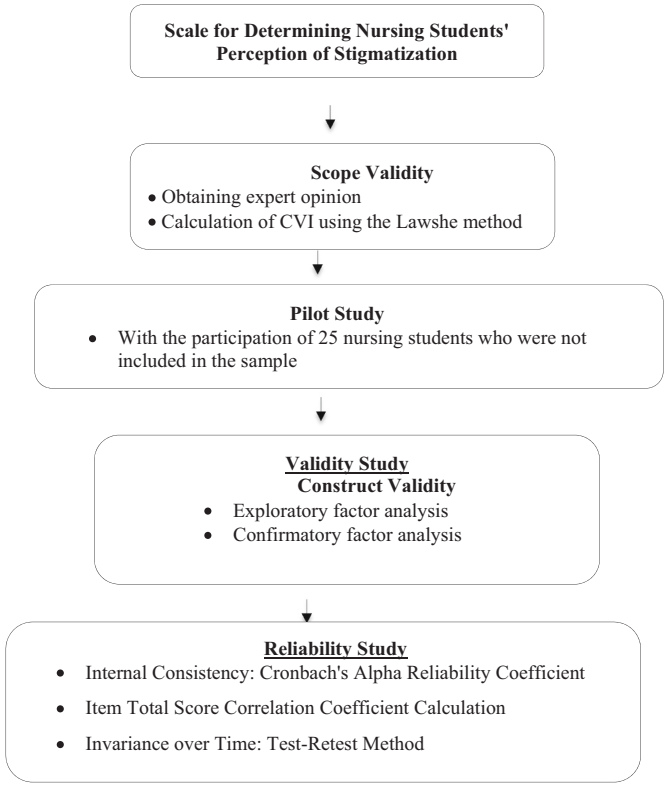


Fig. 1. Scale development process.

(Erdoğan et al., 2015; Karakoç & Dönmez, 2014). Expert opinion was sought to determine the content validity of the scale. The experts reviewed and evaluated each item of the scale in terms of comprehensibility, whether it served the required purpose, discrimination and cultural equivalence, and presented their opinions. The Lawshe (1975) technique was used for evaluating the expert opinions. The number of items in the draft scale was decreased from 50 to 46 following the confirmation of the content validity.

In order to confirm the construct validity of the Scale for Determining Nursing Students' Perceptions of Stigma, exploratory factor analysis was first applied to determine the factor structure. The aim of exploratory factor analysis is to eliminate the complexity of the data with fewer factors (dimensions/variables) at the conceptual level and to ensure that a wide range of original observations are performed with a small number of factors (Erkuş, 2012). Prior to the exploratory factor analysis, the Kaiser-Meyer-Olkin (KMO) test was used to test the sample size of the draft scale, and Bartlett's Sphericity test was used to evaluate the suitability of the data for factor analysis. The KMO test produces a value between 0 and 1 which presents a more reliable factor structure as it approaches to 1. While a KMO value >0.50 is acceptable, a value between 0.50 and 0.70 is considered normal, between 0.70 and 0.8 is good, between 0.80 and 0.90 is very good, and a value >0.90 can be interpreted as an excellent sample size (Erdoğan et al., 2015; Karagöz, 2017; Karakoç & Dönmez, 2014; Özdamar, 2017). The KMO and Bartlett test results revealed that the sample size was sufficient and the data were suitable for factor analysis.

The 46-item draft of the Scale for Determining Nursing Students' Perceptions of Stigma was subjected to exploratory factor analysis using principal components analysis and Varimax rotation (Kline, 1994). If an item indicates a high load on both factors, it is recommended that the difference in between be checked. A difference of at least 0.10 between two high loads is acceptable whereas it is recommended that an item with a difference of <0.10 be removed from the scale as it is considered an overlapping item. However, there is a common view in the literature

that the factor load of the item should be at least 0.30, and it is thus recommended that items with a factor load lower than this be removed (Erdoğan et al., 2015; Karagöz, 2017; Karakoç & Dönmez, 2014; Özdamar, 2017). Accordingly, 27 items with factor loads below 0.32 and with high loads on both factors were excluded from the scale.

The number of factors in the draft scale was determined according to the eigenvalues that would represent the relationships between the variables at the highest degree. Eigenvalue is used to calculate the variance explained by the factors and to decide on the number of factors. The eigenvalue further indicates the explanatory power of each factor. The Kaiser criterion or Kaiser–Guttman rule was used to determine the number of significant factors of the scale used in this study. In the Kaiser criterion, an eigenvalue >1 is considered as "stable". Accordingly, items with eigenvalues >1 were accepted as factors whereas factors with eigenvalues <1 were not taken into account (Kaiser, 1960). As a result of this analysis, a five-factor structure, namely Perception, Stigmatization, Student Perspective, Potential Risk Groups and Dispositional Factors, was constructed with a total of 19 items.

The measurement model established to verify the structure consisting of 19 items and five factors was then tested with confirmatory factor analysis. As a result of the analysis, it was determined that the model showed adequate fit. The structure constructed with explanatory factor analysis was confirmed with confirmatory factor analysis and none of the items were eliminated. The model, which was verified with 19 items and five factors, was found to have good or acceptable fit indices.

The internal consistency of the Scale for Determining Nursing Students' Perceptions of Stigma was evaluated with the Cronbach alpha reliability coefficient. The Cronbach alpha coefficient is a weighted standard variations mean, obtained by dividing the total of the k items in the scale with the general variance. The Cronbach alpha coefficient takes a value between 0 and 1. This method is used to investigate whether the k questions in the scale represent a whole that shows a homogeneous structure (Erdoğan et al., 2015; Karagöz, 2017; Özdamar, 2017). It was determined that the scale used in this study had adequate reliability.

Test-retest correlation measures the ability of a measurement tool to provide consistent results between individual applications and indicates time invariance. For the purposes of this method, the measurement tool is re-administered to the same individuals under the same conditions and circumstances at different time periods, and the correlation between the scores obtained from the two applications is calculated in order to determine reliability. The correlation calculated as a result of this process demonstrates the test-retest reliability coefficient. An intraclass correlation coefficient of <0.40 is accepted as weak, between 0.40 and 0.59 is accepted as moderate, between 0.60 and 0.74 is accepted as good, and >0.74 is accepted as very good (Erdoğan et al., 2015; Karagöz, 2017; Karakoç & Dönmez, 2014; Özdamar, 2017). The expected result is that the difference between the two measurements should not be too high. The time between the two measurements will vary according to the characteristics of the test or scale applied and the status of the respondents. In general, it is recommended that the time between two measurements be between two and four weeks. A "very good" correlation between the scores obtained in the first and second application confirms that the scale is reliable (Erdoğan et al., 2015; Karagöz, 2017; Karakoç & Dönmez, 2014; Özdamar, 2017). For the purpose of this study, the scale was re-administered to 80 students selected from each class by stratified sampling at two-week intervals and it was determined that there was no significant difference between the two measurements.

The Factor 1 "Perception" sub-dimension of the Scale for Determining Nursing Students' Perceptions of Stigmatization consists of four items, and the score that can be obtained from this sub-dimension is between 4 and 20 points. The Factor 2 "Stigmatization" sub-dimension consists of four items, and the score that can be obtained from this sub-dimension is between 4 and 20 points. The Factor 3 "Student Perspective" sub-dimension consists of three items, and the score that can be obtained from this sub-dimension is between 3 and 15 points. The Factor 4 "Potential Risk Groups" sub-dimension consists of five items, and the score that can be obtained from this sub-dimension is between 5 and 25 points. The Factor 5 "Dispositional Factors" sub-dimension consists of three items, and the score that can be obtained from this sub-dimension is between 3 and 15 points.

The responses to the scale are designed as a five-point Likert-type scale with a range of 1–5 points. The points scored are 1 = "Strongly Disagree", 2 = "Disagree", 3 = "Unsure", 4 = "Agree", and 5 = "Strongly Agree". The participants were asked to rate each item on the scale by marking one of these five-point Likert-type options. The total scale score and the scores from the sub-dimensions are calculated by summing the scores obtained from the participants' responses to the relevant items of the scale. The total score obtainable from the scale ranges from 19 and 95 points. High score indicates that the nursing students have high perceptions of stigmatization, while a low score indicates that nursing students have low perceptions of stigmatization.

Data analysis

Descriptive statistics of frequency distributions were given for categorical variables and means and standard deviations were given for numerical variables. Validity analyses and reliability analyses of the Scale for Determining Nursing Students' Perceptions of Stigmatization were conducted. Expert opinion was sought to determine the content validity index (CVI) of the scale and the Lawshe (1975) technique was used in the evaluation of expert opinions. Explanatory factor analysis and confirmatory factor analysis were applied to the scale within the scope of the validity studies. In the reliability studies, the reliability of the Scale for Determining Nursing Students' Perceptions of Stigmatization and its sub-dimensions was examined using the Cronbach's alpha internal consistency coefficient. The invariance of the scale over time was evaluated by the test-retest method. The scale and sub-dimension scores of the nursing students participating in the study were obtained by averaging the relevant items. The SPSS 28.0 package program was used in the explanatory factor and reliability analyses of the study. The AMOS 21.0 program was used in the confirmatory factor analyses. The significance level was accepted as 0.05 in all statistical analyses applied within the scope of the research.

Results

A total of 403 nursing students participated in the study. It was determined that 75.7 % of the nursing students were female, 98.5 % were single, 71 % had a nuclear family structure, 29.3 % defined their family structure as "protective", 47.6 % had lived for the most time in a city, 26.8 % were second-year nursing students, 42.2 % had chosen the nursing department willingly, 60.6 % liked the nursing profession, and 85.9 % did not plan to change their profession. The mean age of the students was 20.41 ± 1.40 years (Supplementary Table 1).

Content validity

The Scale for Determining Nursing Students' Perceptions of Stigmatization was presented to 11 experts to evaluate its content validity (Polit & Beck, 2010). As recommended in the literature, the content validity criterion (CVC) calculated was 0.59 in line with the number of experts (Veneziano & Hooper, 1997). It was seen that the item content validity ratios (CVRs) of the Scale for Determining Nursing Students' Perceptions of Stigmatization ranged between 0.45 and 1, and there were no items with a CVR of <0.59. Since the items with CVRs smaller than the CVC should be removed from the scale (Ayre & Scally, 2014), the 8th, 10th, 46th, and 49th items with CVR < CVC were excluded. After these items were removed, the content validity index (CVI) was determined as 0.89 from the average of the CVIs.

Pilot Study

After the content validity studies were completed, the Scale for Determining Nursing Students' Perceptions of Stigmatization was applied to a group of 25 nursing students to evaluate its comprehensibility. Those nursing students who participated in the pilot study were not included in the sample. The nursing students taking part reported that the Introductory Information Form and scale items were understandable and that they had no difficulty understanding them.

Construct validity

To test the construct validity of the Scale for Determining Nursing Students' Perceptions of Stigmatization, exploratory factor analysis was first applied to determine the factor structure.

Exploratory factor analysis

The KMO test and Bartlett's test of sphericity were applied before the exploratory factor analysis. It was determined that the sample size of the scale with a KMO value of 0.813 was adequate, and the data were suitable for factor analysis according to Bartlett's sphericity test ($p < 0.001$) (Supplementary Table 2).

Exploratory factor analysis was applied to the draft Scale for Determining Nursing Students' Perceptions of Stigmatization using the principal components analysis method and Varimax rotation. As a result of the first analysis, it was seen that the scale was divided into 13 subdimensions, some scale items loaded strongly on >1 factor, and some items formed a factor structure alone. Therefore, items 1, 4, 6, 9, 11, 15, 16, 17, 18, 20, 22, 23, 24, 27, 28, 29, 30, 31, 36, 38, 39, 40, 42, 43, 44, 45 and 46 were excluded from the 46-item scale. After these items were

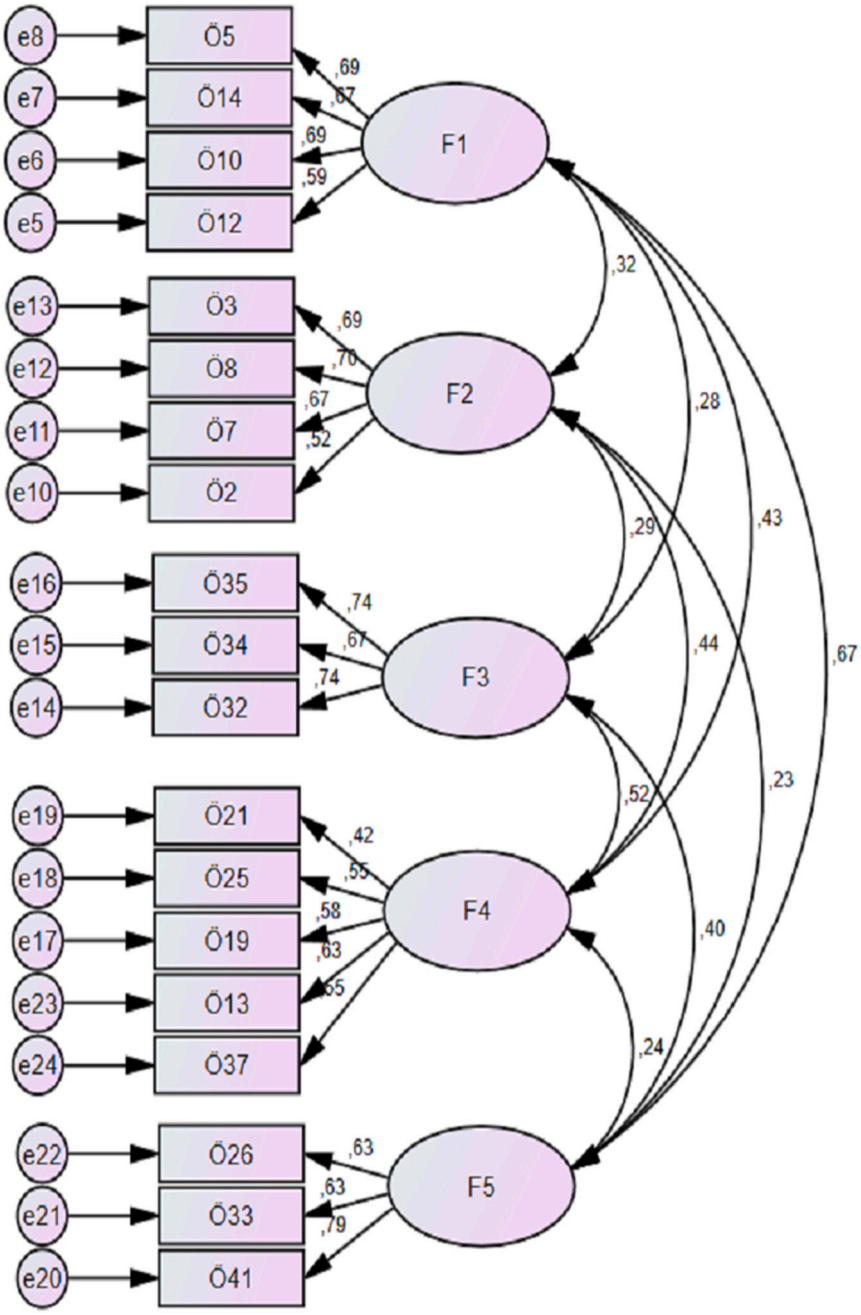


Fig. 2. Path diagram of the scale for determining nursing students' perceptions of stigmatization.

excluded, a structure consisting of 19 items and five factors was obtained.

The explained variance ratio expresses the strength of the factor structure of the scale. Accordingly, the results showed that there were five factors with eigenvalues >1. The Perception sub-dimension of the scale accounted for 13.36 % of the total structure, the Stigmatization sub-dimension of the scale accounted for 12.27 % of the total structure, the Student Perspective sub-dimension of the scale accounted for 12.03 % of the total structure, the Potential Risk Groups sub-dimension of the scale accounted for 11.44 % of the total structure, and the Dispositional Factors sub-dimension of the scale accounted for 10.06 % of the total structure; the structure consisting of five factors and 19 items explained 59.15 % of the total variance (Supplementary Table 3). The factor loads of the items of the Scale for Determining Nursing Students' Stigmatization Perceptions were found to be above 0.500 (Supplementary Table 4). In addition, in the measurement model validated with 19 items and five sub-dimensions, the items of the model and the standardized regression coefficients of the paths on the one-way arrows can also be seen (Fig. 2).

Confirmatory factor analysis

The measurement model established to confirm the structure consisting of 19 items and five factors as a result of the exploratory factor analysis was tested with confirmatory factor analysis (Izquierdo et al., 2014; O'Rourke & Hatcher, 2013). As a result of the analysis, it was determined that the model showed adequate fit. The structure formed by exploratory factor analysis was confirmed by confirmatory factor analysis, and no items were eliminated. The fit index values of the model, which was confirmed in 19 items and five factors, were χ^2/sd: 2.957; GFI: 0.902; AGFI: 0.869; IFI: 0.906; TLI: 0.937; CFI: 0.905; RMSEA: 0.070; and SRMR: 0.063 (Supplementary Table 5). The factor loadings of the scale ranged between 0.418 and 0.790 (Supplementary Table 6).

Reliability

Internal consistency (Cronbach's alpha reliability coefficient)

As a result of the reliability analysis of the scale, the Scale for Identifying Nursing Students' Perceptions of Stigmatization, which was validated with 19 items, was found to have adequate reliability (α = 0.824). The Perception sub-dimension of the scale consisting of four items was found to have adequate reliability (α = 0.748), the Stigmatization sub-dimension of the scale consisting of four items was found to have adequate reliability (α = 0.736), the Student Perspective sub-dimension of the scale consisting of four items was found to have adequate reliability (α = 0.753), the Potential Risk Groups sub-dimension of the scale consisting of four items was found to have acceptable reliability (α = 0.681), and the Dispositional Factors sub-dimension of the scale consisting of three items was found to have adequate reliability (α = 0.721) (Supplementary Table 7).

Item total score correlation coefficients

In the Scale for Determining Nursing Students' Perceptions of Stigmatization, the results showed that there was no item with an item total correlation below 0.300 that negatively affected the Cronbach's alpha coefficient, and the item total correlation values ranged between 0.301 and 0.507. When the Cronbach's alpha reliability coefficients of the total scale obtained after the deletion of the item were examined, it was determined that the alpha value varied between 0.810 and 0.823 and that no significant change would occur in the total scale reliability with the removal of the item (Supplementary Table 8).

Test-retest/invariance reliability

The draft Scale for Determining Nursing Students' Perceptions of Stigmatization was administered to 80 students at two-week intervals. The relationship between the scores obtained from the first and second application was examined with the intraclass correlation coefficient (ICC) to evaluate the invariance of the scale over time, and it was seen that the agreement between the answers given by the nursing students to the questions in the repeated application was very good (ICC: 0.980; $p < 0.001$) (Supplementary Table 9).

In line with these results, it was determined that the Scale for Determining Nursing Students' Perceptions of Stigmatization is a valid and reliable measurement tool for measuring nursing students' perception of stigmatization (Supplementary Table 10).

Discussion

This study aimed to develop the Scale for Determining Nursing Students' Perceptions of Stigma. The scope validity index of the Scale for Determining Nursing Students' Perceptions of Stigmatization was determined as 0.89 after expert opinion. After exploratory and confirmatory factor analysis, the Scale for Determining Nursing Students' Perceptions of Stigmatization was finalized with 19 items and five sub-dimensions (perception, stigmatization, student perspective, potential risk groups, and dispositional factors). In the confirmatory factor analysis, the goodness of fit values of the scale was determined as χ^2/sd: 2.957; GFI: 0.902; AGFI: 0.869; IFI: 0.906; TLI: 0.937; CFI: 0.905; RMSEA: 0.070; SRMR: 0,063. The reliability of the scale over time was evaluated with the test-retest method, and it was found that the agreement between the responses was very good (ICC: 0.980; $p < 0.001$). The Cronbach's alpha reliability coefficient of the scale was 0.824.

The attitudes and behavior of health care professionals affect the provision of health care services. Current evidence indicates that health care professionals exhibit stigmatizing behaviors (Bates & Stickley, 2013; Blas et al., 2024; Copeland, 2020; Copeland, 2022; Mbome, 2022; Nyblade et al., 2019; Simpson et al., 2020; Tyerman et al., 2020). It has been reported that health care professionals, in particular nurses, have the opportunity to eliminate obstacles and challenge discrimination. On the other hand, it has also been argued that nursing students exhibits attitudes similar to those found in the general population at the beginning of their careers, that they may engage in behaviors that have a negative effect on the lives of the individuals they care for (Tee & Özçetin, 2016), and that the prejudicial attitudes of nursing students can prevent individuals from receiving quality care (Dunagan et al., 2016).

Ozaydın and Tuncbeden (2022) reported that nursing students tend to exhibit stigmatizing behaviors, that the level of stigmatization increases with age, varies according to their year of study and family type, and that students' stigmatization levels are a determining factor in terms of their prejudices. Bilge and Palabiyik (2017) concluded that stigmatization is affected by the type of disease, and that students receiving nursing education were able to learn to empathize with patients by making short films about mental health and mental disorders, which is a measure that can be used to prevent patients from being stigmatized.

Pickles et al. (2017) reported that nursing students worldwide had negative perceptions of HIV and AIDS and were reluctant to provide nursing care to individuals with these conditions; these patients were thus subject to alienation and suspicion. Sutherland et al. (2021) stated that nurses' attitudes and beliefs about incarcerated individuals can also affect their behavior. It was emphasized in the same study that undergraduate nursing programs should include training strategies that focus on the stigma of being incarcerated and that students' clinical experiences be investigated.

Dion (2019) argued that people who use drugs face higher rates of prejudice and stigma compared to individuals with other health problems, and that nursing students are not adequately prepared to provide care for drug addicts. Wright et al. (2022) reported that nurses play a significant role in providing care services to individuals with substance use disorders and reducing stigma. In the same study, it was determined that a training program aimed at addressing the treatment of opioid use disorder for nursing students positively affected the students' knowledge, attitudes and beliefs about people with substance use disorders.

Lack of knowledge leads to stigmatization which then reduces the quality of care provided to patients and causes poor health outcomes. Therefore, nurses need to have attained an adequate level of education and knowledge to prevent stigmatization (Blas et al., 2024;Mbome, 2022; Nyblade et al., 2019). As education and training is an important factor in preventing stigmatization, nursing schools have a significant responsibility in this regard (Mbome, 2022; Nyblade et al., 2019; Pickles et al., 2017). The nursing curriculum is vital in improving patient health and well-being; it is not enough for educators to simply provide information to students. Nurse educators should seek to improve nursing students' awareness about stigmatization and encourage them to review their own perceptions, taking into account their individual cultural backgrounds, knowledge, values, perceptions, and beliefs (Pickles et al., 2017).

Eliminating stigmatizing attitudes and the potential of these in nursing students will ensure all individuals can benefit equally from health care services (Mbome, 2022; Nyblade et al., 2019). Reducing stigmatization and prejudices in nursing students during their education will prevent patients from being discriminated against and will support the provision of optimum care (Blas et al., 2024; Dion, 2019). The Scale for Determining Nursing Students' Perceptions of Stigma developed within the scope of this study can be used to determine nursing students' perceptions of stigmatization. Further studies on this subject will provide an opportunity to improve and further validate the scale developed, and will thus make significant contributions to the literature on this subject.

This research has some limitations. The fact that the study was conducted in the nursing department of a single university is one limitation. The findings obtained from this study cannot be generalized to all nursing students until comparable further studies are conducted using the Scale for Determining Nursing Students' Perceptions of Stigma on nursing students studying at other universities in different regions and provinces of Türkiye.

Implications for practice

A non-stigmatizing approach ensures that all people will be able to receive individualized, safe, effective, equitable, respectful and compassionate care. In order to prevent the deleterious effects of stigmatization on both healthy and unwell individuals, it is important to determine whether nursing students engage in any stigmatizing behaviors before they graduate. Nurse educators need to understand the impact of the curriculum on students' potentially stigmatizing attitudes in order to train nursing students who are able to behave professionally, ethically, and with empathy. The scale developed within the scope of this study will help nurse educators to review current nursing curricula and consider any improvements that can be made to address the potential for stigmatizing attitudes in specific situations.

The Scale for Determining Nursing Students' Perceptions of Stigma will therefore provide useful data in determining stigmatization among nursing students in their professional practice. Developing strategies in line with the data collected may help to plan further initiatives aimed at improving the quality of nursing care provided by students and patient outcomes. This may also help to prevent legal and ethical issues that may arise if stigmatized individuals are provided with unequal access to health care services. Equality, safety and quality in health services are best promoted by ensuring that all patient groups can benefit from nursing care services equally without being subject to discrimination.

Conclusion

In this study, it was determined that the Scale for Determining Nursing Students' Perception of Stigmatization, which was validated with 19 items and five sub-dimensions, is a valid and reliable measurement tool for determining students' perceptions of stigmatization. In line with the findings obtained, the Scale for Determining Nursing Students' Perception of Stigmatization can be recommended for use.

Ethical considerations

The study was started after the approval of the Ethics Committee of Ondokuz Mayıs University (Number: 2020/756).

Financial source

The authors declare that no funds, grants, or other support were received during the preparation of this manuscript.

CRediT authorship contribution statement

Gülşah Kaya: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Zeliha Koç:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

We thank the nursing students who participated in this study.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.apnu.2024.10.016.

Data availability

This research data has never been used in an article before. The datasets used during the current study are available from the corresponding author upon reasonable request.

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