Empirical Paper

Psychometric testing of the nurses professional values scale-revised on family and community health nurses

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Abstract

Background: Family and Community Health Nurses (FCHNs) are at a higher risk of experiencing emotional exhaustion and feelings of low personal accomplishment. Higher levels of professional identity may decrease these negative feelings. Its measurement could produce positive effects for FCHNs and the quality of care they offer.

Aim: This study aims to evaluate the psychometric properties (validity and reliability) of the Nurses Professional Values Scale-Revised (NPVS-R) on FCHNs in Italy.

Research design: A cross-sectional research design was used.

Participants and research context: A convenience sample of FCHNs was recruited in an out-of-hospital setting from Italy. A total of 202 nurses were eligible (mean age of 41.11 ± 10.55 years; 78.2% female).

Ethical considerations: The study was performed in accordance with the World Medical Association Declaration of Helsinki. Participants were asked for their consent and were guaranteed anonymity in the information collected. The study was approved by the internal review board of the university.

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Results: Confirmatory Factor Analysis (CFA) supported a unidimensional factorial structure of the NPVS-R with an adequate fit to the data. Internal consistency reliability was also supported. The construct validity was further reinforced by the concurrent validity results showing a positive and significant correlation of professional identity with job satisfaction.
Conclusion: The NPVS-R is a valid and reliable instrument to measure professional identity among FCHNs. It can be used in clinical practice to improve FCHNs' psychological-emotional feelings and quality of care provided, in research to allow comprehensive understanding of professional identity, and in educational settings to monitor the professional identity levels of Family and Community Health Nursing students.

Keywords
Family and community health nurses, nurses professional values scale-revised, professional identity, psychometric, validation study

Introduction

Professional identity is defined as "the ability to perform the functions of the profession; knowledge, as evidenced by education and/or certification; identification with a community of practice and with the values and ethics of the profession; and personal identification as a professional within an identified professional group."[1]

A high professional identity has a positive association with psychological-emotional factors,[2,3] job satisfaction,[2,4–7] retention plan,[4] quality of care, and satisfaction with care.[2] Literature indicates that burnout is negatively associated with professional identity[8–10] and job satisfaction,[11–13] suggesting that professional identity helps prevent burnout.[10,14]

Burnout symptoms have a negative effect on the quality of care, patient safety, adverse events, error reporting, medication error, infections, patient falls, and dissatisfaction.[15] Nurses working in primary care are at a high risk of burnout, frequently experiencing emotional exhaustion and feelings of low personal accomplishment.[16,17] The long-term nature of patient care and close contact with patients and their loved ones in their living environments, in addition to growing demand and pressure for primary care services make these nurses more prone to feelings of burnout.[9,15,16,18] Among primary care nurses are Family and Community Health Nurses (FCHNs), a workforce committed to the primary care field and embodying one of the main resources available to address the public health challenges of our times.[19] Socio-demographic changes, the growing burden of noncommunicable diseases and the need to provide high-quality, accessible and equitable health services have created new needs and demands,[19,20] thereby increasing the pressure on primary care services, a key factor for burnout syndrome.[15,21]

Measuring and detecting professional identity levels in FCHNs is crucial in order to prevent burnout from negatively affecting FCHNs and, consequently, compromising the care provided and the resource they represent.

The literature provides various instruments to assess professional identity. Among them is the Nurses Professional Values Scale-Revised (NPVS-R).[22] This instrument is the only one derived from the Code of Ethics for Nurses of the American Nurses Association.[22] This characteristic makes it particularly suitable for measuring the construct of professional identity according to its definition.[1] The Code of Ethics guides professionals through the functions and knowledge of the profession (i.e., establish standards as a guide for practice), also guiding professional associations (i.e., participate in activities of professional nursing associations). The Code of Ethics is built on professional standards and laws (i.e., protect moral and legal rights of patients) and strengthens the identification of professionals within their group and community of practice (i.e., advance the profession through active involvement in health-related activities).[23,24] To our knowledge, the psychometric properties of this instrument have never been tested on FCHNs. The use of a valid and

reliable measure for assessing professional identity would provide deeper knowledge of professional identity itself by measuring it in this specific population.

Background

The NPVS-R is an instrument first developed by Weis and Schank (2009)[22] based on a previous version of the same tool. It consists of 26 items and five dimensions (Caring, Activism, Trust, Professionalism and Justice); it measures professional nursing values and is used to assess professional identity.[25–27]

The dimensionality, or construct validity, of NPVS-R was tested in previous studies on nurses, specifically clinical nurses[28,29] and nurses working in internal and surgical medicine departments,[30] and on nursing students, specifically senior nursing students[28,29,31] and baccalaureate nursing students,[32] using different statistical approaches. Specifically, Geçkil et colleagues (2012) and Moon et colleagues (2014) tested the dimensionality via Principal Component Analysis (PCA) and found a five-factor structure (in the first study, Caring, Professionalism, Activism, Justice and Truth factors; in the second study, Human Dignity, Professionalism, Innovation, Contribution, and Advocacy factors).[28,32] Via Exploratory Factor Analysis (EFA), Hosseini et colleagues (2020) found a five-factor structure (Care, Professionalism, Activism, Responsibility, and Social Commitment factors) removing item 17 ("Refuse to participate in care if in ethical opposition to own professional values.").[31] Özsoy and Dönmez (2015) found a four-factor structure (Professionalism, Caring, Activism and Trust factors) while testing dimensionality through Confirmatory Factor Analysis (CFA) and EFA.[30] Finally, Lin, and Wang (2010) tested the dimensionality via PCA and found a three-factor structure (Professionalism, Caring and Activism factors).[29] This summary highlights different factor structures. Potential reasons for this can be found in the influence of cultural background on professional identity and nursing values,[22,28–34] but also in the way different countries organize their health care systems.

Content validity was evaluated by experts reviews,[35] using CVI[28,29,31] showing an index always ≥0.90, and by Hosseini et al. (2020)[31] also using Content Validity Rate (for all items it was between 0.6 and 1).

Reliability was evaluated using Cronbach's alpha[28–32,35,36] and test-retest reliability,[28,35] yielding adequate values.

Finally, two cultural validations of the NPVS-R were conducted following a forward and backward translation process.[36,37] No psychometric properties were tested on the Italian NPVS-R version.

From this summary, it emerges that the factorial structure of the NPVS-R is not yet clearly defined, and in addition, no previous validation study has tested the instrument on FCHNs.

Testing the NPVS-R's psychometric properties makes it possible to prove the validity and reliability of this instrument in measuring professional identity in this specific population. A valid and reliable way of measuring professional identity could be pivotal for practitioners, researchers, and educators. In clinical practice, knowing the level of professional identity of FCHNs could help to identify nurses at greater risk of low professional identity and, consequently, with a higher risk of developing psychological-emotional distress and performing low-quality care. In research, testing the psychometric properties of NPVS-R among FCHNs is important for a comprehensive understanding of professional identity and its relationship to quality of care. In an educational setting, it means that students' professional identity levels can be measured and monitored before they become FCHNs and during training. Professional identity can therefore be improved throughout the course of study in a move to protect these nurses before they join the primary care workforce.

The study

Aims

To evaluate the psychometric properties (validity and reliability) of the NPVS-R on FCHNs.

Methods

Research design

A cross-sectional validation study was conducted between May 2021 and February 2022.

Data come from an ongoing pilot study aimed at describing professional identity in FCHNs and identifying determinants of professional identity.

Sample and setting

A convenience sample of FCHNs was recruited from an out-of-hospital setting in Italy. Family and Community Health Nurses are understood as in the definition proposed by WHO in its conceptual framework and curriculum.[38] Nurses were included if they were: (i). employed in an out-of-hospital Primary Care service; (ii). between the ages of 21 and 65; (iii). able to read and understand the Italian language. Retired nurses or nurses employed in an out-of-hospital setting not formally identifiable with a Family and Community Health Nursing service (such as a hospice and nursing home) were excluded.

A sample of seven participants per item was needed to allow adequate inference in EFA or CFA factor analysis.[39] Since, the NPVS-R comprises 26 items, a sample of 182 participants was adequate to address the main study objective (validity and reliability). However, we included all data collected on nurses in the parent study at the time of the analysis (n = 202) to obtain a more stable analysis.[39,40]

Data collection

Participants were recruited with the support of nurses' organizations and associations and through social media, such as Facebook. We collected data through an electronic questionnaire created using Google Modules® (Google, LLC; Mountain View, CA, USA); approximately 10 min were required for administration.

Measurements

The NPVS-R comprises 26 items grouped into five factors: Caring (nine items), Activism (five items), Trust (five items), Professionalism (four items), and Justice (three items). Each item is phrased in the positive direction and consists of a brief phrase referring to the Code of Ethics for Nurses (e.g., "Protect health and safety of the public"). Answers are built on a Likert-scale ranging from 1 (Not Important) to 5 (Most Important), where higher scores indicate stronger professional value. Total scores are obtained by adding the numeric responses (score range: 26–130).[22] The Italian version of the NPVS-R was translated by Nocerino et colleagues[36] and it was used with permission of the first Author.

The Job Satisfaction scale of the Employee Wellbeing Questionnaire (EWQ)[41] was used to evaluate job satisfaction of FCHNs. Job Satisfaction scale is composed of 22 items. Answers are formed by a six-point Likert-scale ranging from 1 (Absolutely True) to 6 (Absolutely False) pointing to how true or how false participants consider the statement. Higher scores indicate better job satisfaction. The scale has excellent psychometric properties.[41] It was used in its Italian version and with permission (https://www.psyjob.it/).

Socio-demographic (i.e., gender, marital status, education) and job characteristics (i.e., experience, patients FCHNs take care of, job activities, work setting, and intensive training) of the participants were collected using a questionnaire created ad-hoc for our study.

Ethical considerations

Participation was voluntary. Each potential participant was informed of the characteristics of the study. The Principal Investigator's email was provided in case participants would like further information. Before being able to continue with the compilation, consent to participate and to the processing and protection of data was requested. The study was performed in accordance with the World Medical Association Declaration of Helsinki. Participants were asked for their consent and were guaranteed anonymity of the information collected. The study was approved by the university's internal review board.

Data analysis

Socio-demographic and job characteristics were described using descriptive statistics (mean, standard deviation, frequency, and percentage). Skewness and kurtosis were used to evaluate the normality of the NPVS-R items. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were used to examine data factorability.

Construct validity was tested using factorial analyses. Specifically, a Confirmatory Factor Analysis (CFA) was carried out to confirm all previous NPVS-R factorial structures identified in the literature on both the original version of the instrument[28–30,32] and its adaptations.[31,35]

Since culture can influence scale dimensionality,[42] we planned to conduct EFA in the event of CFA misfit. To define the number of plausible factors for extraction, parallel analysis, an empirical method for determining optimal factor solution, was performed.[43–46] Since a one-factor solution was suggested as adequate, the CFA was carried out using Structural Equational Modeling (SEM).[47] The NPVS-R uses a 5-point Likert type scale where higher scores indicate stronger professional values. Since the NPVS-R item response format uses only five ordered categories and the data are not normally distributed, we used a Weighted Least Square method, WLS-MV estimator,[48] which is recommended for ordinal or dichotomous variables.[49] The suitability of the model was evaluated considering the following fit indices: comparative fit index (CFI), and Tucker and Lewis Index (TLI) with 0.90–0.95 indicating acceptable fit and >0.95 indicating good fit;[50] the Root Mean Square Error of Approximation (RMSEA) with ≤0.05 to 0.08 indicating good fit;[50] the Standardized Root Mean Square Residual (SRMR) with ≤0.08 indicating a good fit.[51–53] Traditional chi-square (χ^2) statistics were interpreted together with the above indices. According to Bagozzi (1983) and Fornell (1983) modification indices were used to improve model fit.[54,55]

Reliability of the NPVS-R was assessed by evaluating internal consistency using Cronbach's alpha and the composite reliability coefficient. Values >0.70 indicate supportive internal consistency.[50,56]

Concurrent validity of the NPVS-R was evaluated by correlating the NPVS-R score with the Job Satisfaction score, using the Pearson correlation coefficient r (two-tailed).

Statistical analyses were managed using Mplus version 8.4[48] and IBM® SPSS® Statistics V24.

Results

Socio-demographic and job characteristics of the participants

A total of 393 nurses were involved in the study. Among them, 202 were eligible with a mean age of 41.11 (±10.55) years. Most of them (78.2%) were female with a 3-year bachelor or a first level master's degree (76.2%) and employed in the public sector (60.4%). Regarding their job, mainly participants stated that they carried out activities that proved to be consistent with those proposed in the WHO curriculum of Family Health Nurses.[38] 55.9% of participants care for both pediatric and adult patients and 40.1% stated that they care for adults only. Detailed sample socio-demographic and job characteristics are presented in Table 1.

Table 1. Socio-demographic and job characteristics of the sample (n = 202 Family and Community Health Nurses).

	% (N) or mean (±SD)
Age	41.11 (10.55)
Gender	
Female	78.2 (158)
Education	
Three-year bachelor/I level master	76.2 (154)
High school	12.4 (25)
Master of science/II level master	9.9 (20)
Specialization/PhD	1.5 (3)
Occupation	
Public sector	60.4 (122)
Self-employment with VAT number	22.8 (46)
Cooperative/Private sector	16.8 (34)
Setting	
Home	49.0 (99)
District	19.3 (39)
Multi-setting	9.4 (19)
Community	8.9 (18)
Nursing clinic	6.4 (13)
Family physician/Pediatrician clinic	6.4 (13)
Caseload	
1–1500	63.4 (128)
1501–6000	13.5 (27)
>6000	4.5 (9)
Teamworking	
Y	67.8 (137)
Working team (n = 137)	
Multi-professional	82.5 (113)
Mono-professional	17.5 (24)
Working in years	16.21 (11.10)
Working on territory in years	7.94 (7.72)
On-job education (in family and community health nursing)	
Y	26.2 (53)
University education (in family and community health nursing)	
Y	22.8 (46)
Intensive education (on-the-job + university education)	
Y	10.4 (21)

Notes. I level master: 1 year of study; accessible after the 3-year bachelor degree. Master of Science: 2 years of study; accessible after the 3-year bachelor degree. II level master: 1 year of study; accessible after the Master of Science. Multi-setting: describes all those who have selected more than one work setting. Intensive education: represents that part of the sample who stated having achieved both on-the-job and university education on the specific theme of Family and Community Health Nursing.
SD: standard deviation; Y: yes.

Item descriptive analysis

Table 2 shows the item description of the NPVS-R. The mean score of the items ranged from 3.25 (item 18, "Act as a patient advocate") to 4.59 (item 14, "Accept responsibility and accountability for own practice"). Not all of the items were normally distributed, with more items showing a skewness and kurtosis indices greater than |1|.

Construct validity

The KMO measure of sampling adequacy was 0.87 and the Bartlett's test of sphericity was significant ($p < .001$). The dataset was therefore deemed suitable for factor analysis. Table 3 shows the results of the CFAs performed on the previous factorial structure existing in the literature. None of the structures tested showed adequate fit indexes, so we implemented an explorative approach. Parallel analysis suggested that a one-factor

Table 2. Items' description of the NPVS-R (n = 202 Family and Community Health Nurses).

NPVS-R items	Mean	SD	Skewness	Kurtosis
Q1 - Engage in ongoing self-evaluation	4.20	0.95	−1.12	0.83
Q2 - Request consultation/collaboration when unable to meet patient needs	4.50	0.86	−2.08	4.38
Q3 - Protect health and safety of the public	4.48	0.88	−2.12	4.91
Q4 - Participate in public policy decisions affecting distribution of resources	4.11	0.95	−1.15	1.20
Q5 - Participate in peer review	4.29	0.96	−1.59	2.37
Q6 - Establish standards as a guide for practice	4.25	0.95	−1.52	2.31
Q7 - Promote and maintain standards where planned learning activities for students take place	3.97	1.07	−1.15	0.97
Q8 - Initiate actions to improve environments of practice	4.19	0.96	−1.32	1.62
Q9 - Seek additional education to update knowledge and skills	4.49	0.85	−1.94	3.89
Q10 - Advance the profession through active involvement in health-related activities	4.24	0.96	−1.37	1.70
Q11 - Recognize role of professional nursing associations in shaping health care policy	3.92	1.12	−0.86	−0.01
Q12 - Promote equitable access to nursing and health care	4.43	0.90	−1.74	2.85
Q13 - Assume responsibility for meeting health needs of the culturally diverse population	4.21	0.94	−1.47	2.45
Q14 - Accept responsibility and accountability for own practice	4.59	0.83	−2.54	6.81
Q15 - Maintain competency in area of practice	4.44	0.87	−1.92	4.00
Q16 - Protect moral and legal rights of patients	4.40	0.91	−1.75	3.03
Q17 - Refuse to participate in care if in ethical opposition to own professional values	3.80	1.14	−0.78	−0.15
Q18 - Act as a patient advocate	3.25	1.32	−0.24	−1.04
Q19 - Participate in nursing research and/or implement research findings appropriate to practice	4.04	1.06	−0.95	0.25
Q20 - Provide care without prejudice to patients of varying lifestyle	4.39	0.90	−1.73	3.08
Q21 - Safeguard patient's right to privacy	4.52	0.88	−2.17	4.73
Q22 - Confront practitioners with questionable or inappropriate practice	4.04	1.03	−1.11	0.93
Q23 - Protect rights of participants in research	4.04	1.08	−1.16	0.79
Q24 - Practice guided by principles of fidelity and respect for person	4.40	0.89	−1.77	3.36
Q25 - Maintain confidentiality of patient	4.50	0.88	−2.04	4.27
Q26 - Participate in activities of professional nursing associations	3.92	1.16	−0.92	0.03

SD: standard deviation.

Table 3. Goodness-of-fit indices for the NPVS-R factorial structures in the existing literature (n = 202 Family and Community Health Nurses).

NPVS-R scale source	Sample	Number of factors identified	χ^2	DF	p (χ^2)	CFI	TLI	RMSEA (90% CI), p (RMSEA <0.05)	SRMR
Allari R.S., 2016[35]	50 nursing students	5	806.215	289	<.001	0.905	0.893	0.094 (0.086–0.102), $p < .001$	0.057
Geçkil E. et al., 2012[28]	57 clinical nurses; 328 senior nursing students	5	955.413	289	<.001	0.877	0.862	0.107 (0.099–0.114), $p < .001$	0.056
Hosseini F.A. et al., 2020[31]	439 senior nursing students	5	790.831	265	<.001	0.901	0.887	0.099 (0.091–0.107), $p < .001$	0.056
Lin Y.-H., Wang L.S., 2010[29]	110 senior nursing students; 223 clinical nurses	3	1006.253	296	<.001	0.869	0.856	0.109 (0.102–0.116), $p < .001$	0.062
Moon S. et al., 2014[32]	1077 baccalaureate nursing students	5	1066.651	289	<.001	0.856	0.839	0.115 (0.108–0.123), $p < .001$	0.060
Weis D., Schank M.J., 2009[22]	404 baccalaureate nursing students; 80 graduate nursing students; 298 practicing nurses	5	806.215	289	<.001	0.905	0.893	0.094 (0.086–0.102), $p < .001$	0.057

Note. 22. Weis D, Schank MJ. Development and psychometric evaluation of the Nurses Professional Values Scale-Revised. J Nurs Meas. 2009; 17 (3): 221–31. 28. Geçkil E, Ege E, Akin B, et al. Turkish version of the revised nursing professional values scale: Validity and reliability assessment. Japan J Nurs Sci. 2012; 9 (2): 195–200. 29. Lin YH, Wang LS. A Chinese version of the revised Nurses Professional Values Scale: reliability and validity assessment. Nurse Educ Today. 2010; 30 (6): 492–8. 31. Hosseini F, Zarshenas L, Parvan K, et al. Psychometric properties of Nurses Professional Values Scale-Revised: An Iranian version. 2020. DOI: 10.21203/rs.3.rs-38280/v1. 32. Moon S, Kim DH, Kim EJ, et al. Evaluation of the validity and reliability of the Korean version of the Nursing Professional Values Scale-Revised. Nurse Educ Today. 2014; 34 (3): 325–30. 35. Allari R.S. Nursing professional values scale: psychometric properties of Arabic version. Int J Recent Sci Res. 2016; 7 (9): 13,240–4.
CFI: comparative fit index; DF: degrees of freedom; RMSEA: root mean square error of approximation; SRMR: standardized root mean square residual; TLI:Tucker-Lewis index.

solution was the most adequate. Accordingly, a one-factor CFA was conducted. The model yielded a poor fit as follows: χ^2 (299, N = 202) = 917.147, p < .001, CFI = 0.962, TLI = 0.959, RMSEA = 0.101 (90% CI = 0.094 – 0.109), SRMR = 0.059. Inspection of the modification indices reveals that the cause of the misfit was the excessive covariance between Q6 ("Establish standards as a guide for practice") and Q7 ("Promote and maintain standards where planned learning activities for students take place"); Q24 ("Practice guided by principles of fidelity and respect for person") and Q25 ("Maintain confidentiality of patient"). The covariances related to items Q6 and Q7, and items Q24 and Q25, with an adjacent position in the scale, were specified as a consequence of the "proximity effect." Weijters et colleagues (2009) argue that adjacent pairs of positively worded items may show a pattern of increasing correlation that decreases with increasing inter-item distance.[57] Thus, when we reran the model allowing the residuals of these two items to be correlated,[54,55] the model showed adequate fit indices: χ^2 (297, N = 202) = 831.552, p < .001; CFI = 0.967; TLI = 0.964; RMSEA = 0.094 (90% CI = 0.087–0.102); SRMR = 0.056. All factor loadings were significant and ≥0.53. The trimmed model is presented in Figure 1.

Reliability

Cronbach's alpha coefficient for the overall scale was 0.97; and the composite reliability coefficient was 0.96. These results revealed excellent internal consistency of the NPVS-R.

Concurrent validity

Correlations between the NPVS-R total score and the Job Satisfaction subscale of the EWQ resulted in a Pearson's r or f 0.22 (p = .01).

Discussion

This study aimed to evaluate the psychometric properties (validity and reliability) of the NPVS-R on FCHNs. To the best of our knowledge, this study was the first to test the validity and reliability of the NPVS-R on FCHNs.

Based on the results of this study, the NPVS-R can be used in FCHNs for its intended purpose, as its validity and reliability were supported. The NPVS-R offers the opportunity to study professional identity. This extended knowledge is essential for a better assessment of professional identity and could lead to the development of tailored intervention to enhance professional identity and, consequently, quality of care.

Regarding structural validity, the CFA supported a monodimensional factorial structure with adequate fit to the data. To the best of our knowledge, these results have not been previously documented in the NPVS-R psychometric literature. A five-factor structure was defined using EFA for students[31] and PCA for both nurses[28] and student.[28,32] Whereas two other studies found four- and three-factorial structures, respectively, tested on nurses using CFA[30] and on both nurses and students using PCA.[29] These mixed results highlight the importance of further testing the instrument. The monodimensional factorial structure found could indicate that FCHNs recognize the construct that the scale operationalizes, but at the same time they are unable to identify the nuances of the construct itself; or maybe that they consider professional identity as a unique concept with no nuances. This could be explained by recent formalization of FCHNs in Italy. In fact, the various implementations prior to this formalization have led to a lack of clarity between the different roles that nurses assume in the country, generating various intra- and inter-regional identifications of FCHNs.[58] Another very plausible explanation may lie in the influence of culture on professional identity; in fact, we expected to find some differences due to the diverse cultural background of our sample. In several psychometric studies that tested the NPVS-R in multiple populations,[28–32] authors linked the differences compared to the original

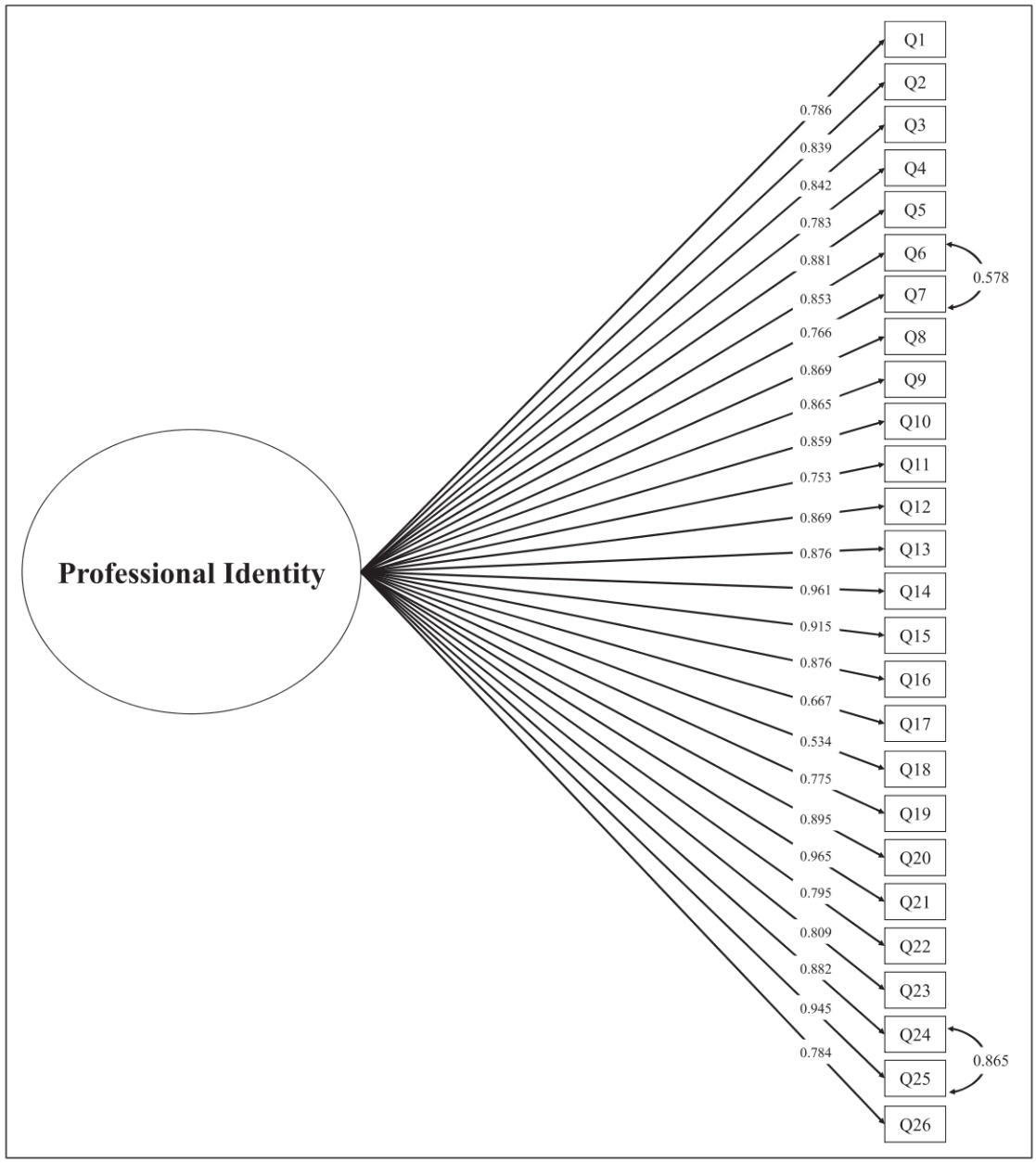

Figure 1. Confirmatory factor analysis of the nurses professional values scale-revised. Note. goodness-of-fit indices of the factorial confirmatory model: χ^2 (297, N = 202) = 831.552, p < .001; CFI = 0.967; TLI = 0.964; RMSEA = 0.094 (C.I. 90% 0.087–0.102); SRMR = 0.056. Notes. CFI: comparative fit index; RMSEA: root mean square error of approximation; SRMR: standardized root mean square residual; TLI: Tucker-Lewis index.

version of the instrument to cultural reasons (both for nurses and students). This cultural matter was also reinforced by the authors of the original NPVS-R version[22] and by a consistent literature affirming cultural influence on professional identity and on the set of nursing values.[33,34]

Some covariances were specified between Q6 ("Establish standards as a guide for practice") and Q7 ("Promote and maintain standards where planned learning activities for students take place"), and Q24 ("Practice guided by principles of fidelity and respect for person") and Q25 ("Maintain confidentiality of patient"). These covariances are methodologically and theoretically supported. In addition to the proximity effect,[57] the excessive covariances between items Q6 and Q7 can also be explained by the fact that both items refer to clinical standards. Regarding Q24 and Q25, maintaining confidentiality of patients is a concept contained in the principles of fidelity and respect that should guide practice.

Regarding internal consistency reliability of the NPVS-R, both coefficients estimated were supportive. To our knowledge, this is the first study to test internal consistency using composite reliability coefficients supporting the reliability of the instrument. This means that future measurements of the professional identity factor of the scale will ensure reliable scores in this population.

Finally, the concurrent validity of the NPVS-R was demonstrated by testing the hypothesis of significant positive correlations between professional identity and job satisfaction. As underscored by the empirical literature, job satisfaction is positively correlated with professional identity, both in nurses[2,5] and in other health-care professionals.[6,7] As expected, we found a positive and significant correlation of professional identity with job satisfaction, suggesting evidence of concurrent validity.

Overall, the NPVS-R demonstrated good validity and reliability for measuring professional identity in FCHNs.

Limitations

Several limitations should be acknowledged. First, we tested the instrument on a single convenience sample enrolled in one European country. Second, validation against more than one criterion, discriminant validity, responsiveness, and test-retest reliability were not tested because this was not the principal aim of the primary study. Future studies are needed to verify these psychometric characteristics of the NPVS-R. Third, we excluded retired nurses or nurses employed in out-of-hospital services not formally identifiable with Family and Community Health Nursing: in the first case, because by no longer practicing the profession they could have a different vision of professional identity from that of nurses currently working; in the second, because the diverse intra- and inter-regional identifications of FCHNs detected among the various implementations prior to the formalization of this figure[58] could led to a selection bias. Considering these limitations, generalizability of our findings should be applied with caution in other countries and in other FCHNs populations.

Implications for practice and research

All these results are a relevant addition to knowledge and practice for several reasons.

In clinical practice, the use of the NPVS-R allows organizational institutions to detect professional identity levels and take actions to improve it, decreasing the risks related to low levels, such as burnout and low-quality care.

In research, the psychometric properties of NPVS-R found in FCHNs allow a comprehensive understanding of professional identity and its relationship to quality of care.

In an educational setting, the use of the NPVS-R allows professional identity levels to be measured and monitored while nurses study to become FCHNs.

Conclusion

This study shows that the NPVS-R has good psychometric characteristics of validity and reliability and could be used in clinical practice and research to evaluate and improve professional identity among FCHNs and students.

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