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Development and Psychometric Evaluation of the Migrant Health Competency Scale for Nurses

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ABSTRACT:

Aim: This methodological study aimed to develop the Migrant Health Competency Scale for Nurses (MHCSN) and evaluate its validity and reliability.

Methods: The study was conducted with a total of 600 nurses, including 301 nurses from Erzurum City Hospital, 225 nurses from Atatürk University Research Hospital, and 74 nurses working in Family Health Centers in Erzurum, Türkiye. Data were collected using a demographic information form and a preliminary 31-item scale. Data were analyzed using SPSS version 22.0 and AMOS. Descriptive statistics, exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and reliability analyses were performed to evaluate the psychometric properties of the scale.

Results: The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was 0.912, indicating excellent suitability for factor analysis. The final scale consisted of 29 items organized into seven subscales, explaining 55.388% of the total variance. Factor loadings ranged from 0.456 to 0.739. The overall Cronbach's alpha coefficient was 0.902, while the Cronbach's alpha coefficients for the subscales ranged from 0.62 to 0.79, demonstrating acceptable to good internal consistency.

Conclusion: The Migrant Health Competency Scale for Nurses (MHCSN) is a valid and reliable instrument for assessing nurses' competencies in migrant health. Future studies are recommended to further evaluate the psychometric properties of the scale in different cultural settings and among more diverse nursing populations.

1. INTRODUCTION

Migration is a multifaceted phenomenon that affects both individuals and societies by bringing about social, physical, cultural, and psychological changes. Consequently, it has a profound impact on health and healthcare systems. Cultural diversity among migrant populations influences several aspects of healthcare, including the ability to express health needs, awareness of the importance of early diagnosis, health literacy, health beliefs and perceptions, health-related behaviors, acceptance of illness, utilization of healthcare services, communication with healthcare professionals, and understanding of discharge instructions. These factors play a critical role in determining migrants' access to and utilization of healthcare services (1).

A migrant is generally defined as an individual who leaves their country of origin and settles in another country in pursuit of improved economic, social, or living conditions (2).

Migration has long been recognized as a global social phenomenon. In recent decades, however, globalization, armed conflicts, political instability, and various socioeconomic factors have substantially accelerated migration flows, making migration a major

global public health concern (2–4). Owing to its strategic geographical location, Turkey has become one of the principal destination and transit countries for migrants. Many migrants regard Turkey as either a temporary transit route or a settlement destination while attempting to reach European Union countries (5,6).

The growing migrant population presents numerous challenges to healthcare systems. Limited availability of healthcare facilities, financial hardship, lack of health insurance, language barriers, difficulties in meeting basic needs, and psychosocial stressors adversely affect migrants' health and well-being (7). Furthermore, many migrants tend to postpone seeking healthcare because of economic difficulties and other social challenges, which may lead to delayed diagnosis and treatment, poorer health outcomes, and increased vulnerability to preventable diseases (8).

Nurses are the healthcare professionals who have the most direct and continuous contact with migrant populations throughout the healthcare process. They play a pivotal role in protecting, promoting, and improving the health of migrant patients and constitute the primary workforce responsible for delivering comprehensive healthcare services to this vulnerable population (9).

Public health nurses play a particularly important role in migrant health services. They are responsible for planning, implementing, and evaluating healthcare interventions while considering migrants' linguistic, cultural, social, and economic characteristics. In addition, public health nurses facilitate migrants' access to healthcare services, provide health education, promote healthy lifestyle behaviors, monitor health problems, and strengthen coordination among healthcare institutions through interdisciplinary collaboration (10).

Nurses are also responsible for collecting and evaluating relevant health information to assess migrants' health status, facilitate their access to healthcare services, and contribute to addressing migrant health-related challenges. By identifying migrants' health needs, public health nurses develop appropriate, evidence-based strategies to improve health outcomes. Furthermore, they organize health education programs that enhance health awareness and contribute to improving the overall health of both migrant populations and the wider community (11).

Because migrants constitute one of the most vulnerable population groups, migrant health represents a major area of practice for public health nursing. Nurses play a critical role in preventing disease and premature mortality among migrant populations while facilitating the delivery and coordination of healthcare services. However, migrants often experience limited access to public health services because of language barriers, cultural differences, socioeconomic disadvantage, psychological distress, and inadequate health insurance coverage. Through community- and home-based healthcare programs, nurses provide essential services, including health education, maternal and postnatal care, child health follow-up, and immunization. Given these responsibilities, there is a clear need for a valid and reliable instrument to evaluate nurses' competencies in migrant health. Therefore, the present study aimed to develop a measurement tool for assessing nurses' competencies in migrant health.

2. MATERIALS AND METHODS

2.1 Study Design and Setting

This methodological study was conducted to develop and evaluate the psychometric properties of the Migrant Health Competency Scale for Nurses (MHCSN). The study was carried out in Erzurum, a province located in Eastern Turkey.

The study population consisted of nurses working at Erzurum City Hospital ($n = 301$), Atatürk University Research Hospital ($n = 225$), and Family Health Centers located in the city center of Erzurum ($n = 74$). All nurses who met the inclusion criteria and voluntarily agreed to participate were included in the study, resulting in a final sample of 600 nurses.

Erzurum is situated in the Eastern Anatolia Region of Turkey ($39^{\circ}55'$ N latitude and $41^{\circ}16'$ E longitude). The province is bordered by Ardahan, Artvin, and Rize to the north; Gümüşhane, Erzincan, and Bayburt to the west; Bingöl and Muş to the south; and Ağrı, Kars, and Iğdır to the east. The study was conducted at Erzurum City Hospital, Atatürk University Research Hospital, and Family Health Centers located in Erzurum city center.

Both hospitals serve as major tertiary referral centers providing comprehensive healthcare services, including medical and surgical specialties, diagnostic imaging, and laboratory services for Erzurum and neighboring provinces. The Family Health Centers represent the primary healthcare system, delivering preventive healthcare, health promotion, early diagnosis, primary medical care, and basic emergency health services.

2.2 Data Collection

Data collection was conducted between 9 November 2023 and 25 February 2024.

The study data were collected using two instruments:

Demographic Information Form

Migrant Health Competency Scale for Nurses (MHCSN)

Completion of the questionnaires required approximately 15–20 minutes. Eligible nurses were identified through their institutional administrators, and participants were invited to take part in the study. After obtaining the necessary institutional permissions, the questionnaires were administered face-to-face under standardized conditions. Prior to participation, all nurses were informed about the purpose of the study, and written informed consent was obtained from each participant.

2.3 Scale Development

The item pool was developed following a comprehensive review of the relevant literature conducted by the researchers. To identify existing instruments and conceptual frameworks related to migrant health competencies, searches were performed in national and international electronic databases, including PubMed, Web of Science, ScienceDirect, Google Scholar, ULAKBİM, and the Council of Higher Education (YÖK) National Thesis Database. Appropriate keywords related to migrant health and nursing competencies were used to retrieve relevant studies, and the findings of the literature review were used to generate the initial pool of scale items (12).

The scale development process began with an extensive literature review to determine whether an existing instrument assessing nurses' competencies in migrant health was available. Based on the findings, a preliminary item pool consisting of 31 items was developed using a five-point Likert scale.

The draft instrument was evaluated by two subject-matter experts and ten experts in scale development. Based on their recommendations, three items were revised to improve clarity and comprehensibility, while no items were removed at this stage.

Each item was rated on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The scale contained no reverse-scored items.

2.4 Sample Size

Previous methodological studies have proposed different recommendations regarding sample size for factor analysis. Bryman and Cramer (2001) recommended recruiting a sample equivalent to five to ten participants per item, whereas Tabachnick and Fidell (2013) suggested that a minimum sample of 300 participants is sufficient regardless of the number of items. Consistent with these recommendations, the present study included 600 participants, exceeding the minimum recommended sample size and providing adequate statistical power for the validity and reliability analyses.

2.5 Validity and Reliability

The psychometric evaluation of the Migrant Health Competency Scale for Nurses (MHCSN) was conducted in two sequential stages. First, the validity of the instrument was established through content and construct validity analyses. Subsequently, reliability analyses were performed to evaluate the internal consistency of the final scale.

2.6 Content Validity

Content validity of the Migrant Health Competency Scale for Nurses (MHCSN) was evaluated by a panel of 10 experts. The preliminary version of the scale was assessed using a four-point rating system: 1 = not appropriate, 2 = appropriate but requires minor revisions, 3 = quite appropriate, and 4 = highly appropriate.

The Content Validity Ratio (CVR) and the Content Validity Index (CVI) were calculated for all items. According to Karagöz and Bardakçı (2020), the minimum acceptable Content Validity Index (CVI) for a panel consisting of ten experts is 0.62. In the present study, the overall CVI was 0.80, exceeding the recommended threshold and indicating satisfactory content validity. This finding demonstrates that the scale adequately represents the conceptual domain of migrant health competency and provides sufficient evidence for its content validity.

2.7 Ethical Considerations

Ethical approval was obtained from the Atatürk University Non-Interventional Clinical Research Ethics Committee before the commencement of the study (Approval No. B.30.2.ATA.0.01.00/410; Date: 1 June 2023).

Additional institutional permissions were obtained from Atatürk University Research Hospital and the Erzurum Provincial Directorate of Health (Permission No. E-76614443-604.01-238309091; Date: 4 March 2024).

Prior to data collection, all participants were informed about the purpose and procedures of the study. Written informed consent was obtained from each participant. Participation was entirely voluntary, and participants were informed that they could withdraw from the study at any time without any consequences.

3. RESULTS

3.1 Exploratory Factor Analysis

Before conducting the exploratory factor analysis (EFA), the suitability of the dataset for factor analysis was assessed using the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity.

The final analysis demonstrated a KMO value of 0.912, indicating excellent sampling adequacy. Bartlett's test of sphericity was statistically significant ($\chi^2 = 5169.692$, $df = 406$, $p < 0.001$), confirming that the data were appropriate for factor analysis (13–15).

Exploratory factor analysis was subsequently performed to examine the construct validity of the Migrant Health Competency Scale for Nurses (MHCSN). The initial analysis of the preliminary 31-item scale identified seven factors with eigenvalues greater than 1.0, explaining 54.179% of the total variance.

Examination of the rotated factor matrix revealed that Items 22 and 26 exhibited cross-loadings on more than one factor. Consequently, these two items were removed, and the exploratory factor analysis was repeated. The final solution consisted of 29 items grouped into seven factors, accounting for 55.388% of the total variance.

Factor loadings ranged from 0.456 to 0.739, indicating satisfactory relationships between the retained items and their underlying constructs.

Table 1. Factor Loadings for the Items of the Migrant Health Competency Scale for Nurses.

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
M17	.691						
M16	.631						
M18	.617						
M20	.522						
M19	.502						
M15	.496						
M21	.488						
M6		.729					
M5		.643					
M4		.609					
M7		.588					
M3		.526					

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
M11			.610				
M12			.580				
M13			.453				
M10			.446				
M14			.446				
M31				-.749			
M30				-.731			
M29				-.720			
M27				-.625			
M28				-.603			
M26*				-.411	-.326		
M24					-.759		
M23					-.608		
M25					-.606		
M2						.745	
M1						.649	
M22*	.351					.362	
M8							.758
M9							.697

Note. Items 22 and 26 were removed from the final version of the scale because of cross-loadings.

3.2 Exploratory Factor Analysis

The criteria recommended for exploratory factor analysis were applied during the factor extraction process (16). The following criteria were used to retain items: (a) a minimum difference of 0.10 between factor loadings for cross-loading items, (b) factor eigenvalues greater than 1.0, and (c) minimum factor loadings of 0.32. Based on these criteria, no additional cross-loading items were identified after the removal of Items 22 and 26.

The maximum likelihood extraction method, one of the most widely used techniques in exploratory factor analysis, was employed to estimate the underlying factor structure (16). Because the latent factors were expected to be correlated, an oblique (direct oblimin) rotation was applied.

According to Pallant (2020), communality values below 0.30 indicate that an item does not adequately share variance with the remaining items within the factor structure (17). The communalities, factor loadings, and variance explained by each factor are presented in Table 2.

Table 2. Communalities, Factor Loadings, and Explained Variance of the Migrant Health Competency Scale for Nurses

Factor	Items	Communality	Factor Loading
Factor 1	M17	.682	.528
	M18	.654	.572
	M16	.609	.586
	M19	.564	.520
	M20	.550	.456
	M15	.515	.519
	M21	.489	.523
Factor 2	M6	.708	.615
	M7	.659	.564
	M5	.547	.538
	M4	.488	.523
Factor 3	M11	.640	.553
	M12	.623	.496
	M10	.466	.500
	M14	.465	.472
	M13	.455	.484
Factor 4	M31	.770	.547
	M29	.748	.565
	M30	.747	.578
	M28	.633	.494
	M27	.576	.516
Factor 5	M24	.760	.619
	M23	.634	.575
	M25	.633	.602
Factor 6	M8	.734	.645
	M9	.694	.596
Factor 7	M2	.882	.739
	M1	.639	.537
	M3	.558	.601

Total variance explained: 55.388%

3.3 Interpretation of the Factor Structure

As shown in Table 2, all retained items demonstrated communality values above the recommended threshold of 0.30, indicating that each item contributed meaningfully to the overall factor structure. The final scale comprised seven factors with eigenvalues greater than 1.0, explaining 55.388% of the total variance.

According to Henson and Roberts (2006), an explained variance of 52% or higher is considered adequate for newly developed multidimensional instruments (18). Therefore, the total explained variance obtained in the present study indicates satisfactory construct validity of the Migrant Health Competency Scale for Nurses (MHCSN).

The scree plot, which was used to determine the optimal number of factors underlying the scale, is presented in Figure1

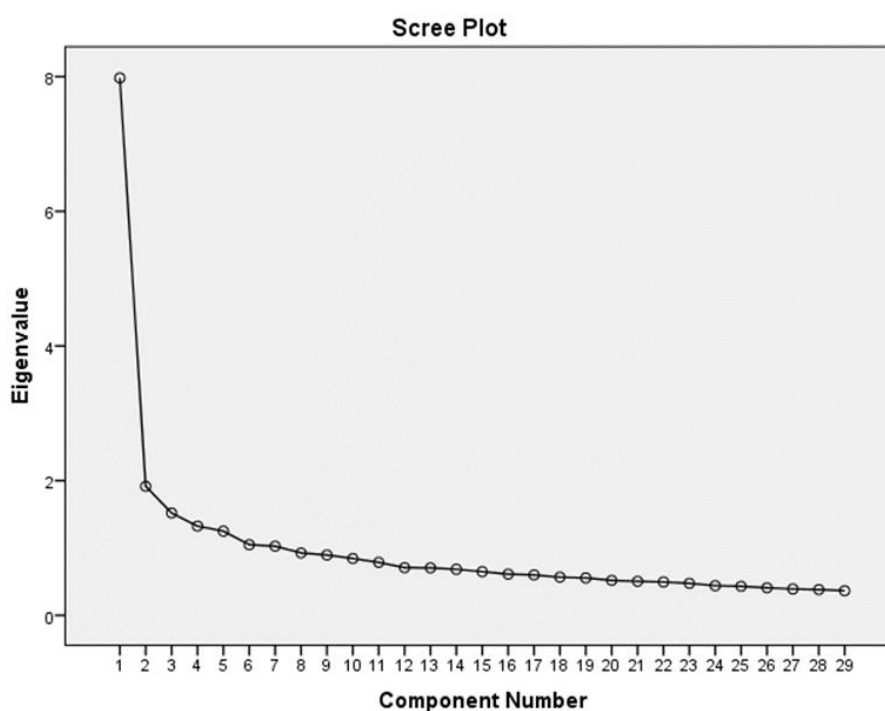


Figure 1. Scree Plot of the Exploratory Factor Analysis of the Migrant Health Competency Scale for Nurses.

As shown in Figure 1, the scree plot indicated a seven-factor structure, with seven factors having eigenvalues greater than 1.0. The point of inflection observed in the scree plot further supported the seven-factor solution.

The findings presented in Table 2 and Figure 1 demonstrated that the explained variance was adequate to support the construct validity of the scale. The names of the seven factors and the corresponding items included in each factor are presented in Table 3.

Table 3. Names of the Factors and Corresponding Items of the Migrant Health Competency Scale for Nurses.

Factor	Factor Name	Original Items	Renumbered Items
Factor 1	Health Promotion Competency	M15–M21	M15–M21
Factor 2	Self-Confidence	M4–M7	M4–M7
Factor 3	Care Competency	M10–M14	M10–M14
Factor 4	Healthy Lifestyle Competency	M27–M31	M25–M29

Factor	Factor Name	Original Items	Renumbered Items
Factor 5	Health Assessment Competency	M23–M25	M22–M24
Factor 6	Health Policy	M8–M9	M8–M9
Factor 7	Communication Competency	M1–M3	M1–M3

3.4 Reliability Analysis

The reliability analysis results for the subscales of the Migrant Health Competency Scale for Nurses (MHCSN) are presented in Table 4.

According to the literature, a Cronbach's alpha coefficient of 0.60 or higher is considered acceptable, a value of 0.70 or higher indicates satisfactory internal consistency, and a coefficient of 0.90 or above reflects excellent reliability (19).

As shown in Table 4, the Cronbach's alpha coefficients demonstrated satisfactory to excellent internal consistency for both the overall scale and its subscales, indicating that the MHCSN is a reliable instrument for assessing nurses' competencies in migrant health.

The Migrant Health Competency Scale for Nurses (MHCSN) does not contain any negatively worded or reverse-scored items. The scale is scored using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Total and subscale scores are calculated by summing the item scores. No cut-off score was established for either the total scale or its subscales. The total score ranges from 29 to 145, with higher scores indicating higher levels of migrant health competency among nurses. The items included in each subscale and their corresponding score ranges are presented in Table 4.

Table 4. Reliability Analysis and Descriptive Statistics of the Migrant Health Competency Scale for Nurses.

Subscale	Cronbach's α	Number of Items	Items	Score Range	Mean $\pm$ SD
Health Promotion Competency	0.79	7	M15–M21	7–35	22.08 $\pm$ 5.79
Self-Confidence	0.71	4	M4–M7	4–20	12.89 $\pm$ 3.55
Care Competency	0.71	5	M10–M14	5–25	13.01 $\pm$ 3.36
Healthy Lifestyle Competency	0.73	5	M25–M29	5–25	15.92 $\pm$ 4.35
Health Assessment Competency	0.66	3	M22–M24	3–15	9.84 $\pm$ 2.82
Health Policy	0.62	2	M8–M9	2–10	5.91 $\pm$ 2.10
Communication Competency	0.66	3	M1–M3	3–15	8.66 $\pm$ 2.85
Total MHCSN Score	0.90	29	M1–M29	29–145	91.45 $\pm$ 18.50

3.5 Reliability Analysis

The reliability analysis of the Migrant Health Competency Scale for Nurses (MHCSN) is presented in Table 4. The Cronbach's alpha coefficient for the overall scale was 0.90, indicating excellent internal consistency. Cronbach's alpha coefficients for the seven subscales ranged from 0.62 to 0.79, demonstrating acceptable to good internal consistency. Since all Cronbach's alpha values exceeded the recommended threshold of 0.60, the findings indicate that both the overall scale and its subscales are reliable measures of migrant health competency among nurses.

Table 5. Item Means, Standard Deviations, Item–Total Correlations, and Cronbach's Alpha if Item Deleted for the Migrant Health Competency Scale for Nurses (29 Items).

Item	Mean	SD	Corrected Item–Total Correlation	Cronbach's Alpha if Item Deleted
M1	2.75	1.216	.480	.902
M2	2.89	1.197	.416	.903
M3	3.03	1.265	.480	.902
M4	3.22	1.160	.452	.903
M5	3.18	1.199	.435	.903
M6	3.13	1.296	.455	.903
M7	3.36	1.193	.381	.904
M8	2.98	1.230	.427	.903
M9	2.94	1.239	.429	.903
M10	3.11	1.208	.495	.902
M11	3.29	1.205	.489	.902
M12	3.31	1.164	.439	.903
M13	3.15	1.206	.434	.903
M14	3.27	1.194	.515	.902
M15	3.12	1.234	.460	.902
M16	3.28	1.223	.481	.902
M17	3.28	1.192	.481	.902
M18	3.14	1.266	.539	.901
M19	3.01	1.250	.499	.902
M20	3.11	1.240	.506	.902
M21	3.15	1.236	.510	.902
M23	3.20	1.258	.505	.902
M24	3.32	1.215	.423	.903
M25	3.32	1.178	.517	.901
M27	3.07	1.239	.508	.902
M28	3.16	1.203	.508	.902
M29	3.23	1.253	.494	.902
M30	3.26	1.202	.516	.901
M31	3.20	1.186	.440	.903

3.6 Item Analysis

Table 5 presents the item analysis results for the Migrant Health Competency Scale for Nurses (MHCSN), including the item means, standard deviations, corrected item–total correlations, and Cronbach's alpha if item deleted.

The mean scores of the retained items ranged from 2.75 to 3.36, indicating moderate to high levels of agreement among the participants.

The corrected item–total correlation coefficients ranged from 0.381 to 0.539. The highest correlation coefficient was observed for Item 18 ($r = 0.539$), whereas the lowest was observed for Item 7 ($r = 0.381$). Since all corrected item–total correlation coefficients exceeded the recommended minimum threshold of 0.25, each retained item demonstrated satisfactory discriminatory power and contributed meaningfully to the overall scale.

The Cronbach's alpha if item deleted values ranged from 0.901 to 0.904, indicating that the removal of any individual item would not improve the internal consistency of the scale. Therefore, all retained items were considered appropriate for inclusion in the final version of the Migrant Health Competency Scale for Nurses (MHCSN).

4. DISCUSSION

Migrant health is an integral component of public health. The increasing cultural diversity resulting from migration presents significant challenges for healthcare professionals in protecting and promoting the health of migrant populations. In addition to providing direct patient care, nurses are expected to understand the social, cultural, economic, and environmental factors influencing migrant health and to implement evidence-based nursing interventions that address these determinants. Strengthening nurses' competencies in migrant health is therefore essential for improving the quality of healthcare services and promoting health equity among migrant populations.

The present study aimed to develop a valid and reliable instrument for assessing nurses' competencies in migrant health. The development of a psychometrically sound measurement instrument requires rigorous evaluation of two fundamental properties: validity and reliability (20).

4.1 Validity

4.1.1 Content Validity

The content validity of the Migrant Health Competency Scale for Nurses (MHCSN) was established through expert evaluation. The initial pool of 38 items was reviewed by a panel of 10 experts, and based on their recommendations, the scale was refined to 31 items (20). This expert review ensured that the retained items adequately represented the conceptual framework of migrant health competency.

4.1.2 Construct Validity

Construct validity was evaluated using exploratory factor analysis (EFA). The primary objective of EFA was to identify the underlying factor structure of the scale and to determine whether the observed data adequately reflected the proposed construct.

Prior to factor extraction, the suitability of the data for factor analysis was assessed using the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. A KMO value below 0.50 indicates that the sample size is insufficient for factor analysis (Karagöz, 2019). In the present study, the KMO value was 0.912, while Bartlett's test of sphericity was statistically significant ($\chi^2 = 5169.692$, $df = 406$, $p < 0.001$), demonstrating that the sample size was adequate and that the correlation matrix was suitable for factor analysis (14,15).

Exploratory factor analysis identified a seven-factor structure with eigenvalues greater than 1.0, explaining 55.388% of the total variance. This proportion of explained variance exceeds the recommended level for multidimensional scales and provides evidence of satisfactory construct validity (18). Furthermore, the factor loadings ranged from 0.456 to 0.739, indicating that all retained items demonstrated acceptable associations with their respective latent constructs.

The item with the lowest factor loading (0.456) was Item 20, "I can perform periodic follow-up assessments of migrant children's health." This relatively lower loading may reflect the practical challenges nurses encounter in monitoring migrant children's health, including barriers to continuity of care, limited access to health services, and difficulties in long-term follow-

up. These challenges may also be associated with administrative and organizational factors within healthcare systems serving migrant populations.

In contrast, the highest factor loading (0.739) was observed for Item 2, "It is possible to communicate effectively with migrant patients regardless of the language they speak." This finding may indicate that nurses perceive communication as a core professional competency and recognize the importance of adapting communication strategies when caring for culturally and linguistically diverse populations.

4.1.3 Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) is commonly used to examine whether the hypothesized relationships between observed variables and their underlying latent constructs are supported by the observed data. Model fit indices are calculated to evaluate how well the proposed measurement model fits the data.

In the present study, the model fit indices demonstrated an acceptable to good fit. According to the recommended criteria, a χ^2/df ratio of ≤ 3 indicates a good model fit, whereas a value of ≤ 5 indicates an acceptable model fit. The χ^2/df ratio obtained in this study indicated a good fit between the proposed model and the observed data.

Furthermore, the Root Mean Square Error of Approximation (RMSEA) was less than 0.05, indicating an excellent model fit. The Adjusted Goodness-of-Fit Index (AGFI), Incremental Fit Index (IFI), Goodness-of-Fit Index (GFI), and Comparative Fit Index (CFI) were all within the acceptable or good fit ranges (21). Overall, these findings indicate that the proposed seven-factor model demonstrated satisfactory construct validity and provided an acceptable fit to the observed data (22,23).

4.2 Reliability

The internal consistency of the Migrant Health Competency Scale for Nurses (MHCSN) was evaluated using Cronbach's alpha coefficients. The Cronbach's alpha coefficients of the seven subscales ranged from 0.62 to 0.79, while the overall scale demonstrated a Cronbach's alpha coefficient of 0.902, indicating excellent internal consistency.

The first, second, third, and fourth subscales demonstrated good reliability, with Cronbach's alpha coefficients exceeding 0.70. Although the fifth, sixth, and seventh subscales yielded Cronbach's alpha coefficients below 0.70, all values remained above the recommended minimum threshold of 0.60. The relatively lower reliability coefficients observed for these subscales may be attributed to the limited number of items they contain, as each consists of only two or three items (19). Previous psychometric studies have shown that Cronbach's alpha is influenced by the number of items in a scale, and lower coefficients are commonly observed in shorter subscales.

Nevertheless, because the Cronbach's alpha coefficients exceeded the acceptable threshold and approached 0.70, these subscales can be considered to have acceptable internal consistency. Overall, the Migrant Health Competency Scale for Nurses (MHCSN) demonstrated excellent reliability and can be considered a reliable instrument for assessing nurses' competencies in migrant health (22,23).

4.3 Item Analysis and Interpretation

The corrected item–total correlation coefficients ranged from 0.381 to 0.539, indicating satisfactory item discrimination and supporting the internal consistency of the scale.

The lowest corrected item–total correlation was observed for Item 7, "I can provide health education to migrant patients with the assistance of an interpreter" ($r = 0.381$). Zimmerman and Beam (2020) reported that migrant populations often have limited literacy and health literacy in both their native language and the language of the host country. These communication and health literacy barriers may reduce the effectiveness of health education and could explain the relatively lower correlation observed for this item.

The highest corrected item–total correlation was observed for Item 18, "I can explain the importance of family planning methods to migrant patients" ($r = 0.539$). This finding may indicate that nurses perceive themselves as more competent in providing family planning counseling. Similarly, Susanto et al. (2021), in their study evaluating public health nursing competencies in Indonesia, identified family planning and contraceptive counseling as one of the strongest competency domains among public health nurses (24).

All corrected item–total correlation coefficients exceeded the recommended threshold of 0.30, indicating that each retained item contributed meaningfully to the overall construct and supporting the reliability of the Migrant Health Competency Scale for Nurses (MHCSN).

Following the exploratory factor analysis, two items were removed, resulting in a final instrument consisting of 29 items. The total score ranges from 29 to 145, with higher scores indicating higher levels of migrant health competency among nurses.

The findings of the present study are consistent with previous research evaluating nursing competencies in different clinical and public health settings. Toprak and Aslan (2020), in their Turkish validity and reliability study of the Nurse Competence Scale, reported that nurses demonstrated high levels of overall professional competence. Likewise, nurses working as clinical education nurses in a private hospital evaluated themselves as professionally competent in fulfilling their responsibilities (25). Similar findings were reported in a study involving 163 nurses in Saudi Arabia, where participants demonstrated good levels of professional competence (26). Collectively, these findings emphasize that nursing competence should be continuously developed, maintained, and systematically evaluated to ensure the delivery of high-quality healthcare services (27).

4.4 Limitations

Despite its strengths, this study has several limitations. First, the study sample was recruited exclusively from one city hospital, one university hospital, and primary healthcare centers in Erzurum, eastern Türkiye. Therefore, the findings may not be generalizable to nurses working in other regions or healthcare settings. Second, the psychometric properties of the Migrant Health Competency Scale for Nurses (MHCSN) were evaluated using a single study population. Future studies should further examine the validity and reliability of the scale among nurses from different geographical regions, healthcare institutions, and cultural backgrounds.

5. CONCLUSION

This study developed and psychometrically evaluated the Migrant Health Competency Scale for Nurses (MHCSN) to assess nurses' competencies in migrant health. The findings demonstrated that the Turkish version of the scale is a valid and reliable instrument, exhibiting satisfactory content validity, construct validity, and internal consistency.

The final version of the scale consists of 29 items grouped into seven subscales, providing a comprehensive assessment of nurses' competencies in migrant health. The MHCSN may serve as a useful instrument for identifying competency levels, evaluating educational interventions, and supporting research and professional development in migrant health nursing.

Based on the findings of this study, the following recommendations are proposed:

- The MHCSN should be used in future cross-sectional and interventional studies involving nurses.
- The psychometric properties of the scale should be re-evaluated among nurses working in different healthcare settings and across diverse cultural populations.
- Future research should investigate the factors influencing nurses' competencies in migrant health.
- Additional methodological studies should be conducted to further evaluate and refine competency assessment instruments for nurses.

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AUTHOR CONTRIBUTIONS

Emced Elubeyd: Conceptualization, investigation, methodology, data curation, formal analysis, writing—original draft, and writing—review & editing.

Esra Yıldız: Conceptualization, methodology, supervision, validation, and writing—review & editing.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ETHICS STATEMENT

Ethical approval was obtained from the Atatürk University Non-Interventional Clinical Research Ethics Committee before commencement of the study (Approval No. B.30.2.ATA.0.01.00/410; Date: 1 June 2023). Institutional permissions were obtained from Atatürk University Research Hospital and the Erzurum Provincial Directorate of Health. Written informed consent was obtained from all participants prior to data collection.

DATA AVAILABILITY STATEMENT

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

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