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Cross-cultural Adaptation, Validity and Reliability of Mentor Function Scale – Arabic Version in Saudi Nursing Interns

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Abstract

Background: Mentors are important in creating a positive clinical learning environment for newly graduated nurses who will transition to become professional nurses in Saudi Arabia. The Mentor Function Scale (MFS) was translated to the Arabic language to have a valid and reliable instrument for the measurement of the perception of nursing interns in Saudi Arabia with regard to their mentors during their clinical internship program. **Objective:** This study aimed to examine the cross-cultural adaptation, validity, and reliability of the Arabic translation of MFS. **Design:** A panel of five experts translated the MFS and determined its validity using the item- and the scale-level validity indices. The exploratory factor analysis was conducted to determine the number of factors, and Cronbach's α was used to determine the reliability of the translated version. **Participants:** A total of 279 participants (response rate = 79.7%) were recruited. **Results:** The MFS-Arabic (MFS-A) version, which had a scale-level validity index >0.90, was valid. The exploratory factor analysis generated the following subscales with their corresponding reliability: career support α = 0.92, psychological support α = 0.84, emotional support α = 0.75, social support α = 0.55, and overall α = 0.92. The corrected item–total correlations ranged between 0.386 and 0.827. **Conclusion:** Overall, the MFS-A version showed adequate validity and reliability. Therefore, this version can be used as an appropriate tool to measure the mentor functions in Saudi Arabia and other Arabic-speaking countries.

Keywords: Cross-cultural adaptation; Mentor Function Scale; mentoring; Preceptorship; Reliability; Validity; Saudi Arabia

Introduction

Nursing, as a practice discipline, poses great challenges to newly graduated nurses who are in transition from student nurse roles to professional nurse roles. The complex transition from an idealistic student nurse to a realistic professional nurse makes these professionals vulnerable, stressed, and problematic [1,2]. Therefore, a transition phase between the completion of undergraduate theoretical nursing foundations and the actual clinical practice is important. An internship program is expected to fill in this transition to prepare newly graduated nurses for professional practice. In this program, mentors are assigned to provide guidance and coaching to the students. At this stage, the mentor is expected to help the mentee to think critically, and an integration of the nursing knowledge and clinical skills is expected in the mentor–mentee relationship during the program course.

The concept of mentoring can be traced back in 1990 and such concept is the first and only step to analyze the course of mentoring across other disciplines in business, education, and nursing [3]. Stewart and Krueger [3] cited that *"Mentoring occurs when a senior person (mentor) in terms of age and experience undertakes to provide information, advice, and emotional support for a junior person (protégé) in a relationship lasting over an extended period of time and marked by substantial emotional commitment by both parties"*. Berk and colleagues [4] cited the five polished elements of mentoring relationship in which a general agreement is established. A mentoring relationship has the following characteristics: (1) focuses on achievement or acquisition of knowledge; (2) consists of three components or spheres, namely, emotional and psychological support, direct assistance with career and professional development, and role modeling [5]; (3) reciprocal, where the mentor and mentee derive emotional or tangible benefits; (4) personal in nature as it involves direct interaction; and (5) emphasizes the mentor's greater experience, influence, and achievement within a particular organization.

In the United States of America, the New Careers in Nursing scholarship programs on the mentoring and leadership projects has developed a toolkit as guidance, resource, and development strategy to direct students for successful socialization into their profession, career goals, possible advance nursing education, fostering growth, and establishment of successful mentoring relationships [2]. In the Western European context, nursing students perceive mentors to be their most important role models during their practice placements [6]. In Australia, the learning of nursing students in the clinical environment based on their mentors' perspectives is a cornerstone of pedagogy in pursuing a Bachelor's Degree in Nursing [7]. In the United Kingdom, the Nursing and Midwifery Council states that teaching is part of the role of a registered nurse, which can be interpreted as mentorship during the practice placements of nursing students

[8]. In addition, the concept of mentors "failing to fail", which is identified as instrumental in the development of standards to support practice-based learning and assessment, is related to the professional responsibility of mentors to facilitate nursing students achieve competence [9]. Moreover, the enhancement of mentoring acceptance can be achieved through institutional recognition of the significance of their roles via workload consideration, institutional recognition, or financial means that encourage internationally educated nurses to seek registration in New Zealand to reduce local nursing shortages [10]. In the Kingdom of Saudi Arabia (KSA), the creation of a positive work environment through incorporation of mentoring has been suggested to aid in the internship program of Saudi nursing students [11].

Mentoring, as used in many studies, is also utilized through the internship program in KSA. The colleges of nursing in the kingdom have implemented a curriculum that comprises two parts. The first part is the four-year nursing curriculum program, and the second part is a one-year internship program designed to extensively train nursing students in the hospital. Mentorship has been utilized as an internship training strategy for nursing students who accomplished the four-year undergraduate nursing curriculum. The internship program instituted by all colleges of nursing in KSA is in accordance with the National Qualifications Framework for Higher Education in KSA published in 2009. In addition, this program is in agreement with the Guideline of Professional Classification and Registration for Health Practitioners of Saudi Commission for Health Specialties, Article 6, Classification of Qualifications in the Field of Nursing [12]. Although many studies have focused on the mentoring relationship in nursing, a discrepancy is found in terms of determining the functions of mentors. Thus, this study translated the Mentor Function Scale (MFS) into the Arabic language to evaluate the function of mentors during the clinical internship program in KSA. The need to establish validity and reliability of the Arabic version of the instrument is of paramount concern to measure the mentor function constructs and enhance the understanding of the mentoring relationship nature in the Saudi Arabian setting. Many empirical research studies have emphasized the importance of obtaining evidence that supports the construct validity of measures [13-15]. Therefore, this study aimed to evaluate the validity and reliability of the Arabic version of MFS for future use among Arabic-speaking researchers and participants.

Methods

Study design, sample, and setting

This study utilized the translation of the original English version of the MFS into the Arabic language for validation, exploratory factor analysis (EFA), and reliability tests. A panel of translators comprised five Saudi PhD degree holders in nursing. Four of the five experts were tenured faculty members of the College of Nursing and had been handling Saudi nursing students for at least five years in the clinical and academic settings. The fifth expert was the director of nursing education in a training hospital. Another panel of five bilingual Saudi PhD degree holders conducted the validation of the final Arabic version of the MFS using the item- (I-CVI) and scale-level (S-CVI) content validity indices. Thirty Saudi pre-interns, which were composed of 15 males and 15 females, were recruited for the pretest of the Arabic version of MFS. The pretest participants were informed to provide comments on items that seemed difficult to understand. After completion, the participants were instructed to seal the questionnaire inside an envelope before submission to the researchers. Apparently, no major concern was raised by the pretest participants as they accomplished the 15-item questionnaire between 4 and 7 minutes.

The pilot test was conducted. A total of 279 Saudi nursing interns (response rate = 80%) registered in the internship program for the Academic Year 2016–2017 and currently undergoing clinical training in three tertiary training hospitals in Riyadh, KSA participated in the present study. Nursing interns who were not currently enrolled for the Academic Year 2016–2017 were not eligible to participate. Moreover, nursing interns were not included if their clinical training was held in hospitals other than the selected ones. Data were gathered between December 2016 and February 2017.

Instrument

The questionnaire was divided into two parts. Part 1 was about the demographic characteristics, which included gender, age, number of months in the internship program, internship hospital, and pre-internship nursing school of the participants. Part 2 was the original English version of the MFS by Scandura and Ragins [5]. This questionnaire has 15 items that explored the protégés' perception of their relationship with their mentors, particularly the support functions. Furthermore, the MFS measures three components, namely, career development, psychosocial support, and role modeling. The career development subscale assessed the perception of the coaching function of the mentor. The psychosocial support subscale measured the perceived friendship function of the mentor. The role modeling subscale assessed the protégé's perception of the mentor as a role model. The scale used the 7-point Likert Scale with 1 as Strongly Agree, 3 as Neutral, and 7 as Strongly Disagree. The construct validity of the original MFS was determined through factor analysis and alpha coefficients for the three spheres that ranged from 0.70 to 0.81 [5]. Other analyses have reported about the scale and indicated that the original 15-item multidimensional mentoring measure needed refinement [15]. The coefficient alpha reliability estimate of the original 15-item measurement scale was 0.93.

Translation, cross-cultural Adaptation and validation

Guidelines in cross-cultural adaptation, translation and validation of the SECS into Arabic language and culture using five stages were adopted [16,17]. The production of the Arabic version followed five stepwise phases, which included (1) translation, (2) synthesis, (3) back translation, (4) experts' review, and (5) pretesting. The translation of MFS followed the repeated forward–backward translation technique. The translation involved seven stages performed by bilingual participants from KSA. The evaluators or translators included

bilingual Saudi professors in the College of Nursing and linguistic experts in English and Arabic translation.

Two translators were involved in Stage 1. The translators were assistant professors in a nursing college who obtained a doctorate degree in an English-speaking country with experiences in English–Arabic translation. The translators independently translated the English description of the instrument to the Arabic version. In Stage 2, a Saudi faculty with PhD degree from the United States of America synthesized and consolidated the two Arabic versions into a single translated Arabic version 1. In Stage 3, the Arabic version 1 was presented to two bilingual faculty members, who were doctorate degree holders, in one of the nursing colleges in KSA. Both faculty members used the English and the Arabic languages in their education-related activities with Saudi students. The translators evaluated the Arabic version 1 and compared it with the original English version. Both faculty members focused on the coherence and meaning of the items and possible responses. Evaluators identified minor inconsistencies, which were modified, to create the Arabic version 2.

In Stage 4, two bilingual female Saudi PhD tenured faculty members back-translated the Arabic version 2 to English. These two translators were not involved in Stages 1, 2, and 3. In Stage 5, two linguistic experts compared the two back-translated versions with the English version by Scandura and Ragins [5]. Both translators were able to comprehend the meaning and differences between the original and back-translated versions. In Stage 6, the Arabic terms that caused discrepancy in meaning were replaced. The process from the identification of discrepancies to the change of suitable Arabic terms was repeated until a consensus agreement of the final Arabic version was obtained.

Stage 7 involved pre-testing the final Arabic version of MFS. The pretest was done among 30 participants, who were not included in the study, to ascertain ease in reading, understanding, and responding to the items. The participants in the pretest accomplished the questionnaire in a span of 4–7 min without major concerns. A pilot test participated by 279 Saudi nursing interns was then conducted. Content validity was determined by computing the I-CVI and S-CVI. An I-CVI of 1 for a panel of five experts and S-CVI of 0.90 or higher were acceptable [18].

Reliability

The data were processed and analyzed for the EFA by using the IBM SPSS for Windows version 21.0 (Armonk, NY; IBM Corp.). Data were screened before proceeding with the analysis. A total of 279 surveys were processed. The 1:10 ratio of variable to samples was made as basis for sample size requirement. Fifteen variables were present in the MFS. Thus, the minimum sample size should be at least 150. A total of 279 surveys, which indicated that the sample size was more than adequate to conduct principal component analysis, were retrieved. Further examination of the P–P plots of each item showed linearity, and the histograms showed apparent normal distribution. Multicollinearity and singularity were absent. The inspection of the correlation matrix indicated that most of the correlations were more than 0.30, which qualified the values for further analysis.

The principal component analysis with the Varimax rotation was performed to determine factor loadings. The reliability of the MFS Arabic (MFS-A) version was determined using Cronbach's alpha for internal consistency and reliability. A Cronbach's alpha ≥ 0.70 is acceptable [13,19]. The item–total correlation coefficients (ITCs) were determined to support the internal consistency of the scale. An ITC > 0.30 is considered acceptable [20].

Ethical considerations

Ethical approval from the Institutional Review Board (IRB) of the College of Medicine at King Saud University was obtained before conducting the study. Permissions were obtained from the administrators of the settings to conduct the study among Saudi nursing interns. Participants were informed about the objectives of the study, asked for their voluntary participation, and assured confidentiality of identities and responses. Voluntary participation was obtained when the questionnaires were filled out by the participants and returned to the research assistants.

Results

Participants

Most of the participants were females (*n* = 196; 70.3%), 23 years old or older (n = 178; 63.8%), in the internship program for 1–4 months (n = 146; 52.3%), undergo internship at Hospital 3 (*n* = 148; 53.05%), and had their preinternship program from nursing public schools (*n* = 258; 92.5%) (Table 1).

Characteristics	f	%
Gender		
Male	83	29.7
Female	196	70.3
Age group		
22 years old and below	101	36.2
23 years old and older	178	63.8
Mean = 22.78; SD = 1.19		
Months in internship program		
1-4 months	146	52.3
5-8 months	77	27.6
9-12 months	56	20.1
Internship setting		
Hospital 1	32	11.47
Hospital 2	99	35.48
Hospital 3	148	53.05
Pre-internship nursing school		
Public	258	92.5
Private	21	7.5

Table 1: Characteristics of participants (N=279).

Validity

The content validity of the scale was assessed by five experts in nursing education and practice. The I-CVI and S-CVI for the scale were calculated. Table 2 showed that the computed I-CVIs of the scale were 1. The panel of expert validators reached a consensus and attained unanimous agreement with the final Arabic version of the scale with the computed S-CVI/Ave of 1 (Table 3).

Item No.	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total Number or Relevant Items	Item-level Index
1	4	4	4	4	4	5	1
2	4	4	4	4	4	5	1
3	4	3	3	4	3	5	1
4	4	4	4	4	4	5	1
5	4	4	4	4	4	5	1
6	4	4	4	4	4	5	1
7	4	4	4	4	4	5	1
8	4	4	4	4	4	5	1
9	4	4	4	4	4	5	1
10	4	3	4	4	3	5	1
11	4	4	4	4	4	5	1
12	4	4	4	4	4	5	1
13	4	4	4	4	4	5	1
14	4	3	4	4	3	5	1
15	4	3	4	4	3	5	1
Note: The I-CVI should be 1.00 if there are 5 or fewer experts (Lynn, 1986)							

Table 2: I-CVI of the Mentor Functions Scale (MFS) Arabic Version (15-Item Scale) by Five Experts: Items Rated 3 or 4 on a 4-point relevance scale.

	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total and Mean I-CVI
Total	15	15	15	15	15	15.00
Proportion Relevant (PR)	1.00	1.00	1.00	1.00	1.00	1.00
Mean Expert PR	1.00					
Note: Since the S-CVI is > 0.90 therefore the overall scale is valid (Polit and Beck, 2006).						

Table 3: S-CVI Ratings of the MFS Arabic Version by Five Experts: Items Rated 3 or 4 on a 4-Point Relevance Scale.

Exploratory factor analysis

A principal component analysis was conducted on the Arabic translation of the 15-item MFS using the Varimax rotation method with Kaiser Normalization. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy yielded 0.881, which was considered highly significant [21]. The KMO values for the individual items ranged between 0.596 and 0.810, which were all above the acceptable limit of 0.5 [21]. The Bartlett's Test of Sphericity [χ^2 (105) = 2756.18, p<0.001] showed that the correlations between items were sufficiently large for principal component analysis. The analysis was run to obtain the Eigenvalues for the components in the data. Three components had Eigenvalues more than the Kaiser's criterion of 1 and were combined to explain 67.2% of the variances. However, the Scree plot showed inflections, which would justify the retention of four components that were combined to explain 73.56% of the variances. The examination of the three- and four-component models showed that the latter had clearer clustering of items. Hence, the four-component model was used for further analysis. Table 4 shows the factor loadings after rotation. The items clustered in component 1 represented career support with seven items and factor loadings that range between 0.637 and 0.843. Component 2 represented psychological support with three items and factor loadings that range between 0.748 and 0.610. Component 3 represented emotional support with three items and factor loadings that range between 0.811 and 0.642. Component 4 represented social support with two items and factor loadings that range between 0.793 and 0.812.

Reliability

The reliability test showed that all items had corrected ITC ranging between 0.386 and 0.827, suggesting a good outcome [21]. The examination of α showed that none of the items would increase reliability if they were deleted. Therefore, all items positively contributed to the overall reliability [21]. The reliability analysis was done using Cronbach's alpha.

Items **الفقرات**	**Rotated Factor Loadings**				**Reliability**	
	Career Support	**Psycho-logical Support**	**Emotional Support**	**Social Support**	**CITC** †	**α if Item deleted**
14. My mentor helps me to coordinate my professional goals. 14 مدربي يساعدني على تنسيق أهدافي المهنية	0.843				0.827	0.910
12. I respect my mentor's ability to teach others. 12 أحترم قدرة مدربي على تعليم الآخرين	0.831				0.797	0.914
9. I respect my mentor's knowledge of the profession. 9 أحترم معرفة/معلومات مدربي المهنية	0.787				0.761	0.917
6. I admire my mentor's ability to motivate others. 6 أنا معجب بقدرة مدربي على تحفيز الآخرين	0.778				0.819	0.912
15. My mentor has developed special time and consideration to my career. 15 مدربي يضع وقتا واهتماما خاصا تجاه مهنتي	0.751				0.778	0.915
5. My mentor has placed me in important assignments. 5 يعطيني مدربي مهام ذات أهمية	0.732				0.673	0.925
7. I exchange confidences with my mentor. 7 أتبادل الثقة مع مدربي	0.637				0.742	0.919
8. My mentor gives me special coaching on the job. 8 يعطيني مدربي تدريب خاص في العمل		0.748			0.729	0.774
10. I consider my mentor to be a friend. 10 أعتبر مدربي صديقًا		0.684			.667	0.828
11. My mentor advised me about promotional opportunities. 11 مدربي ينصحني/يوجهني بالفرص الطموحة		0.610			0.752	0.749
1. I share personal problems with my mentor. 1 أشارك المشاكل الشخصية مع مدربي			0.811		0.558	0.694
3. I try to model my behaviour after my mentor. 3 أحاول أن أتخلق بأخلاق مدربي			0.763		0.560	0.690
2. My mentor takes a personal interest in my career. 2 مدربي يولي مهنتي اهتماماً شخصيا			0.642		0.622	0.620
13. I often go to lunch with my mentor. 13 غالبا أتناول الغداء مع مدربي				0.812	0.386	
4. I socialize with my mentor after work. 4 ألتقي بمدربي خارج العمل				0.793	0.386	
Eigenvalues	7.384	1.559	1.138	0.954		
% of Variance	49.224	10.394	7.587	6.360		
Cronbach's Alpha (α) (overall = 0.917)	0.927	0.846	0.751	0.555		

Table 4: Summary of exploratory factor analysis results for the Arabic Translation of MFS Scale adopted from Scandura & Ragins (1993) (N=279).

Career support with seven items, psychological support with three items, and emotional support with three items had α values of0.92, 0.84, and 0.75, respectively. The social support subscale had α of 0.55. In total, the MFS-A version had Cronbach's α of 0.91.

Discussion

This study aimed to assess the psychometric properties of the MFS-A.When a certain construct is planned to be measured, the instrument must be valid and reliable. The sound validity and reliability of the instrument are significant indicators of quality measurement of mentoring relationships in Saudi nursing interns in the Arabic context during their one-year internship program. The findings of this study presented evidence that strongly supported the excellent content validity and reliability of the scale and its subscales. The use of a valid and reliable tool is critical for ensuring the accurate measurement of the constructs being studied. Moreover, such tool facilitates the reduction of errors in the measurement process. The reliability of the instrument is established through the assessment of the internal consistency

of the measurement, whereas validity ensures that the instrument measures what is intended to be measured [22].

The outcomes showed an acceptable item- and scale-level content validity of the scale as evaluated by the five experts in nursing education and practice. The assessment of the content validity of scales was important to establish their quality. Content validation of scales is recommended to be clearly reported in scale development studies. Hence, the item- and scale-level content validity should be reported [18]. In the present study, all 15 items of MFS were rated 3 (quite relevant) and 4 (highly relevant) by the five experts, yielding an I-CVI of 1 for all of the items, which met the standard criteria set for an acceptable I-CVI [23]. For the scale-level validity, the study utilized validity using the S-CVI/Ave method as recommended by Polit and Beck [18], who have stated that universal agreement is highly difficult to achieve if various members of the panel with varying viewpoints are present. Thus, a scale should have an I-CVI of 1 and 0.78 for 3–5 and 6–10 members, respectively, to have excellent content validity. In addition, the scale should have an S-CVI/Ave of 0.90 or higher [18,23]. These criteria were met in the current study, supporting the acceptable content validity of the MFS.

The results of the factor loadings were consulted to five validators for their expert opinion with regard to the realignment of factor loadings of the subscales of the instrument. The expert validators reached a consensus of endorsing four component factors, namely, career, psychological, emotional, and social supports. The three components (i.e., career support, psychosocial support, and role modeling) of the original MFS were used in the final Arabic version. The current study pursued modification of the factor structures of scale using an EFA due to language distinctions. The results of this study exposed new directions for future research because of the use of EFA to modify the scale factor structures. Results indicated differences in many aspects of the scale between the Arabic and the English versions. The adaption of all items in the Arabic version scale had major challenges, which led to modification of subscale structures. However, all items of the scale were retained in the Arabic version of the factor structures. Thus, good significant values were obtained when all items (collective) were considered rather than each subscale of the MFS. The findings of the current study were similar to another psychometric evaluation as a result of cultural and health system differences [24]. In addition, the present study contributed to the existing literature in Saudi Arabian culture and other Arabic cultures and was vital for understanding the nature of mentoring relationship observed among Saudi nursing interns. The Saudi Arabian culture is a collectivist society in contrast to the American individualist society. In the present study, Saudi nursing interns identified themselves as being part of a group, and the family is regarded as the center of their culture [25]. Results reflected strong mentor functions (mentor–mentee group) on career, psychological, social, and emotional supports. Thus, mentoring is important for career development as recognized in the literature [26]. In addition, the Saudi Arabian culture accentuates strong group commitment and loyalty to group members to protect individuals and families and provide mutual support, either emotional or promotional opportunities within the government institution [27,28], which is the case of the current study.

Desirable internal consistency was observed in terms of reliability. Such internal consistency is described as the ability to find correlation (homogeneity) between the items of a scale-fashioned instrument, that is, to find whether they measure the same theoretical construct they are proposed to. If the test for reliability attains the same result repeatedly, the measure is considered reliable [29]. The findings supported the excellent reliability of the scale. The computed Cronbach's alpha of MFS ($\alpha = 0.917$) was greater than the accepted value of 0.70, suggesting a good internal consistency of the scale. The achievement of internal consistency of the scale implies that the items in the scale were interrelated [30]. The measure of internal consistency obtained by Cronbach's alpha is important and desirable when working with instruments that aim to measure a single construct through multiple items. Such value must range between 0.70 and 0.95. The most commonly used measure of internal consistency is the Cronbach's alpha. A higher value of the Cronbach's alpha indicates a higher reliability level, thus, a higher precision of measurement by the tool [22,31].

The cross-cultural adaptation, content validity and reliability of the Arabic version of MFS by Scandura and Ragins [5] have significant implications on nursing education and practice. The scale had satisfactory reliability, which was calculated through internal consistency ($\alpha = 0.917$) and was found to perform well in the tests for I-CVI and S-CVI. Furthermore, this scale reported promising results on the validity and reliability of the Arabic version. However, the study sample was not entirely representative of the reality of Saudi nursing interns. Hence, reinvestigations with samples of nursing interns who undergo internship in different hospitals (private and public) from other regions in the kingdom are recommended to evaluate regional differences. The regionalism and the large territorial extension of the KSA and the social, economic, religious, and cultural characteristics that are peculiar to health care institutions must be considered. Although the methods employed in the current study to establish validity of the scale were adequate, other methods, such as confirmatory factor analysis, convergent and divergent validity tests, and concurrent validity tests should also be attempted to strengthen current findings. Having presented such limitations, the findings of this study still confirm that MFS-A is valid and reliable and can be used for Saudi nursing interns and in other Arab countries.

Conclusion

The current study has reported the results of an assessment of the psychometric properties of the MFS-A version in Saudi nursing interns. Based on the content validity confirmed by the expert validators of the translation into the Arabic language, the excellent construct validity, and the acceptable results of the psychometric analysis for reliability, the Arabic version of MFS has sound psychometric properties to assess the functions of mentors among Saudi nursing interns in the clinical internship program in KSA.

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Conflict of Interest

No conflict of interest has been declared by the authors.

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