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## PSYCHOMETRIC PROPERTIES OF THE UNDERGRADUATE CLINICAL EDUCATIONAL ENVIRONMENT MEASURE UCEEM IN IRANIAN NURSING AND MIDWIFERY STUDENTS

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**ABSTRACT:** Background: Students' perceptions of the educational environment are an important construct in assessing and enhancing the quality of medical training programs. Reliable and valid measurement, however, can be problematic especially as instruments developed and tested in one culture are translated for use in another. Materials and method: This study sought to explore the psychometric properties of the undergraduate Clinical Educational Environment Measure (UCEEM) for use in Iranian nursing and midwifery students. We translated the instrument into Persian and ensured its content validity by back translation and expert review prior to administering it to 215 nursing and midwifery Students Tehran Medical Sciences branch Islamic Azad University.

Results: One hundred and ninety seven questionnaires were analyzed. The factor analysis yielded four factors: F1: Opportunists to learn in and through work and Quality of supervision (8 items), F2Preparedness for student entry (8 items), and F3: Workplace interaction patterns and student inclusion Supervision (7 items), F4: Equal treatment (2) items. All correlations were  $r > 0.3$ . Pearson's correlation coefficients indicated that the relationships between subscales conformed to the theoretical model. Coefficients for subscales ranged between 0.27 and 0.75. All correlations were significant ( $p < 0.005$ ). The equal treatment subscale had a lower correlation with the other subscales (range 0.27–0.36). Relationships between the other three subscales varied between 0.53 and 0.75 and the reliabilities (Cranach's  $\alpha$ ) of the items was 0.93.

Conclusion: The Persian version of the UCEEM appears to be a reliable and potentially valid instrument for use in Iranian nursing and midwifery schools and may find favor in evaluating the educational environments of nursing and midwifery programs nationwid

**Keywords:** Environment, undergraduate, evaluation, psychometrics

### INTRODUCTION

Since knowledge, thinking, and learning are context dependent ( Durning 2011), it is important to acknowledge the relationship between students' educational environment and their academic achievement and satisfaction (Soemantri 2010). Clinical education, in particular, is an environment with unique challenges and an effective clinical teaching environment balances and integrates the relevancy of professional education to patients as well as students' active participation, professional thinking, and behaviors (Clapham 2007). There are many tools to

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measure the educational environments in general, in different settings and different disciplines. Among them are: the Dundee Ready Education Environment Measure (DREEM)(Roff 2005), the Postgraduate Hospital Educational Environment Measure (PHEEM) (Aspegren 2007)and The Clinical Learning Environment Inventory (CLEI) (chan 2003, polio 2007). These instruments aim to explore the educational environment in general and its effect on the learning process. Factors related to academic atmosphere, facilities, and psychosocial characteristics of the clinical learning environment were the main focus of these instruments.

Despite the increasing interest to measure the effectiveness of the clinical education for undergraduate medical students, only a few studies have addressed the quality of teaching in undergraduate clinical education (polio 2000, Daleman 2004)

Assessing the quality of the clinical learning environment, then, should be done periodically. However, the reliability and validity of the resulting scores should first be established in the setting the instrument is to be used. The Undergraduate Educational Environment Measure (UCEEM) was developed and validated in Sweden using qualitative and quantitative methods (strand 2012).

UCEEM is a 25item questionnaire with three subscales tapping respondents' perceptions of: 1) Opportunists to learn in and through work & Quality of supervision; 2) Preparedness for student entry; 3) Workplace interaction patterns & student inclusion. and 4) Equal treatment Each item is measured on a five-point Likert-type scale, and is scored: 5 for 'Strongly Agree', 4 for 'Agree', 3 for 'Uncertain', 2 for 'Disagree', and 1 for 'Strongly Disagree' (There aren't any items with reverse coded . Total scores range from 27 to 125, with higher scores indicating a higher quality educational climate (strand 2012). Validity of Undergraduate Educational Environment Measure in an Iranian training context is unknown. Thus, this study assesses the psychometric properties of Persian (Farsi) version of the UCEEM in an Iranian nursing and midwifery program setting.

**Table1. Comparison of Factors Extracted in The Study and the Original Questionnaire**

Sub scale	Factor & names	items	mean	min score	max score
<b>Original Subscale</b>	<i>F1: Opportunists to learn in and through work &amp; Quality of supervision</i>	3,4,5,6,13,14,15,16,17,18,25	36.6(8.9)	<b>11</b>	<b>55</b>
<b>Original Subscale</b>	<i>F2: Preparedness for student entry</i>	1,2,9,10,11,12	19.3(5.8)	<b>6</b>	<b>30</b>
<b>Original Subscale</b>	<i>F3: Workplace interaction patterns &amp; student inclusion'</i>	7,8,19,20,21,24	20.5(4.9)	<b>6</b>	<b>30</b>
<b>Original Subscale</b>	<i>F4: Equal treatment</i>	22,23	8.2(1.7)	<b>2</b>	<b>10</b>
<b>Study subscale</b>	<i>F1: Opportunists to learn in and through work &amp; Quality of supervision</i>	2,9,10,11,12,13,14,15	32(7.9)	<b>8</b>	<b>40</b>
<b>Study subscale</b>	<i>F2: Preparedness for student entry</i>	1,3,4,5,6,7,16,17	24.5(7.34)	<b>8</b>	<b>40</b>
<b>Study subscale</b>	<i>F3: Workplace interaction patterns &amp; student inclusion'</i>	18,19,20,21,22,23,25	19.58(5.76)	<b>6</b>	<b>30</b>
<b>Study subscale</b>	<i>F4: Equal treatment</i>	8,24	5.47(2.37)	<b>2</b>	<b>10</b>

## METHODS

After garnering the author's permission to adapt the UCEEM, two Iranian teacher proficient in English individually translated the instrument into Persian. We then sent the translated version to two reviewers (one clinical teacher and one medical education expert) who were asked to assess item relevance for Iranian nursing and midwifery programs.

Based on their comments, we made minor modifications to several items. To make the wording more appropriate in an Iranian context. The edited questionnaire was then back translated to English by a professional translator, who was blinded to the original version. We send back-translated version to original authors subsequently and

he reviewed the back-translated version alongside the original questionnaire and found no conceptual differences. Finally, 20 selected medical education teacher of Shaheed Beheshti University of Medical Sciences, Tehran, Iran reviewed the Persian version to assess its face validity and reliability. Spaces for written suggestions were provided after each item; however, no comments were made regarding item exclusion or obscurity.

The pre-tested questionnaire was then administered to 30 nursing and midwifery students of the university. Construct validity of the scores was assessed using an Exploratory Factor analysis (EFA) and a Varimax rotation. We considered Eigen values 1.5 and factor loadings 0.5; a visual inspection of the inflection point in the scree plot dictated the factor extraction criteria. All analyses were conducted using SPSS Version 16.0 (6), and a critical p-value of 0.05 was set for all inferential analyses.

## **RESULTS and FINDINGS**

Two hundreds and fifteen (215) nursing and midwifery students returned completed questionnaires. The corrected response rate was 91.3% (eighteen returned instrument with less 50% of items completed was excluded from the study). Participants consisted of 64.4% nurse and 35.5% midwife, with a mean age of 23(19-36) years. Per the original subscales, the internal consistency (Alfa Cranach's) was 0.93 for total 25 items and (0.84-0.5) for inter items respectively. An EFA of student's responses revealed four factors with Eigen values 1.5 accounting for 51.8% of total variance. Items loading on multiple factors were assigned based on the largest coefficient. Extracted factors were identified by two researchers (Table 1). As shown in (Table 1), 8 items loading on Factor F1, were part of the 'Perception of Opportunists to learn in and through work & Quality of supervision'. 8 items loaded loading on Factor F2 similarly on 'Preparedness for student entry'. 7 items loaded on Factor F3 similarly on 'Workplace interaction patterns and student inclusion'. 2 items loaded on Factor F4 similarly on 'Equal treatment'. A summary of factor loadings is presented in Table 1. Some items, now loading on different dimensions, could be better interpreted when allowing them to contribute to another.

### **Description of the four factors**

Items experience in the first version of the questionnaire appeared to change on the Persian version. Items that were intended for the factor F1 "Opportunists to learn in and through work & Quality of supervision". The initial version of this factor had six items. Two new items emerge in this factor. Factor F2 items loaded similarly on 'Preparedness for student entry'. The initial version of this factor had eleven items. Three of these items did not emerge in this factor. Factor F3 loaded similarly on 'Workplace interaction patterns & student inclusion'. The initial version of this factor had five items. Two items emerge in this factor. 'Factor F4' 'Equal treatment'. The initial version of this factor has had two items. Any of items has not been deleted. Table 1

## **DISCUSSION**

In this study, we describe the development of a new instrument (UCEEM) for the evaluation of the clinical learning environment from the perspective of undergraduate nursing and midwifery students. This instrument was needed because of shortcomings in already existing instruments that were developed in the past. The 25 items of the (UCEEM) were based on a Sweden on the perceptions of students and teachers concerning an effective clinical learning environment (strand 2012), and on a survey of the literature. These items were placed under four factors. The main aims of the study were to investigate whether these factors could be confirmed by means of factor analysis and to determine the reliability and validity of the instrument. After establishing the final factor structure of the UCEEM the items of this instrument were attributed to the factors on which they had the highest loading. All factors were positively related to each other. Although, the highly significant correlations between all four factors might indicate that there is no need to differentiate between them, the fact that the correlations are all around. Moreover, the results have shown that the new instrument is to some extent able to discriminate between the qualities of the clinical learning environment of the fifteen hospitals that were involved in this study. In the assessment by a group of experts (clinical teachers and medical educators), the instrument showed acceptable content validity. In pretesting with medical education teacher, the instrument also had suitable face validity. Regarding construct validity, the EFA revealed a multi-dimensional structure. The loading of items related to quality of learning through work and quality of supervision in the first factor reflects student's perceptions of the experiential learning Billet (2002, 2010). and loading of items in the third factor reflects social participation (Guile & Griffiths 2001). Both the original and the revised instruments showed good internal consistency across the representative subscales. Our Study was in accordance with Dr Strand study, have reported high internal consistency for the UCEEM. Our EFA results are similar to Dr Strand study (strand 2012), in which the UCEEM was also found to four unique factors. Comparison of factors extracted in the study and the original questionnaire.

Comparing the results of this study with the original questionnaire shows that the most of items in the original work loaded on three factors of our study: 'education system', 'training facility' and 'supervision' and two items

of the original instrument ' equal treatment ' subscale loaded on our Workplace interaction patterns & student inclusion factor, with the remaining seven distributed to other factors. As the nature of knowledge, thinking, and learning is context specific, the cultural and educational system differences may have caused. These contextual considerations may also underlie observed differences in the educational support factor.

## CONCLUSION

The Persian (Farsi) version of the UCEEM shows promise as a reliable and potentially valid instrument for assessing the clinical educational environment in this context.

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## RECOMMENDATIONS

We recommend expanded study of this instrument perhaps in combination with qualitative approaches to identify factors affecting differences in group perceptions of the educational environment.

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