

Psychometric Testing of the Student Evaluation of Clinical Educational Environment Inventory in Greek Nursing Students

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Abstract

Introduction: The need for translation and validation of an assessment tool regarding the Clinical Learning Environment of nursing students in Greece is imperative, given that inappropriate research tools are frequently used. **The aim** of this study was to validate and psychometrically test the Greek translation of the Student Evaluation of Clinical Educational Environment (SECEE) Version 3 Inventory, with a sample of senior nursing students during their clinical practice.

Methods: Following a formal “forward-backward” method to translate the original SECEE into Greek, the scale was administered to 130 senior students. They also completed the Clinical Learning Environment and Supervision (CLES) Scale. Validity and reliability analyses were performed.

Results: Cronbach’s alpha coefficient for the SECEE subscales score was 0.89 for Instructor Facilitation of Learning (IFL), 0.84 for Learning Opportunities (LO) and 0.84 for Preceptor Facilitation of Learning (PFL). Test-retest reliability analysis in a subgroup of students (n=40) revealed good short term stability over a two week interval. Confirmatory factor analysis confirmed the three factor subscales for the Greek translation, as in the original scale. Construct validity was supported through the scale’s moderate correlation with CLES subscales, ranged from 0.163 to 0.317 for IFL, from 0.387 to 0.445 for LO and from 0.443 to 0.537 for PFL.

Conclusions: The Greek version of the SECEE is a psychometrically sound instrument that can be usefully implemented into clinical education to identify appropriate clinical sites and provide information about student perceptions regarding the adequacy of learning opportunities.

Keywords: Clinical Learning Environment, SECEE Scale, validation, nursing students

1. Introduction

Clinical education is a vital and paramount part of the nursing curriculum of studies (Serçekuş & Başkale, 2016). The Clinical Learning Environment (CLE) is doubtless one of the most valuable components of a nursing program (Tiwaken, Caranto, & David, 2015). Worldwide, applied knowledge constitutes the core of the nursing education which is mainly provided in hospital sites. This is in line with the European guidelines (2013/55/European Union) for nursing education.

The implementation of nursing knowledge in the clinical environment is a crucial part of the clinical program, since it allows students to act and practice their skills in deciding and solving problems in the real world, concentrating in what they see, hear and do (Sharif, 2010; Elliot, 2002; Landers, 2000). Clinical educators play a significant role in students’ education, role modeling, coaching, and feedback (Rhodes, Meyers & Underhill, 2012). However, nursing students’ education is not without drawbacks, as the facilities are insufficient and clear-cut educational models are lacking (Warne et al., 2010; Saarikoski et al., 2007).

The nursing ward is a part of a very complicated social-hospital system. It is considered by Joel (1984) as a clinical laboratory, while Massarweh (1999) refers it as a clinical classroom. The Clinical Learning Environment (CLE) encompasses the nursing culture and the interrelations between education and students supervision (Saarikoski &

Leino-Kilpi, 2002). This is an interactive net that includes the patient, the clinical educator (preceptor) and the clinical professor (instructor). This kind of complex social context significantly influences students' clinical education and behavior (Lúanaigh, 2015; Chan, 2004; Papp, Markkanen, & Von Bonsdorff, 2003). The fine atmosphere is of paramount importance presupposing an open, frequent communication and cooperation within the hospital and the nursing ward (Papp, Markkanen, & Von Bonsdorff, 2003; Saarikoski & Leino-Kilpi 2002). Trust relationships between students and educators, opportunities for skill acquisition and the students' feeling of being part of a group are also very essential (D'Souza 2013; Papp, Markkanen, & Von Bonsdorff, 2003).

Based on our national nursing curriculum, the students' clinical training begins in the second semester, where small groups are supervised by clinical teachers. During the 8th semester the program's philosophy changes aiming at the students' socialization in the profession. Therefore, the students are trained exclusively by the host hospital under the sparse and discreet supervision of the faculty teachers.

All the Nursing Departments of our country under the management of the Technological and Educational Institutes (TEI) include compulsory clinical education in their 8th semester. During this last semester there are no theory modules, given that they have been accomplished by the end of the 7th semester. The 8th semester has been chosen, due to the fact that nursing students are trained exclusively in the clinical environment. Throughout this 6-month clinical practice in Greece, the students are supervised by the staff nurses or charge nurses (ward manager). As a result, students are smoothly introduced into the nursing role and practice. In earlier semesters, clinical training refers to a group of students (usually 10) supervised by clinical teachers (educators) for ten hours per week. This is happening as an attempt to alleviate staff nurses of the burden of clinical education and address the long debated theory-practice gap. However, Papastavrou, Lambrinou, Tsangari, Saarikoski, & Leino-Kilpi, (2010) stated that students supervised by staff nurses were more satisfied compared with students who were being educated in groups by clinical teachers. This is in line with current clinical education models which suggest one-to-one supervision (Saarikoski et al., 2007).

Over the last decades, the recognition of the clinical environment importance has deemed in the development of several assessment tools, concerning the students' clinical education setting (Hooven, 2014; Sand-Jecklin, 2009; Hosoda, 2006; Saarikoski & Leino-Kilpi, 2002; Chan, 2001). These tools meet the need of measuring the quality of the clinical environment, where nursing students practice (Salamonson et al., 2011). The quality of the Clinical Learning Environment (CLE) has been a matter of research since the 1980s (Bjork et al., 2014). Quality assessment of the Clinical Learning Environment (CLE) should also include students' opinions because it affects their educational outcome (Tiwaken, Caranto, & David, 2015; Bjork et al., 2014). The existing instruments for measuring clinical learning environment have many advantages and disadvantages. Although several dimensions of the learning environment are included, some of them are not, such as statements about feedback, nurse-manager and nurse-teacher involvement (Hooven, 2014). Obviously, the need to use a more integrated instrument emerges. The Student Evaluation of the Clinical Learning Environment (SECCE) Inventory has been developed to assess student perceptions of their Clinical Learning Environment (CLE). Their evaluation provides practical and useful information not only to the nursing faculty, administration, and hospital managers but also to the nursing school and nursing professors who can make the necessary changes in order to ensure quality of the student clinical experience. After students' narrative responses and an updated review of the literature, additional revisions to the Student Evaluation of the Clinical Learning Environment (SECEE) were performed leading to SECEE Version 3 Inventory (Sand-Jecklin, 2009).

Given that many problems are associated with undergraduate clinical education due to different clinical settings, facilities and educational opportunities, the assessment of the clinical environment is very important. It is, thus, essential for us to use a reliable and sensitive tool to assess the Clinical Learning Environment (CLE) in our country. A Greek study explored the nursing students' perceptions of their Clinical Learning Environment (CLE) with Clinical Learning Environment Inventory (CLEI) (Papathanasiou, Tsaras, & Sarafis, 2013). Papastavrou et al. (2010) used the Clinical Learning Environment Scale (CLES) in a Greek-Cypriot population, which presented satisfactory psychometric characteristics. Nevertheless, the Greek and Greek-Cypriot nursing education systems are different in several aspects. Thus, a short, properly translated and validated measurement of Clinical Learning Environment (CLE) for Greek students may lead to an increase of relevant research, and promote changes in clinical practice, choosing clinical sites that best improve students' learning. Moreover, a worldwide nursing education aim is to provide students with skills and dexterities needed to implement the acquired knowledge in order to be clinical competent (Newton et al., 2010; Baxter, 2007). Nowadays, students and professional nurses frequently move abroad looking for training and job opportunities, reinforcing the need of common training principles that ensure the quality and homogeneity in education and clinical practice (Tigchelaar, Vermunt, & Brouwer, 2012). Consequently, the Clinical Learning Environment (CLE) seems to be a major and global issue in

nursing education syllabus (O'Mara et al., 2014). As mentioned above, most of the published studies have been carried out on nursing students using different tools, in different regions of Greece (Papathanasiou, Tsaras, & Sarafis, 2014; Papastavrou et al., 2010). Furthermore, in our country, the research studies about nursing education are scarce, probably due to the generally poor nursing research. It is common for us to use tools following simple translation from Anglo-Saxon language with ambiguous results. These reasons stimulated the researchers' interest to further investigate the validation of another clinical learning environment tool.

In view of these terms, the **aim** of the present study was to validate and psychometrically assess the Greek translation of the Student Evaluation of the Clinical Learning Environment (SECEE) Version 3 (Sand-Jecklin, 2009) by administering it to a sample of senior nursing students. More specifically, the scale's internal consistency, reliability, stability and validity were evaluated, in order to provide instructors and clinical educators a reliable and applicable tool for improving nursing education. Our main goal is the implementation of this tool in the clinical education, detecting the possible barriers related to instructor and preceptor facilitation of learning and learning opportunities as well.

2. Material and Methods

Study participants were students of the Technological Educational Institute, Nursing Department. The sample consisted of 130 students during the two semesters of the academic year 2012-13. More specifically, it involved 44 students on their eighth semester and 86 students who had not graduated on time. The sample size required for the Confirmatory Factor Analysis (CFA) based on researchers conventions ranging for the participants ratio 3:1 to as high as 12:1. Stable factor models can be found with samples as small as 100² and with samples as small as 150 if 10 or more items load at 0.4 or higher. The Student Evaluation of the Clinical Learning Environment (SECCE) consisted of 31 items, thus our sample size of 130 is within the above guidelines (Guadagnoli & Veliser 1988). The eighth semester is the final one, when there are no lectures in classroom, and the students are required to work at a hospital as trainees, based on the theoretical and clinical skills that they have acquired during previous semesters.

The instrument is based on the theoretical framework of cognitive apprenticeship which claims that students apply tools of conceptual knowledge in an actual environment while being guided by expert practitioners (Brown, Collins, & Duguid, 1989). A cross-sectional, consecutive sampling approach was followed. Data was collected in the form of a questionnaire. The questionnaire was anonymously completed by the students themselves during their clinical training at the hospital.

2.1 Instrumentation

Student Evaluation of the Clinical Education Environment

The Student Evaluation of the Clinical Learning Environment (SECCE) Version 3 instrument was developed to provide information about the quality of the student clinical learning environment and to assist faculties and clinical agencies in selecting the most appropriate sites that best promote student learning.

Items of Student Evaluation of the Clinical Learning Environment (SECEE) Version 3 were categorized into three subscales: Instructor Facilitation of Learning (IFL), Preceptor Facilitation of Learning (PFL) and Learning opportunities (LO). The revised SECEE Version 3 is a 32-item inventory and students respond to these questions on a 5-point Likert scale, from strongly agree (5) to strongly disagree (1). Potential subscale scores range from 11 to 55 for the IFL and PFL and from 10 to 50 for the LO scale. Higher scores indicate a more positive student perception of the learning environment. According to the guidelines (Guillemin, 1995), the Student Evaluation of the Clinical Learning Environment (SECEE) was translated into Greek (forward translation) by two independent translators whose native language was Greek and knew the relevant terminology. Then, the questionnaire was translated back into English (backward translation) by two other independent translators whose native language was English. The next step for translators was to compare the original with the forward and backward translated questionnaire considering conceptual and cultural parameters. Finally, translators and researchers agreed on the final version of the questionnaire.

Clinical Learning Environment and Supervision Scale

The Clinical Learning Environment and Supervision (CLES) Scale evaluates the learning environment and the supervisory relationship. It has a total of 27 items and it is sub-divided into five subscales. The "ward atmosphere" subscale contains 5 items, the "leadership style of the ward manager" subscale contains 4 items, the "premises of nursing care on the ward" subscale contains 4 items, the "premises of learning on the ward" subscale contains 6 items and the "supervisory relationship" subscale contains 8 items. The students respond to these statements on a 5-point Likert -type scale, from fully agree (5) to fully disagree (1).

2.2 Ethical Approval Statement

Permission for the students' recruitment was obtained from the Institution Bioethics Committee, from the Director of the School and from each instructor teacher, as well. All students were informed that they could withdraw at anytime. They were also informed that their anonymity would be respected.

2.3 Data Analysis

A missing value analysis was initially performed. With regard to the Student Evaluation of the Clinical Learning Environment (SECCE), less than 0.5 % of the data was absent for the total sample. All tests were two-sided, and $p < 0.05$ was considered as statistically significant. All analyses (except Confirmatory factor analysis) were performed using the Statistical Package of the Social Sciences SPSS vr 17.0 (SPSS Inc, Chicago, IL).

Confirmatory factor analysis (CFA) was used to examine and confirmed the factor structure as suggested by the original model (three-factor subscales) (Hatcher, 2007; Arbuckle, 2006). The **Confirmatory** factor analysis (CFA) was carried out using the Analysis of Moment Structure (AMOS) Version 9.0. Rejecting or accepting a model was based on global **fit indices** (Hu & Bentler, 1999) including (1) chi-square that tested the fit of the observed covariance matrix, obtained under the constraints of the model, (2) the root mean square error of approximation (RMSEA), (3) the comparative fit index (CFI), and (4) non-normed fit index (NNFI). Chi-square-degrees of freedom (d.f.) ratio < 2.0 (Byrne, 1989), RMSEA < 0.05 (Browne & Cudeck 1993), CFI > 0.90 (Benter, 1990), and NNFI > 0.90 (Benter, 1990) indicate an acceptable fit.

The convergent validity was evaluated by examining the items-total correlation. **Concurrent** validity was assessed through correlation (Pearson's correlation coefficient) between the CLES subscales. Correlation of the Greek (Gr) SECEE questionnaire to the well-established CLES questionnaire would support the validity of the Gr-SECEE questionnaire in measuring the clinical education environment. Moreover, **known groups validity** of Gr-SECEE questionnaire was examined in terms of the ability to distinguish between sub-groups of students, formed on the basis of their expectation of their clinical education. Independent samples t-test was used for statistical analysis.

Internal consistency of the Student Evaluation of the Clinical Learning Environment (Gr-SECEE) was assessed by means of item-to total correlation and Cronbach's alpha coefficient, using the data obtained from the initial Student Evaluation of the Clinical Learning Environment (Gr-SECEE) assessment (130 students). A threshold value of 0.70 was chosen, which indicates sufficient reliability for research purposes (Polit & Beck, 2013). **Test-retest reliability** (stability) was determined through examination of Pearson's product moment correlation coefficients, intraclass correlation coefficients (ICC) and paired t-test between initial assessment and re-assessment total scores of the Gr-SECEE in 40 students.

3. Results

Student demographics are outlined in Table 1. The typical student was female, 24 years old. 66.2% of the students had exceeded the 8th semester. These particular students felt that they had fewer learning opportunities during their practice in relation to the 8th semester students (39.01 v. 41.80; $p < 0.05$). They also had felt the clinical practice outline did not meet their expectations (36.38 v. 40.46; $p < 0.05$). No significant differences in Student Evaluation of the Clinical Learning Environment (SECCE) Inventory subscales were found with regard to the students' gender ($p > 0.05$).

Table 1. Demographic statistics

		Frequency(N)	Percent (%)
Gender	Male	17	13.1
	Female	113	86.9
Study semester	8st	44	33.8
	>8nd	86	66.2
Institution of Clinical Education	Public	80	61.5
	Private	50	38.5
Supervision	Once a week	62	47.7
	Once a month	68	52.3
Age	Mean 24.12±4.32 years	Range: 21-49	

3.1 Subscales and Total Score Distribution Analysis

The item mean for the Greek Student Evaluation of the Clinical Learning Environment (SECEE) Inventory ranged from 2.83 (item 10) to 4.56 (item 6) (Table 2). There was good variability in relation to the means (SD's ranged from 0.75 to 1.42). An IFL, LO and PFL subscale mean total score of 46.12, 39.95, and 45.24 respectively were yielded, thus indicating that students evaluated their clinical education environment almost positively (Table 3).

Table 2. Item score distribution analysis of the Greek SECEE

SECEE	Mean ±SD	SECEE	Mean ±SD
1. Preceptor was available to student	4,39±,87	17. Needed resources were available at site	3,55±1,24
2. Wide range of learning opportunities available at site	4,34±,94	18. Instructor provided constructive feedback about behaviors	3,96±1,02
3. Felt comfortable asking questions of instructor	4,42±,95	19. Preceptor supported me in applying new knowledge	4,04±1,03
4. Preceptor retained ultimate responsibility for patient	4,35±,88	20. No negative impact due to multiple students at site	4,01±1,15
5. Site provided practice with communication skills	4,36±,96	21. Instructor provided adequate guidance with new skills	4,12±1,05
6. As skills increased, instructor allowed more independence	4,56±,86	22. Staff informed students of possible learning experiences	4,06±1,05
7. Preceptor informed me about issues in patient care	4,08±1,08	23. Was able to perform "hands-on" skills to my ability level	4,38±,86
8. Site provided opportunities for application of knowledge	3,92±1,05	24. Instructor supported me in applying new knowledge	4,25±1,03
9. Instructor served as positive role model for nursing	4,18±1,19	25. Staff were positive role models for nursing	3,98±1,05
10. Preceptor workload did not impact experience at site	2,83±1,23	26. Client interactions provided sufficient skill opportunities	3,30±1,42
11. Adequate time in clinical rotation to meet learning goals	3,81±1,16	27. Instructor encouraged students to learn together	4,00±1,18
12. Instructor encouraged to pursue opportunities for learning	4,24±1,01	28. Staff provided feedback about nursing behaviors	4,45±,75
13. Preceptor provided guidance in learning new skills	4,41±,82	29. Was able to take advantage of most learning opportunities	3,90±1,22
14. Adequate number/variety of patients a site of learning	4,38±,97	30. Instructor expectations for performance were realistic	4,15±1,00
15. Instructor was available to answer questions and assist	4,13±1,20	31. Preceptor was positive about being a resource to students	4,25±,89
16. Felt comfortable asking questions to receptor	4,40±,85	32. Instructor provided feedback in time for corrective action	4,11±1,04

Table 3. Subscales score distribution analysis of the Greek SECEE and CLES

Subscales	Mean± SD	Min	Max
IFL	46.12±8.03	20.00	55.00
LO	39.95±6.06	21.00	50.00
PFL	45.24±6.62	25.00	55.00
Ward atmosphere	4.36±.65	1.75	5.00
Leadership style of the ward manager	4.33±.68	1.75	5.00
Premises of nursing care on the ward	4.26±.66	1.75	5.00
Premises of learning on the ward	4.26±.61	2.50	5.00
Supervisory relationship	4.17±.81	1.25	5.00

Note. IFL= Instructor Facilitation of Learning; LO= Learning Opportunities;

PFL= Preceptor Facilitation of Learning.

3.2 Confirmatory Factor Analysis

A three-factor model was conducted by confirmatory factor analysis, giving acceptable global fit indices. The resulting global fit indices $X^2=885.3$, $p<0.003$, chi-square-degrees of freedom (d.f.) ratio=1.92, RMSEA=0.052, CFI=0.92 and NNFI=0.93 showed that the three-factor solution should be retained.

3.3 Feasibility and Reliability

Duration of the interviews ranged from 20 to 25 min, of which 10 min were required for most of the students to complete the Greek version of the Student Evaluation of the Clinical Learning Environment (SECEE). In terms of internal consistency, Cronbach's alpha of the 32 items was 0.921. The Cronbach's alpha for each subscale was: IFL=0.891, LO=0.839 and PFL=0.844. Table 4 summarizes the correlation between the Student Evaluation of the Clinical Learning Environment (Gr-SECEE) subscales and the items of the questionnaire in each subscale. Corrected item-total correlation is greater than 0.3 (less than 0.30 indicating poor contribution to overall outcome). More specifically, the correlation coefficient ranged from 0.627 to 0.816 for the IFL subscale, 0.514 to 0.662 for the LO subscale and 0.512 to 0.703 for the PFL subscale, indicating strong relationship between individual items and each subscale.

Table 4. Item-subscales correlation

Items	IFL	LO	PFL
Q3	0,751		
Q6	0,671		
Q9	0,627		
Q12	0,734		
Q15	0,732		
Q18	0,816		
Q21	0,801		
Q24	0,725		
Q27	0,721		
Q30	0,710		
Q32	0,643		
Q2		0,625	

Q5	0,591	
Q8	0,612	
Q11	0,580	
Q14	0,557	
Q17	0,586	
Q20	0,514	
Q23	0,662	
Q26	0,629	
Q29	0,643	
Q1		0,650
Q4		0,590
Q7		0,703
Q10		0,512
Q13		0,654
Q16		0,589
Q19		0,703
Q22		0,591
Q25		0,635
Q28		0,686
Q31		0,661

In test-retest reliability analysis, paired samples t-test between initial and follow-up assessment indicated no statistically significant differences. ICC coefficient was high for each subscale (IFL=0.885-0.900, LO=0.867-0.880, and PFL=0.844- 0.855 respectively) ($p < 0.0005$) (Table 5), thus suggesting that the Student Evaluation of the Clinical Learning Environment (Gr-SECEE) was remarkably consistent between the two measures. The correlations between the Student Evaluation of the Clinical Learning Environment (Gr-SECEE) subscales were: IFL-LO $r = 0.58$, IFL-PFL $r = 0.385$ and LO-PFL $r = 0.695$, indicating high correlation between subscales.

Table 5. Test-retest reliability for the SECEE Greek total score (N=40)

	ICC (95%CI)	Paired samples t-test		
			Mean \pm SD	p-value
IFL	0.900 (0.86-0.94)	Initial assessment	47.6 \pm 6.1	0.491
		Reassessment	48.1 \pm 5.1	
LO	0.880 (0.83-0.93)	Initial assessment	40.8 \pm 5.5	0.345
		Reassessment	41.5 \pm 5.1	
PFL	0.855(0.80-0.90)	Initial assessment	45.4 \pm 5.8	0.402
		Reassessment	46.0 \pm 6.7	

Note. IFL= Instructor Facilitation of Learning; LO= Learning Opportunities; PFL= Preceptor Facilitation of Learning.

3.4 Concurrent and Known-Groups Validity

All coefficients are statistically significant indicating moderate relationship between the subscales of Student Evaluation of the Clinical Learning Environment (Gr-SECEE) and Clinical Learning Environment and Supervision (CLES) at initial assessment. The highest and the lowest correlation coefficient are presented between Learning - PFL (0.537) and between Environment - IFL (0.163) respectively (Table 6).

Table 6. Correlation between Gr-SECEE and CLES (Construct validity)

	IFL	LO	PFL
Ward atmosphere	0.163*	0.387**	0.480**
Leadership style of the ward manager	0.298*	0.420**	0.443**
Premises of nursing care on the ward	0.316*	0.417**	0.483**
Premises of learning on the ward	0.271*	0.445**	0.537**
Supervisory relationship	0.317*	0.424**	0.518**

All values are presented as Person's (r), * p<0.05, ** p<0.005.

Note. IFL= Instructor Facilitation of Learning; LO= Learning Opportunities; PFL= Preceptor Facilitation of Learning.

The Student Evaluation of the Clinical Learning Environment (Gr-SECEE) subscales discriminated well between sub-groups of students on the basis of their supervision frequency. The IFL subscale of the Greek version was statistically significant higher in students with weekly supervision compared with those with monthly supervision, while the PFL subscale was statistically significant lower in students with weekly supervision compared with those with monthly supervision (Table 7).

Table 7. Known-groups validity

		n	Mean±SD	p-value
IFL	Supervision once a week	46	48.87±4.8	0.003
	Supervision once a month	84	44.61±9.1	
LO	Supervision once a week	46	40.72±6.8	0.289
	Supervision once a month	84	39.54±5.6	
PFL	Supervision once a week	46	43.72±7.5	0.048
	Supervision once a month	84	46.07±6.0	

Note. IFL= Instructor Facilitation of Learning; LO= Learning Opportunities; PFL= Preceptor Facilitation of Learning.

4. Discussion

Worldwide, clinical education is an important part of the nursing curriculum as it provides students with opportunities to develop skills in nursing practices (Antohe et al., 2016, Tiwaken, Caranto, & David, 2015; Chan 2002). A clinical environment of good quality is essential for students' education and clinical learning opportunities. Nowadays, globalization has been extended to nursing education programs as well. Uniformity in education is also essential among countries, taking into account the movement of students and nurses abroad for training and job opportunities (Tigchelaar, Vermunt, & Brouwer, 2012). Common principles in nursing education will increase the quality of patient care exponentially.

The complete clinical education is largely based on an appropriate clinical learning environment. Clinical learning environments are the most effective in promoting safe practices, but there are difficulties in implementing innovations in routine practices (Henderson et al., 2012). Clinical Learning Environment is a complex experience that has a multi-faceted impact on students' professional integration. Assessment of clinical learning environment through validated measures has become a priority. This study evaluated the validity and reliability of a Greek translation of the scale among students who conducted their practice in the clinical settings.

The Gr- Student Evaluation of the Clinical Learning Environment (SECEE) was well accepted by students as questions were asked in a clear way. The time required (10 min) to have the scale completed was also acceptable, while missing values were kept to a minimum. Combined with easily interpretable scores of the subscales, the scale can be a useful tool in clinical practice for routine assessment of all the clinical learning environment aspects. Moreover, the Greek version of the scale provides additional possibilities to our students regarding the evaluation of the clinical learning environment objectively. Technological Educational Institute (TEI) graduates have sufficient clinical skills (Patelarou, Vardavas, Ntzilepi, & Sourtzi 2009), so it is essential for them to be trained in hospitals by clinical instructors and nurse educators. The researchers use this scale for precise measurement of the clinical learning environment.

The Student Evaluation of the Clinical Learning Environment (SECEE) scale shows great promise as an outcome measure in clinical environment research given its strong psychometric support (Sand-Jecklin, 2009; 2000; 1998), which was also confirmed for the Greek translation. Similarly to findings reported by Sand-Jecklin (2009), responses covered the full range of scores and item variability was overall good. These findings are particularly important when considering the item and subscales' score to determine priority areas for intervention development. More specifically, Learning Opportunities (LO) were the subscale with the lowest score, thus special attention should be paid in order to improve all the factors of this specific area. The lowest level of the dimension "Supervisory relationship" of the CLES is in the same line with Papastavrou et al. (2010) research work. The study showed that the "workload of the clinical educator", "availability of resources" and "interaction with patients" are the items with the lowest score, suggesting that interventions in these topics are required. At a time of economic austerity that threatens every structure, implementation of validated tools such as Student Evaluation of the Clinical Learning Environment (SECEE) scale can be seen as a viable mean for instructors to assess and determine how to best address individual learning needs.

Evidence of construct validity was found when assessing the convergent, known groups' validity and the scales' structure with Confirmatory Factor Analysis. In agreement with our assumptions regarding convergent validity, only moderate correlation was found between the Student Evaluation of the Clinical Learning Environment (SECEE) and CLES scale.

The Student Evaluation of the Clinical Learning Environment (SECEE) scale also showed ability to differentiate well regarding Instructor Facilitation of Learning (IFL) between students with frequent or common supervision, although it did not appear any statistically significant difference in the subscale Learning Opportunities (LO). Surprisingly, students who had frequent supervision appeared lower scores on the subscale PFL. It is possible for the relationship between preceptors and students to be affected by the instructor interference.

As with the original scale, the Confirmatory Factor Analysis supported the use of the Student Evaluation of the Clinical Learning Environment (SECEE) scale as a three-dimensional measure (Sand-Jecklin, 2009). Although the relative chi-square, CFI and NNFI indices were marginally acceptable, they nevertheless suggest the three-factor model (Munro, 2005).

The study also confirmed short-term high stability of the SECEE for a short time interval of 2 weeks, as well as internal consistency. For the SECEE subscales scores, satisfactory high and psychometrically adequate Cronbach's alpha coefficients of 0.89 for Instructor Facilitation of Learning (IFL), 0.84 for Learning Opportunities (LO) and 0.84 for Preceptor Facilitation of Learning (PFL) were yielded (Polit & Beck, 2013), which are comparable to alphas reported in a previous study. More specifically, in Sand-Jecklin's (2009) study reliability coefficients for the subscales were as follows: 0.94 for Instructor Facilitation of Learning (IFL), 0.89 for Preceptor Facilitation of Learning (PFL) and 0.82 for Learning Opportunities (LO). Correlation coefficient between SECEE subscales and subscales' total score were also high, further supporting internal consistency of the scale. In the original study (Sand-Jecklin, 2009), item to total scale correlation ranged from 0.35 to 0.72 for the PFL subscale, from 0.44 to 0.73 for the IFL, and from 0.27 to 0.61 for the LO subscale, except for two items, which had either no correlation or very weak negative correlation with the other items within the scales.

Finally, this study pursued to demonstrate accuracy of the Student Evaluation of the Clinical Learning Environment (SECEE) scale when administered as an assessment tool for the clinical learning environment. Additional studies based on larger samples of students are required to confirm our results.

According to the results of the present study the Greek version of the SECCE is reliable and valid. This is a useful and validated instrument for nurses' educators, which allows them to investigate and possibly improve factors related to student learning. Moreover, this valid tool provides them with the opportunity for further investigation, creating a safe clinical environment, full of learning opportunities.

4.1 Study Limitations

Firstly, the sample size of this study was relatively small. According to recommendations (Polit & Beck, 2013) a sample size of at least 320 individuals would be required to meet the empirical rule of 10 individuals per scale item. Secondly, the sample of this study consisted of senior students who had obtained acquired a level of independence. It is obvious that, studies with students trained differently in previous semesters are required in order to improve generalizability. Moreover, the present cross-sectional design renders the study prone to selection bias. Although the study sample was not representative, the overall good distribution of student responses indicates that our sample was highly representative of the clinical educational situation regarding the 8th semester in our country.

5. Conclusions

In the present study, we have shown that the Greek translation of the Student Evaluation of the Clinical Learning Environment (SECEE) scale is a valid and reliable instrument appropriate to be used with senior students. The scale can be implemented in clinical education to identify the competence of the clinical sites and also to provide information about student perceptions regarding the adequacy of learning opportunities. While several factors influence the effectiveness of the Clinical Learning Environment, the students' views are particularly important due to the fact that they can enhance their learning skills (Henderson et al., 2012) and the quality of clinical education, as well as their professional values. The Gr-SECEE would be useful not only for exploring the educational needs, but also for intervention assessment in the clinical setting.

Finally, it is hopeful that validation of the Student Evaluation of the Clinical Learning Environment (SECEE) scale will stimulate the imminent research in our country.

Competing Interests Statement

There is no conflict of interests regarding the publication of this paper.

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