Title

Clinical learning environment and supervision of international nursing students: a cross-sectional study

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1. Introduction

Internationalism is a fast growing phenomenon today, influencing migration, multicultural societies (Bhopal 2014), global health experiences (Visovsky et al. 2016), integration of international aspects in the nursing curriculum (Kohlbray 2016) and mobility opportunities in professional education (Kent-Wilkinson et al. 2015). The increased number of multicultural societies and migration has also expanded possibilities for culturally and linguistically diverse students to study for their nursing degree in internationally orientated nursing degree programs (Pitkääjärvi et al. 2013). According to teachers' (Pitkääjärvi et al. 2011) and international students' (Pitkääjärvi et al. 2012b) experiences, clinical practice is often a great challenge in these programs, with various aspects influencing the outcome of students' learning (Mikkonen et al. 2016a, Mikkonen et al. 2016b).

In previous studies on students' experiences, it was found that barriers to learning in the clinical learning environment included students' social isolation, cultural discrimination, communication difficulties with staff and patients, and negative staff attitudes toward cultural diversity (Mikkonen et al. 2016a). In two systematic reviews (Mikkonen et al. 2016a, Mikkonen et al. 2016b) and an integrative review (Newton et al. 2016) conducted on international nursing students and their mentors' experiences, it was reported that previous studies had largely relied on qualitative research methods without measuring factors relating to the clinical learning environment and supervision of international nursing students quantitatively. Therefore, in order to promote a safe and educationally profound clinical learning environment and effective supervision of international students, it is essential to find significant relationships between the background of international students and the outcomes in their clinical learning environment and supervision.

2. Background

The clinical learning environment and supervision of students, which is conducted in clinical settings with possibilities for students to practice their real working skills with patients under the supervision of mentors (FINHEEC 2012), plays an essential part in the professional development of nursing (Woodley 2013). The supervision of students

involves collaboration of clinical facilitators and clinical staff assigned as mentors. The mentors' supervision enables students to learn and develop clinical skills under their pedagogical guidance and support given in professional competencies (Haggman-Laitila et al. 2007). Learning in clinical practice encompasses the integration of theoretical knowledge, practicing of skills and shaping of attributes in the philosophy of nursing care (Newton et al. 2010). Additional aspects related to cultural and linguistic diversity also influence learning from the clinical learning environment and supervision.

The theoretical framework of the commonly used Clinical Learning Environment, Supervision and Nurse Teacher (CLES+T) scale presents important concepts describing the process of student learning and development as a professional nurse (Saarikoski et al. 2008). The theoretical framework of the CLES+T scale places a strong emphasis on the supervisory relationship in the environment of the pedagogical atmosphere, with additional importance attached to offering students the facilities needed for nursing on the ward. In culturally and linguistically diverse supervision situations, similar aspects have been identified, including the supervisor's acceptance of the student (Myhre 2011, Rogan et al. 2006), positive reflection times with continual feedback (Grant & McKenna 2003, Green et al. 2008, Mattila et al. 2010, Miguel & Rogan 2009, Rogan et al. 2006), reciprocal learning in a welcoming and permissive atmosphere (Jeong et al. 2011, Pitkälä et al. 2012b), and growth in responsibility when trusted (Myhre 2011). International students also need cultural acknowledgment, positive reception of their cultural diversity (Jeong et al. 2011, Koskinen & Tossavainen 2003a), and provision of equal opportunities in learning (Sedgwick et al. 2014, Mikkonen et al. 2016a, Mikkonen et al. 2016b).

According to recent evidence, some aspects affecting international students' clinical learning success can have alarming consequences and limitations (Mikkonen et al. 2016a). However, in studies relating to the clinical learning environment and supervision of national nursing students, similar issues have been reported which cause students additional stress with outcomes of building negative self-confidence and having an effect on retention in the nursing profession (Flott & Linden 2016). Thus, it is essential to examine the perspectives of nursing students by including the

cultural and linguistic diversity aspects into an empirical study in order to describe possible differences between international and national students.

3. Methods

3.1. Aim

To describe international and national students' perceptions of the clinical learning environment and supervision, and explain background factors related to them.

The research questions were:

- 1) What kind of perceptions do nursing students have of the clinical learning environment and supervision?
- 2) What kind of perceptions do international nursing students have regarding cultural and linguistic diversity in the clinical learning environment and supervision?
- 3) What kind of background factors relate to the clinical learning environment and supervision of international nursing students?

3.2. Study design

An explorative cross-sectional design was used to collect data from eight universities of applied sciences in Finland. The cross-sectional design included collection of data during the same time period from various places related to the same research aim (Polit & Beck 2008).

3.3. Participants and settings

Convenience sampling was used to invite all nursing students ($N=664$) undertaking English language degree programs in universities of applied sciences ($N=8$) in Finland during September 2015 - May 2016 (Polit & Beck 2008). All nursing students studying in English language degree programs who undertook at least one clinical placement during their studies were seen as eligible participants for the survey. 50% ($N=329$) of all invited students participated in the survey, of which 70% ($N=231$) were international students and 30% ($N=98$) Finnish students.

3.4. Instruments

The newly designed CALDs scale was used in conjunction with the CLES+T scale with 1-5 Likert scaling (1 – fully disagree to 5 – fully agree). The psychometric properties of the CLES+T and CALDs scales were tested and adjusted according to a

construct validity and reliability analysis (**Authors names blinded**). The CLES+T scale included eight factors presented in the order they appeared in the exploratory factor analysis: 1. *the content of supervisory relationship*; 2. *pedagogical atmosphere*; 3. *premises of nursing care on the ward*; 4. *role of the nurse teacher: cooperation between placement staff and nurse teacher*; 5. *role of the nurse teacher: nurse teacher as enabling the integration of theory and practice*; 6. *leadership style of the ward manager*; 7. *role of the nurse teacher: relationship among student mentor and nurse teacher*; and 8. *learning environment*. The CALDs scale included five factors presented in the order they appeared in the exploratory factor analysis: 1. *cultural diversity in the clinical learning environment*; 2. *role of the student*; 3. *orientation into the clinical placement*; 4. *culturally diverse pedagogical atmosphere*; and 5. *linguistic diversity in the clinical learning environment*. The Cronbach's alpha of the CLES+T scale varied from .79 to .97 scoring a total of .95 and the CALDs scale from .79 to .85 with a total of .88. Both scales were shown to have strong validity and reliability (Cook & Beckman 2006, DeVellis 2012, DeVon et al. 2007).

3.5. Data collection

All students were initially invited via their university emails, which was followed by two weekly reminders by the first author or their teacher tutors. Owing to the initial low survey response (10%) via email, paper versions were also distributed by the first author and/or the students' teacher tutors throughout the academic year (Sue & Ritter 2007). Students were invited to answer the paper version only once without reminders in order to allow students freedom to decline participation and avoid any perceived pressure to participate. The questionnaire was self-administered and consisted of socio-demographic and background questions, the CLES+T scale had eight sub-scales and 34 items, whereas the CALDs scale had five sub-scales and 30-items. Finnish students did not need to answer the three last CALDs sub-scales in the questionnaire because they were created only for international students (*cultural diversity in the clinical learning environment*; *culturally diverse pedagogical atmosphere*; *linguistic diversity in the clinical learning environment*).

3.6. Data analysis

The data were analyzed using IBM SPSS version 23.0. Descriptive statistics were used to analyze the students' socio-demographic and background data and were presented in percentages, means and standard deviations. Chi-square values were

calculated to compare differences between the observed and expected frequencies. This approach was used to analyze the socio-demographics and background data of international and national students (Munro 2005). Socio-demographic information on age and years lived in Finland were analyzed using a one-tailed t -test. A two-tailed Mann-Whitney U -test was used to compare significantly skewed data (tested Fisher's measure of skewness). The effect size was measured by using standardized mean differences and interpreted according to Cohen's d effect size estimates: 0.2 – small, 0.5 – moderate, 0.8 – large and 1.3 – very large (Cohen 1992, Lakens 2013). The Kruskal-Wallis H -test was used to compare data between different countries of international students. In all tests described, the significance was set at $p < 0.05$ (Davis 2013, Munro 2005).

Logistic regression was used to identify significant factors of students' socio-demographics and background relating to the clinical learning environment and supervision. All factors that had significant correlation with the sub-scales of the CLES+T and CALDs scales were tested by building binary logistic regression models with a forced entry method. Variables measuring years lived in Finland and country of origin were excluded because these highly correlated with the level of Finnish ($r > 0.70$). The outcome variables were transformed into dichotomous variables (0=1-3.4 – disagree; 1=3.5-5 – agree). The log of likelihood -2 times (-2LL) was used to estimate fitness for each model. The goodness of model fit was examined by the Omnibus test of model coefficients, Hosmer and Lemeshow test, and the Cox & Snell and Nagelkerke R square tests. The results were calculated and presented as odds ratios (ORs) with confidence intervals of 95% and statistical significance at $p < 0.05$. The effect size was measured by using OR outcomes in the models and interpreted according to the effect size estimates 1.5 – small, 2.5 – moderate, 4 – large and 10 – very large (Cohen 1992, Chen et al. 2010).

3.7. *Ethical considerations*

Research permission to conduct the cross-sectional survey for the study was granted by all universities of applied sciences ($N=8$) undertaking English language degree programs in nursing. All participants under the study were treated according to the principles of beneficence and respect for human dignity and justice without any risk for potential physical or psychological harm (Polit & Beck 2008).

4. Results

4.1. Participant characteristics

The students were from Africa (29.8%), Europe (15.8%), Asia (14.9%), North America (7.0%), South America (0.3%) and Finland (29.8%) and 2.1% were immigrant Finns (Table 1). Among the international students, 156 were female (67.5%) and 70 were male (30.3%). Among the Finnish participants, 81 were female (82.7%) and 14 were male (14.3%). There were significantly ($p=0.003$) more males among the international nursing students than among the Finnish students. The age of the international students ranged from 18 to 51 years old (mean 28), and age of the Finnish students from 18 to 55 years old (mean 26). The Finnish students were significantly ($p=0.04$) younger than the international students. The years lived in Finland of the international students varied from one year to 33 years (mean 5.03). The international students were significantly ($p<0.0001$) more highly educated than Finnish students. Most of the international students evaluated their level of Finnish at the beginner (43.7%) or intermediate (42.0%) levels. The beginner level students had lived in Finland for an average of 2.88 years and included Africans (45.5%), Asians (28.7%), Europeans (18.8%), North Americans (5.9%) and immigrant Finns (1.0%) (Table 2). The most common language used for the supervision of international students was Finnish (57.6%), followed by a combination of Finnish and English (31.2%), English (9.1%), Finnish and Swedish (0.9%), and other languages related to the students' nationality (0.4%).

4.2. Students' perceptions of the clinical learning environment and supervision

Both the international and Finnish student groups were generally satisfied with the content of supervisory relationship, including a positive attitude toward them, individual supervision, and mutual respect and trust by supervisor (mean 4.01 (international) vs. 4.19 (Finnish)) (Table 3). The *pedagogical atmosphere* with easily approachable staff and open reception of the student was perceived significantly more positively by Finnish students (mean 3.65 vs. 4.14, $p<0.0001$, $d=0.6$). *Premises of nursing on the ward*, including nursing philosophy, individual nursing, information flow and clear documentation (mean 3.90 (international) vs. 3.88 (Finnish)), and *leadership style of the ward manager* (mean 4.14 (international) vs. 4.03 (Finnish)) were rated by both groups positively. *The role of the nurse teacher* as cooperator

between clinical placement staff and the university was evaluated as significantly higher by international nursing students than by Finnish students (mean 3.42 vs. 2.66, $p<0.0001$, $d=0.6$). Also, the *role of the nurse teacher* in enabling the integration of theory and practice was evaluated as significantly higher by international nursing students (mean 3.90 vs. 3.68, $p=0.047$, $d=0.2$). The *role of the nurse teacher* as part of a team acting as a professional link between the students and their mentors was evaluated average by both groups (mean 3.61 (international) vs. 3.57 (Finnish)). *The learning environment*, including sufficient meaningful situations, multi-dimensional learning content and a good learning environment, was evaluated as significantly better by Finnish students (mean 4.01 vs. 4.26, $p=0.02$, $d=0.3$). Students in both groups saw their own role in learning, including their own initiation, effort and commitment to clinical practice, positively (mean 4.63 (international) vs. 4.72 (Finnish)). Both groups agreed that they had received good orientation into the clinical placement, with enough time given to learn (mean 3.99 (international) vs. 3.88 (Finnish)).

4.3. Student perceptions of cultural and linguistic diversity in the clinical learning environment and supervision

There were significant differences relating to *cultural diversity in the clinical learning environment* between students who were immigrant Finns, Europeans or from other cultures regarding their experiences of discrimination, stress of being in a minority, social isolation and having to prove one's competence ($p<0.0001$) (Table 4). A *culturally diverse pedagogical atmosphere*, including cultural acknowledgement, positive reception by staff, constructive feedback and promotion of equality, was evaluated well by all international nursing students. There was a significant difference ($p<0.0001$) in *the linguistic diversity in the clinical learning environment* assessed by international students related to their understanding of the importance of language in clinical learning. All students, except those who were immigrant Finns, perceived language to be a significant barrier to learning ($p<0.0001$).

4.4. Background factors related to the clinical learning environment and supervision

Binary logistic regression analysis predicted that the Finnish language level and gender among international and national nursing students affected the three outcome variables of the pedagogical atmosphere, role of the nurse teacher and total experience (Table 5). Students at beginner ($OR= 0.26$, 95% $CI= 0.13-0.55$, $p<0.0001$) and

intermediate levels in Finnish ($OR=0.28$, 95% $CI= 0.13-0.60$, $p=0.001$) experienced the pedagogical atmosphere of their clinical placement more negatively in comparison with native language speakers. The role of the nurse teacher as a collaborator between students and the clinical placement was seen as more important by students at the beginner ($OR=4.62$, 95% $CI=2.37-9.00$, $p<0.0001$) and intermediate levels of Finnish ($OR=2.56$, 95% $CI=1.30-5.05$, $p=0.007$) than by native students. Evaluation of the total experience of the clinical learning environment and supervision was significantly lower for students at the beginner level in Finnish ($OR=0.21$, 95% $CI=0.10-0.43$, $p<0.0001$) than for native students. The Finnish language and gender among international nursing students affected the outcome variables of cultural diversity and linguistic diversity in the clinical learning environment (Table 6). Students at an intermediate ($OR=2.22$, 95% $CI=1.23-3.98$, $p=0.008$) level in Finnish had better outcomes relating to *cultural diversity in the clinical placement* than students at the beginner level. Additionally, females perceived *cultural diversity in the clinical placement* as leading to more negative consequences than male students ($OR=0.49$, 95% $CI=0.27-0.90$, $p=0.02$). The intermediate level students experienced fewer obstacles in the clinical learning environment caused by language barriers than students at the beginner level ($OR=3.21$, 95% $CI= 1.27-8.09$, $p=0.013$). The models were significant with classification varying from 64.5% to 84.0%. The effect size varied in OR of the models in binary logistic regression from moderate ($OR=2.56$, $OR=3.57$, $OR=3.85$) to large ($OR=4.76$) (Table 5), and from moderate ($OR=2.22$, $OR=3.21$) to large ($OR=4.62$) (Table 6).

5. Discussion

In this study, language has influenced students' awareness of the pedagogical atmosphere in clinical environments, with the elements of feeling comfortable to go to the ward at the start of a shift, being able to approach staff without feelings of distress, feeling comfortable to take part in discussions and receiving attentiveness from staff in supervision. Pitkälä et al. (2012a) investigated culturally diverse healthcare students' experiences in the clinical learning environment by examining students' communication dimension. It was emphasized that international students need to apply a lot of effort and energy in order to perform their clinical placements in the native language. A positive pedagogical atmosphere is important to help students

feel comfortable with using a foreign language in a professional environment, especially when the supervision is also conducted in the foreign language, as was the case for more than half of the students in the present study.

The second important finding in this study relates to the role of the nurse teacher as a cooperator between placement staff and student. This was found to be particularly important for students at the beginner and intermediate levels. The support of the clinical facilitator from the students' university was found to be essential, especially at the beginner level of the students' language development. Olson (2012) has explained that faculty support plays an essential part for international students in reducing feelings of loneliness and isolation.

An important outcome of the present study was the different perception of the results of cultural diversity by students at the beginner level in the native language. Already at an intermediate level in the native language, students experienced two times better outcomes in being treated fairly relating to their culturally diverse backgrounds in their clinical placements. The relationship between language and culture has previously been examined by Olson (2012), who reported that students expressed feelings of being discriminated against because of their strong accents. Growing competence in language was described as a bridge to success in the clinical learning environment of nursing students. Likewise, the development of cultural tolerance may begin with education in cultural knowledge, leading to the growth in cultural competence of all the parties involved in the learning experience of international students (Olson 2012).

International students in this study at a beginner level in Finnish saw competence in communication skills as key for a successful learning experience but when lacking, also as a major limitation for their learning opportunities. Language barriers caused problems where students felt left out from the team on the ward. Owing to the importance of language competence, educational tools need to be integrated and taken into consideration by educators when designing curricula for international degree programs. Sheele et al. (2011) have presented culturally competent teaching strategies with a focus on language development skills, which can be used by educators for the integration of developing language competence in the nursing curricula of

international students. Furthermore, Spinner-Gelfars (2013) have introduced simulation in communication classes for linguistically diverse nursing students prior to their clinical placements. In their study, students had opportunities to try different scenarios created for identical situations applicable for mental health clients and receive pedagogical assessment with feedback on the success of their learning. Rogan and San Miguel (2013) developed the *Clinically Speaking* clinical language workshop tool offering additional online exercises for students to obtain prior education in clinical language. Students have expressed being more confident to go into clinical practice after completion of the course because they became more aware of the expectations of the clinical placement.

In contrast with the main outcomes of a previous systematic review of qualitative studies of international students' experiences in the clinical learning environment (Mikkonen et al. 2016a), which indicated that integration into a clinical environment for international students requires additional time and orientation, our study showed that clinical orientation into placements was rated as sufficient by both international and national students. Previously, Pitkääjärvi et al. (2012a) reported that international students were less satisfied than Finnish students with clinical orientation at the beginning of their clinical placement and did not know staff expectations in their clinical practice. Additionally, in the outcomes of Mikkonen et al. (2016a), it was shown that a positive clinical environment can enable students to overcome language and cultural barriers and increase their positive learning experiences, as confirmed in our study. However, in our study, students at a beginner level in the national language had a worse overall experience of clinical placements than students who spoke the native language. Language competence was thus shown to play an important role in the success of students' clinical learning environment and supervision.

5.1. Limitations

There were limitations relating to a number of methodological outcomes of the binary regression analysis in model 2. The predictive factor in the advanced level of Finnish in the outcomes of the cultural diversity model ($OR=4.62$, 95% $CI=1.77-12.10$, $p=0.002$) and linguistic diversity model ($OR=25.69$, 95% $CI=8.45-78.09$, $p<0.0001$) should be interpreted with caution because of the wide confidence interval (95%). Also, the sample size of advanced level students ($N=32$) was small in comparison

with the beginner ($N=101$) and intermediate ($N=97$) level students, which might have affected the outcome. An additional limitation is shown by the percentages of explanation of total variance: the models explained 10.9%-26.4% of the total variance, which is fairly small (Munro 2005).

6. Conclusion

In this study, we identified important predictive background factors that affect students' clinical learning environment and supervision, which, to the best of our knowledge, have not previously been examined. Competence in language was found to be an essential factor governing students' success in clinical placements and also a predictor of outcomes of reception in the foreign culture. Integrational programs must be designed for international students so that students can develop their knowledge in the foreign language, practice their language skills and learn cultural aspects of communication relevant to the country they are studying in. We further suggest that additional studies are needed to analyze the effects of language education interventions for international students prior to and after their clinical placement in order to evaluate implications for the degree program curricula of nursing studies.

References

- Bhopal R.S. (2014) *Migration, Ethnicity, Race, and Health in Multicultural Societies*. 2nd edn. Oxford University Press, Oxford.
- Chen H., Cohen P. & Chen S. (2010) How big is a big odds ratio? Interpreting the magnitudes of odds ratios in epidemiological studies. *Communications in Statistics-Simulation and Computation* **39**, 860-864.
- Cohen J. (1992) A power primer. *Quantitative Methods in Psychology* **112**(1), 155-159.
- Cook D.A. & Beckman T.J. (2006) Current concepts in validity and reliability for psychometric instruments: theory and application. *The American Journal of Medicine* **119**, 166.
- Davis C. (2013) *SPSS for Applied Sciences. Basic Statistical Testing*. CSIRO Publishing, Collingwood.
- DeVellis R. (2012) *Scale Development. Theory and Applications*. 3rd edn. SAGE Publications, Newbury Park NT.
- DeVon H.A., Block M.E., Moyle-Wright P., Ernst D.M., Hayden S.J., Lazzara D.J., Savoy S. & Kostas-Polston E. (2007) A psychometric toolbox for testing validity and reliability. *Journal of Nursing Scholarship* **39**, 155-164.

- Finnish Higher Education Evaluation Council (FINHEEC) (2012) *Evaluation of the Bologna Process Implementation in Finland*. KKA, Finland 6:2012.
- Flott E.A. & Linden L. (2016) The clinical learning environment in nursing education: a concept analysis. *Journal of Advance Nursing* **72**(3), 501-513.
- Grant E. & McKenna L. (2003) International clinical placements for undergraduate students. *Journal of Clinical Nursing* **12**, 529-535.
- Green B.F., Johansson I., Rosser M., Tegnah C. & Segrott J. (2008) Studying abroad: a multiple case study of nursing students' international experiences. *Nurse Education Today* **28**, 981-992.
- Haggman-Laitila A., Eriksson E., Meretoja R., Sillanpaa K. & Rekola L. (2007) Nursing students in clinical practice – developing a model for clinical supervision. *Nurse Education in Practice* **7**, 381-391.
- Jeong S.Y., Hickey N., Levett-Jones T., Pitt V., Hoffman K., Norton C.A. & Ohr S.O. (2011) Understanding and enhancing the learning experiences of culturally and linguistically diverse nursing students in an Australian bachelor of nursing program. *Nurse Education Today* **31**(3), 238-244.
- Kent-Wilkinson A., Leurer M.D., Luimes J., Ferguson L. & Murray L. (2015) Studying abroad: exploring factors influencing nursing students' decisions to apply for clinical placements in international settings. *Nurse Education Today* **35**, 941-947.
- Kohlbray P.W. (2016) The impact of international service-learning on nursing students' cultural competency. *Journal of Nursing Scholarship* **48**(3), 303-311.
- Koskinen L. & Tossavainen K. (2003a) Relationships with undergraduate nursing exchange students – a tutor perspective. *Journal of Advanced Nursing* **41**(5), 499-508.
- Lakens D. (2013) Calculating and reporting effect sizes to facilitate cumulative science: a practical primer for t-tests and ANOVAs. *Frontiers in Psychology* **4**, 863.
- Mattila L., Pitkääjärvi M. & Eriksson E. (2010) International student nurses' experiences of clinical practice in the Finnish health care system. *Nurse Education in Practice* **10**(3), 153-157.
- Miguel C. & Rogan F. (2009) A good beginning: the long-term effects of a clinical communication programme. *Contemporary Nurse* **33**(2), 179-190.
- Mikkonen K., Elo S., Kuivila H.M., Tuomikoski A.M. & Kääriäinen M. (2016a) Culturally and linguistically diverse healthcare students' experiences of learning in a clinical environment: a systematic review of qualitative studies. *International Journal of Nursing Studies* **54**, 173-187.
- Mikkonen K., Elo S., Tuomikoski A.M. & Kääriäinen M. (2016b) Mentor experiences of international healthcare students' learning in a clinical environment: a systematic review. *Nurse Education Today* **40**, 87-94.
- Mikkonen K., Elo S., Miettunen J., Saarikoski M. & Kääriäinen M. (2016c) Development and testing of the Cultural and Linguistic Diversity scale, a complement to the CLES+T scale for assessment of international nursing students' learning experiences. *Journal of Advanced Nursing*, submitted on 2.7.2016. (in review process)
- Munro B.H. (2005) *Statistical Methods for Health Care Research*. 5th edn. Lippincott Williams, Wilkins, Philadelphia.
- Myhre K. (2011) Exchange students crossing language boundaries in clinical nursing practice. *International Nursing Review* **58**(4), 428-433.

- Newton J.M., Brian C.J., Ockerby C.M. & Cross W.M. (2010) Clinical learning environment inventory: factor analysis. *Journal of Advanced Nursing* **66**(6), 1371–1381.
- Newton L., Pront L. & Giles T.M. (2016) Experiences of registered nurses who supervise international nursing students in the clinical and classroom setting: an integrative literature review. *Journal of Clinical Nursing* **25**(11-12), 1486-1500.
- Olson M.A. (2012) English-as-a-second language (ESL) nursing students success: a critical review of the literature. *Journal of Cultural Diversity* **19**(1), 26-32.
- Pitkääjärvi M., Eriksson E. & Kekki P. (2011) Teachers' experiences of English-language taught degree programs within health care sector of Finnish polytechnics. *Nurse Education Today* **31**(6), 553–557.
- Pitkääjärvi M., Eriksson E. & Pitkälä K. (2012a) The diversity issue revisited: international students in clinical environment. *International Scholarly Research Network (ISRN)* **2012**.
- Pitkääjärvi M., Eriksson E., Kekki P. & Pitkala K. (2012b) Culturally diverse nursing students in Finland: some experiences. *International Journal of Nursing Education Scholarship* **9** (1), 1-18.
- Pitkääjärvi M.A., Eriksson E. & Pitkala K. (2013) Culturally diverse health care students' experiences with teaching strategies in Finland: a national survey. *Nurse Education Today* **33**(6), 590-595.
- Polit D.F. & Beck, C.T. (2008) *Nursing Research: Generating and Assessing Evidence for Nursing Practice*. 8th edn. Wolters Kluwer/ Lippincott Williams & Wilkins, Philadelphia.
- Rogan F., San Miguel C., Brown D. & Kilstoff K. (2006) 'You find yourself' perceptions of nursing students from non-English speaking back-grounds of the effect of an intensive language support program on their oral clinical communication skills. *Contemporary Nurse* **23**(1), 72–86.
- Rogan F. & San Miguel C. (2013) Improving clinical communication of students with English as a second language (ESL) using online technology: a small scale evaluation study. *Nurse Education in Practice* **13**(5), 400–406.
- Saarikoski M., Isoaho H., Warne T. & Leino-Kilpi H. (2008) The nurse teacher in clinical practice: developing the new sub-dimension to the clinical learning environment and supervision (CLES) scale. *International Journal of Nursing Studies* **45**, 1233–1237.
- Scheele T.H., Pruitt R., Johnson A. & Xu Y. (2011) What do we know about educating Asian ESL nursing students? A literature review. *Nursing Education Perspectives* **32**(4), 244-249.
- Sedgwick M., Oosterbroek T. & Ponom, V. (2014) "It All Depends": how minority nursing students experience belonging during clinical experiences. *Nursing Education Perspectives* **35**(2), 89–93.
- Spinner-Gelfars A.H. (2013) Using simulation to promote effective communication with a diverse student population. *Teaching and Learning in Nursing* **8**, 96-101.
- Sue V.M. & Ritter L.A. (2007) *Conducting Online Surveys*. SAGE Publications, Los Angeles.
- Visovsky C., McGhee S. Jordan E., Dominic S. & Morrison-Beedy D. (2016) Planning and executing a global health experience for undergraduate nursing students: a comprehensive guide to creating global citizens. *Nurse Education Today* **40**, 29-32.

Woodley L.K. (2013) Clinical teaching in nursing. In: Oermann, M.H. (Eds), Teaching in nursing and role of the educator. The complete guide to best practice in teaching, evaluation, and curriculum development (pp. 141-161). Springer Publishing Company, New York.

Table 1. Comparison of socio-demographic and background data of international and Finnish students (N=329)

Socio-demographic and background information	International students (N=231)	Finnish students (N=98)	p
Age in years °	28 (6.68)	26 (8.01)	0.043
Years lived in Finland °	5 (4.34)	24 (8.64)	0.0001
Gender			0.003
Female	156 (67.5%)	81 (82.7%)	
Male	70 (30.3%)	14 (14.3%)	
Missing data	5 (2.2%)	3 (3.1%)	
Level of Finnish language			0.0001
Beginner	101 (43.7%)	0 (0.0%)	
Intermediate	97 (42.0%)	0 (0.0%)	
Advanced	32 (13.9%)	2 (2.0%)	
Native	0 (0.0%)	96 (98.0%)	
Previous education			0.0001
Matriculation examination	73 (31.6%)	67 (68.4%)	
Vocational school	29 (12.6%)	12 (12.2%)	
University of applied sciences	48 (20.8%)	6 (6.1%)	
University	77 (33.3%)	13 (13.3%)	
Other	3 (1.3%)	0 (0.0%)	
Missing data	1 (0.4%)	0 (0.0%)	
Year of study in nursing			0.828
1 st year student	34 (14.7%)	15 (15.3%)	
2 nd year student	83 (35.9%)	32 (32.7%)	
3 rd year student	89 (38.5%)	43 (43.9%)	
4 th year student	24 (10.4%)	8 (8.2%)	
An exchange program	1 (0.4%)	0 (0.0%)	
Current/last clinical placement			0.087
Primary health care	109 (47.2%)	36 (36.7%)	
Specialized medical care	121 (52.4%)	61 (62.2%)	
Missing data		1 (0.4%)	
Duration of current/last clinical placement			0.079
2 weeks or less	6 (2.6%)	0 (0.0%)	
3 weeks	16 (6.9%)	7 (7.1%)	
4 weeks	69 (29.9%)	38 (38.8%)	
5 weeks	56 (24.2%)	33 (33.7%)	
6 weeks	40 (17.3%)	11 (11.2%)	
7 weeks	16 (6.9%)	2 (2.0%)	
8 weeks or more	28 (12.1%)	7 (7.1%)	
Language used in supervision			0.0001
Finnish	133 (57.6%)	90 (91.8%)	
Swedish	1 (0.4%)	0 (0.0%)	
English	21 (9.1%)	1 (1%)	
Other	1 (0.4%)	3 (3.1%)	
Finnish and English	72 (31.2%)	0 (0%)	
Finnish and Swedish	2 (0.9%)	4 (4.1%)	
Occupational title of supervisor			0.257
Nurse	184 (79.7%)	81 (82.7%)	
Nurse specialist	32 (13.9%)	5 (5.1%)	
Assistant ward manager	4 (1.7%)	3 (3.1%)	
Sister / ward manager	5 (2.2%)	2 (2.0%)	
Practical nurse	4 (1.7%)	4 (4.1%)	
Other	2 (0.8%)	1 (1.0%)	
Frequency of supervision			0.891
No supervisor	1 (0.4%)	0 (0.0%)	
A personal supervisor, but the relationship did not work during the placement	18 (7.8%)	6 (6.1%)	
The named supervisor changed during the placement	9 (3.9%)	3 (3.1%)	

<i>The supervisor varied according to shift or place of work</i>	57 (24.7%)	20 (20.4%)	
<i>Same supervisor had several students and was a group supervisor</i>	2 (0.9%)	0 (0.0%)	
<i>A personal supervisor was named and relationship worked during this placement</i>	136 (58.5%)	62 (63.3%)	
<i>Other method of supervision</i>	2 (0.9%)	1 (1.0%)	
<i>More than one supervisor</i>	6 (2.6%)	4 (4.1%)	
Frequency of unscheduled supervision meetings			
<i>Not at all</i>	60 (26.0%)	19 (19.4%)	0.312
<i>Once or twice during the course</i>	68 (29.4%)	32 (32.7%)	
<i>Less than once a week</i>	15 (6.5%)	10 (10.2%)	
<i>About once a week</i>	38 (16.5)	19 (19.4%)	
<i>More often</i>	49 (21.5)	14 (14.3%)	
<i>Missing data</i>	1 (0.4%)	4 (4.1%)	

^o M: mean (SD: standard deviation)

p<0.05 (marked in bold)

Parametric continuous data analyzed using independent samples t-test

Categorical data analyzed using Chi-square test

Table 2. Comparison of background data of international students ($N=231$)

Background information	Beginner ($N=101$)	Intermediate ($N=97$)	Advanced ($N=32$)	p
Country of origin				
<i>Finland</i>	0 (0.0%)	0 (0.0%)	0 (0.0%)	0.0001
<i>Immigrant Finns</i>	1 (1.0%)	0 (0.0%)	6 (18.8%)	
<i>Europe</i>	19 (18.8%)	23 (23.7%)	10 (31.3%)	
<i>North America</i>	6 (5.9%)	13 (13.4%)	4 (12.5%)	
<i>Asia</i>	29 (28.7%)	16 (16.5%)	4 (12.5%)	
<i>Africa</i>	46 (45.5%)	44 (45.4%)	8 (25.0%)	
<i>Other</i> π ($N=1$)	0 (0.0%)	1 (1.0%)	0 (0.0%)	
Years lived in Finland	2.88 (1.83) π ($N=5$)	5.52 (3.34)	10.03 (6.98)	0.0001
Education in Finnish prior to the clinical placement ^o	3.26 (1.41) π ($N=3$)	3.40 (1.48) π ($N=3$)	3.52 (1.46) π ($N=3$)	0.533
Knowledge in clinical vocabulary in Finnish ^o	3.30 (1.27) π ($N=4$)	3.56 (1.00) π ($N=1$)	4.00 (1.13) π ($N=3$)	0.010
^o M : mean (SD : standard deviation) π Missing data $p < 0.05$ (marked in bold) Parametric continuous data analyzed using independent samples t-test Nonparametric ordinal data was analyzed using Kruskal-Wallis Test				

Table 3. Students' perceptions of the clinical learning environment and supervision ($N=329$)

Sum-variables	International students ($N=231$) ^o	Finnish students ($N=98$) ^o	Mann-Whitney U-test	Z	p
The content of supervisory relationship (CLES+T)	4.01 (1.12)	4.19 (0.82)	10866.00	-.288	0.774
Pedagogical atmosphere (CLES+T)	3.65 (0.97)	4.14 (0.75)	34329.00	-4.693	0.0001
Premises of nursing on the ward (CLES+T)	3.90 (0.95)	3.88 (0.90)	10801.50	-.394	0.693
Role of the nurse teacher: cooperation between placement staff and nurse teacher (CLES+T)	3.42 (1.23)	2.66 (1.19)	7036.00	-5.105	0.0001
Role of the nurse teacher: Nurse teacher as enabling the integration of theory and practice (CLES+T)	3.90 (1.01)	3.68 (1.00)	9473.00	-1.986	0.047
Leadership style of the ward manager (CLES+T)	4.14 (0.82)	4.03 (0.75)	9788.00	-1.682	0.093
Role of the nurse teacher: Relationship between student mentor and nurse teacher (CLES+T)	3.61 (1.19)	3.57 (1.15)	10332.00	-.509	0.611
Learning environment (CLES+T)	4.01 (0.94)	4.26 (0.79)	9425.50	-2.306	0.021
Role of student (CALDs)	4.63 (0.49)	4.72 (0.37)	10344.50	-.727	0.467
Orientation into the clinical placement (CALDs)	3.99 (0.92)	3.88 (0.97)	10228.50	-.910	0.363
^o M: mean (SD: standard deviation) $p < 0.05$ (marked in bold) The nonparametric ordinal data was analyzed using Mann-Whitney U test					

Table 4. Students' perceptions of cultural and linguistic diversity in the clinical learning environment and supervision (*N*=231)

Sum-variables	Immigrant Finns(<i>N</i> =7) ^o	Europe (<i>N</i> =52) ^o	North America (<i>N</i> =23) ^o	Asia (<i>N</i> =49) ^o	Africa (<i>N</i> =98) ^o	<i>p</i>
Cultural diversity in the clinical learning environment (CALDs)	4.17 (1.22)	4.11 (0.99)	3.57 (0.90)	3.50 (1.00)	3.20 (1.14)	0.0001
Culturally diverse pedagogical atmosphere (CALDs)	4.43 (0.72)	4.14 (0.78)	3.89 (0.80)	3.98 (0.89)	3.88 (1.00)	0.229
Linguistic diversity in the clinical learning environment (CALDs)	4.05 (1.25)	2.88 (1.22)	2.18 (1.01)	2.25 (0.90)	2.13 (1.06)	0.0001

^o *M*: mean (*SD*: standard deviation)
p <0.05 (marked in bold)
The nonparametric ordinal data was analyzed using Kruskal-Wallis *H* Test

Table 5. Background factors related to the clinical learning environment and supervision of nursing students (N=329)

[illegible]

Table 6. Background factors related to the clinical learning environment and supervision of nursing students (N=231)

Independent variable	Outcome variable			
	Cultural diversity OR (CI 95%)	p	Linguistic diversity OR (CI 95%)	p
Level in Finnish				
Beginner (ref.)				
Intermediate	2.22 (1.23, 3.98)	0.008	3.21 (1.27, 8.09)	0.013
Advanced	4.62 (1.77, 12.10)	0.002	25.69 (8.45, 78.09)	0.0001
Gender				
Female	0.49 (0.27, 0.90)	0.021	0.99 (0.45, 2.18)	0.978
Male (ref.)				
Omnibus		0.0001		0.0001
Hosmer and Lemeshow		0.698		0.441
Cox&Snell, Nagelkerke R²	9.0% to 12.0%		16.7% to 26.4%	
Classification	64.5%		84.0%	
p<0.05 (marked in bold)				

STROBE Statement—Checklist of items that should be included in reports of *cross-sectional studies*

	Item No	Recommendation
Title and abstract	1+	(a) Indicate the study’s design with a commonly used term in the title or the abstract (b) Provide in the abstract an informative and balanced summary of what was done and what was found
Introduction		
Background/rationale	2+	Explain the scientific background and rationale for the investigation being reported
Objectives	3+	State specific objectives, including any prespecified hypotheses
Methods		
Study design	4+	Present key elements of study design early in the paper
Setting	5+	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection
Participants	6+	(a) Give the eligibility criteria, and the sources and methods of selection of participants
Variables	7+	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable
Data sources/ measurement	8*+	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group
Bias	9+	Describe any efforts to address potential sources of bias
Study size	10+	Explain how the study size was arrived at
Quantitative variables	11+	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why
Statistical methods	12+	(a) Describe all statistical methods, including those used to control for confounding
		(b) Describe any methods used to examine subgroups and interactions
		(c) Explain how missing data were addressed
		(d) If applicable, describe analytical methods taking account of sampling strategy
		(e) Describe any sensitivity analyses
Results		
Participants	13*+	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed
		(b) Give reasons for non-participation at each stage
		(c) Consider use of a flow diagram
Descriptive data	14*+	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders
		(b) Indicate number of participants with missing data for each variable of interest
Outcome data	15*+	Report numbers of outcome events or summary measures
Main results	16+	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included
		(b) Report category boundaries when continuous variables were categorized
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period
Other analyses	17+	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses

Discussion		
Key results	18+	Summarise key results with reference to study objectives
Limitations	19+	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias
Interpretation	20+	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence
Generalisability	21+	Discuss the generalisability (external validity) of the study results
Other information		
Funding	22+	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.

Highlights

- Language competence was found essential for learning success.
- Cultural diversity was perceived more negatively by students at the beginner level.
- Language competence predicts success in learning more than the country of origin.
- The support of the nurse teacher is essential for students with low language skills.