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Abstract: Background:
The purpose of clinical placements and supervision is to promote the development of healthcare students´ professional skills. High-quality clinical learning environments and supervision were shown to have significant influence on healthcare students´ professional development.
Objectives:
This study aimed to describe healthcare students` evaluation of the clinical learning environment and supervision, and to identify the factors that affect these.
Design: The study was performed as a cross-sectional study.
Methods:
The data (n = 1973) were gathered through an online survey using the Clinical Learning Environment, Supervision and Nurse Teacher scale during the academic year 2015-2016 from all healthcare students (N = 2500) who completed their clinical placement at a certain university hospital in Finland. The data were analysed using descriptive statistics and binary logistic regression analysis.
Results:
More than half of the healthcare students had a named supervisor and supervision was completed as planned. The students evaluated the clinical learning environment and supervision as 'good'. The students´ readiness to recommend the unit to other students and the frequency of separate private unscheduled sessions with the supervisor were the main factors that affect healthcare students` evaluation of the clinical learning environment and supervision. Individualized and goal-oriented supervision in which the student had a named supervisor and where supervision was completed as planned in a positive environment that supported learning had a significant impact on student's learning.

Conclusions:
The clinical learning environment and supervision support the development of future healthcare professionals' clinical competence. The supervisory relationship was shown to have a significant effect on the outcomes of students' experiences. We recommend the planning of educational programmes for supervisors of healthcare students for the enhancement of supervisors' pedagogical competencies in supervising students in the clinical practice.

Dear Editor-in-Chief,

Please find enclosed manuscript, “Healthcare students' evaluation of the clinical learning environment and supervision – A cross-sectional study” by Pitkänen S., Kääriäinen M., Oikarainen A., Tuomikoski A., Elo S., Ruotsalainen H., Saarikoski M., Kärsämänoja T., Mikkonen K.

We believe our findings would appeal to the readership of your journal, especially those interested in improving clinical education of healthcare students. This manuscript includes results concerning outcomes of clinical learning environment and supervision of healthcare students.

We confirm that this manuscript has not been published elsewhere and is not under consideration by another journal. All authors have approved the manuscript and agree with its submission to your Journal. Additionally, all authors meet the criteria for authorship. The roles of each author’s contribution are as described below:

Salla Pitkänen and Kristina Mikkonen: conception and design, acquisition of data and analysis, interpretation of data, drafting the article by revising it critically for important intellectual content, and final approval of the version submitted.

Anna-Maria Tuomikoski: conception and design, acquisition of data, drafting the article by revising it critically for important intellectual content, and final approval of the version submitted.

Maria Kääriäinen, Ashlee Oikarainen, Satu Elo, Heidi Ruotsalainen, Mikko Saarikoski, Taina Kärsämänoja: conception and design, interpretation of data, drafting the article by revising it critically for important intellectual content, and final approval of the version submitted.

We look forward to hearing from you at your earliest convenience.

Sincerely yours, authors
(Corresponding author: Kristina Mikkonen)

Title: HEALTHCARE STUDENTS' EVALUATION OF THE CLINICAL LEARNING ENVIRONMENT AND SUPERVISION – A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: The purpose of clinical placements and supervision is to promote the development of healthcare students´ professional skills. High-quality clinical learning environments and supervision were shown to have significant influence on healthcare students´ professional development.

Objectives: This study aimed to describe healthcare students` evaluation of the clinical learning environment and supervision, and to identify the factors that affect these.

Design: The study was performed as a cross-sectional study.

Methods: The data (n = 1973) were gathered through an online survey using the Clinical Learning Environment, Supervision and Nurse Teacher scale during the academic year 2015–2016 from all healthcare students (N = 2500) who completed their clinical placement at a certain university hospital in Finland. The data were analysed using descriptive statistics and binary logistic regression analysis.

Results: More than half of the healthcare students had a named supervisor and supervision was completed as planned. The students evaluated the clinical learning environment and supervision as 'good'. The students´ readiness to recommend the unit to other students and the frequency of separate private unscheduled sessions with the supervisor were the main factors that affect healthcare students` evaluation of the clinical learning environment and supervision. Individualized and goal-oriented supervision in which the student had a named supervisor and where supervision was completed as planned in a positive environment that supported learning had a significant impact on student's learning.

Conclusions: The clinical learning environment and supervision support the development of future healthcare professionals' clinical competence. The supervisory relationship was shown to have a significant effect on the outcomes of students' experiences. We recommend the planning of educational programmes for supervisors of healthcare students for the enhancement of supervisors' pedagogical competencies in supervising students in the clinical practice.

1. Introduction

The completion of clinical placements and the realization of supervision have a key role on healthcare students` achievement of desired learning outcomes (Cooper et al., 2015; Dimitriadou et al., 2015; McIntosh et al., 2014; Saarikoski et al., 2007), development of their professional identity and competence (Newton et al., 2010) as well as their learning of clinical skills (Saarikoski et al., 2008). Countries within the European Union (EU) have faced several changes in healthcare education, one of which relates to clinical facilitation: the nurse teacher responsible for supervision has a significantly decreased role in supervising students during clinical placement (Hall-Lord et al., 2013; Jokelainen et al., 2011; Saarikoski et al., 2002, Saarikoski et al., 2009). In addition, group supervision has clearly decreased and respectively one-on-one supervision has increased, which is presented by an increase in the overall satisfaction of students (Saarikoski et al., 2009). Within Europe, students' experiences of supervision are predominantly positive (Saarikoski et al., 2007; Warne et al., 2010), however, the most satisfied students are those who received individualized supervision (Antohe et al., 2016) and who had a formal supervisory relationship (Saarikoski et al., 2007). Antohe et al. (2016) emphasize the model of individualized supervision as a pivotal factor in the overall satisfaction of students during clinical placement.

Although the basic premises for supervision, such as the implementation, adequacy and effectiveness of supervision along with sufficient resources are dependent on the pedagogical premises of the work unit (Hooven 2014), the task of the healthcare unit is to guarantee that the clinical placement offers adequate and appropriate learning opportunities (Bisholt et al., 2014;

Jokelainen et al., 2013). Quality supervision is essential in which the individual learning needs and goals of the student are met (Bisholt et al., 2014; Jokelainen et al., 2013) and where requirements and goals are established for the clinical placement (Dimitriadou et al., 2015; Jokelainen et al., 2013), regardless of the student´s educational organization, training or degree programme. Previous research puts great emphasis on the impact that high-quality clinical learning environments and supervision have for healthcare students; it is imperative to further identify and examine the factors that influence these. This study aimed to describe healthcare students` evaluation of the clinical learning environment and supervision, and identify the factors that affect these.

2. Background

The Bologna Process and EU directives have had a significant impact on the development of healthcare education in Europe (Jokelainen et al., 2011; Salminen et al., 2010). The European Commission (2007) called for the Bologna Process to enhance consistent developmental practices in all sectors of education (Saarikoski et al., 2009). Competence should be based on the European Qualifications Framework (EQF) and evaluated according to the ECTS (European Credit Transfer and Accumulation System) grading system (Salminen et al., 2010). Healthcare degrees completed both at the university of applied sciences and at the secondary healthcare degree level require theoretical studies, in addition to clinical placements that enhance professional development (Gustafsson et al., 2015). According to the European Parlament and the Council Directive, healthcare education should contain as much as 50% of clinical training in real life clinical environments (77/452/EEC).

In general, the clinical learning environment refers to the clinical healthcare work environments in which healthcare students complete their clinical placements, which is included as part of the clinical studies of their healthcare education (Jokelainen et al., 2011; Papastavrou et al., 2016). The

concept of clinical placement can be defined as learning that happens under the supervision of a professional from a healthcare organization (Flott and Linden, 2016), which includes the application of theoretical knowledge, the development of clinical skills and the integration of professional activities (Newton et al., 2010). Clinical learning consists of two parts: the learning environment and supervision. The components of a good clinical learning environment include orientation, appropriate learning situations and feedback, the opportunity for professional development and a student-centred learning culture (Bisholt et al., 2014; Papp et al., 2003, Salminen et al., 2010).

The clinical supervisor has a significant role in supporting students` professional development (Jokelainen et al., 2013; Levett-Jones et al., 2009; Saarikoski et al., 2007; Saarikoski et al., 2009). The role of a clinical supervisor is founded upon healthcare expertise and is a part of the duties and responsibilities of healthcare professionals (Budgen and Gamroth, 2007; Chang et al., 2015; Jokelainen et al., 2011; McIntosh et al., 2014). The concept of supervision is defined as the teaching and supervising of students performed by all healthcare professionals, which includes teaching practical skills, completing student assessments and supporting learning during the clinical placement (Jokelainen et al., 2011).

In clinical facilitation, the main task of the nurse teacher from the educational organization is to pedagogically support the learning process of both the supervisor and of the student. The nurse teacher is responsible that the clinical placement is carried out according to the goals of the degree programme. (Warne et al., 2010.) In this study, the term ‘healthcare student’ includes the healthcare student who is completing either the university level, university of applied sciences level or secondary level healthcare degree. The term registered nursing student refers to those students studying general nursing, midwifery, public health nursing or paramedic nursing, which are all

university of applied sciences level programmes in Finland. Licensed practical nursing education is offered at the secondary degree level and offered through vocational schools. Other healthcare degree programmes refer to study programmes such as bioanalyst, physiotherapist, radiographer, dental hygienist, occupational therapist and rehabilitation counsellor, which are offered through universities of applied sciences. (Ministry of Education, 2006).

3. Methods

3.1. Aim

The aim of this study was to describe healthcare students` evaluation of the clinical learning environment and supervision, and to identify the factors that affect these.

3.2. *Study design*

This study was designed as a cross-sectional study.

3.3. Sample and data collection

The data were gathered through an online survey during the academic year 2015–2016 from healthcare students who completed their clinical placement at a certain university hospital in Finland. In this study, the clinical learning environment consisted of hospital outpatient and inpatient units. All of the healthcare students (N = 2500) who completed their clinical placement during this time frame were invited to participate in the evaluation of their clinical learning following their clinical placement. A total of n = 1977 students answered the survey and the overall response rate was 79%. Four of the responses were removed because less than half of the CLES+T items had been answered. The data sample used in this study consisted of n = 1973 students.

3.4. *Instrument*

The Clinical Learning Environment, Supervision and Nurse Teacher scale (CLES+T) (Saarikoski et al. 2008) was developed for the evaluation and study of clinical learning environments and

supervision, as well as an instrument for the quality assessment of healthcare education. The CLES+T scale is composed of five main dimensions, which consist of a total of 34 items: *the supervisory relationship* (8 items), *pedagogical atmosphere on the ward* (9 items), *role of the nurse teacher* (9 items), *leadership style of the ward manager* (4 items), and *premises of nursing on the ward* (4 items). (Saarikoski et al., 2008).

In the evaluation instrument used in this study, the target organization deleted two items from the original CLES+T scale (Saarikoski et al., 2008): *The ward manager was a team member* and *The ward can be regarded as a good learning environment*. Three additional items that were not part of the original scale (Saarikoski et al., 2008) were added by the target organization: *Basic familiarization was well organized*, *Patient cases were used in my supervisory process* and *My supervisor´s supervision skills supported my learning*. The remaining items were consistent with the CLES+T scale's 5-factor model (Saarikoski et al., 2008) (Table 2). Internal consistency was evaluated by calculating Cronbach`s Alphas [0.78-0.97] (Table 2). Prior to the analysis, the ten-level Likert items were categorized into five levels (1= fully disagree – 5= fully agree), which is consistent to that used in the original CLES+T scale (Saarikoski et al., 2008).

3.5. *Statistical analysis*

The data was analysed using IBM SPSS Statistics (V22.0). Frequencies, percentages, means and standard deviations (SD) were utilized in the description of the data. Binary logistic regression analysis was used in the analysis of predicting factors affecting the clinical learning environment and supervision of healthcare students. Prior to the logistic regression analysis, the correlation between variables were examined through Spearman`s rank correlation coefficient and the independent variables that did not correlate ($r \geq 0.30$, $p < 0.001$) with any dependent variables were left out of the analysis. The sum variables from all five sub-dimensions in the CLES+T scale were formed into dichotomous variables for the regression models. For the analysis, the five-level

reclassified sum variables were further classified into two levels: 0 = poor (1-3.49) and 1 = good (3.50-5). (Munro, 2005.)

The logistic regression models were created first by entering the forward stepwise procedure (Conditional), in which both the add and elimination options are combined. The final regression models were created through forced (Enter) selection procedure, which included the independent background variables that proved relevant based on the regression models. Additionally a theoretical guidance on the subject was used to build the models. The goodness of the models fit was examined through –2loglikehood (-2LL) values. The smaller the -2LL value is, the better probability that the prediction obtained in the model reflects reality. (Munro, 2005). The goodness of the models fit was also evaluated using Cox & Snell´s R Square and Nagelkerke R Square tests, which indicate the coefficient of determination of the obtained model. The statistical significance of the models were examined through the Omnibus Tests of Model Coefficients and the correct categorization of values was examined through the Hosmer-Lemeshow test. The results of the logistic regression analysis were reported in odds ratios (OR) with 95% of confidence intervals (Table 3). The boundary for statistical significance was set at the $p < 0.05$. (Burns and Grove 2005).

3.6. *Ethical considerations*

Research approval was received from the target organization during spring 2016. In the covering letter of the survey, the research aim and the utilization of the survey were reported. Responding to the survey was optional and anonymous. All stages of this study were completed according to good scientific practice, and according to guidelines set by the Finnish Advisory Board on Research Integrity (TENK, 2012) and the National Advisory Board on Social Welfare and Health Care Ethics (ETENE, 2001). The TENK (2012) and ETENE (2001) ethical principles as well as the Personal Data Act (1999/523) have been adhered to in the protection, preservation and destruction of the data in order to protect the privacy and confidentiality of the participants. The data has been kept safely

on a computer owned by a member in the research group under a password. The data will be destroyed once the research project has been completed. (Stang, 2015).

4. Results

4.1. Participants' background

Over half (52%) of the participants in this study were under the age of 24 years and 55% of the respondents held a previous vocational degree. Most of the participants (98%) were healthcare undergraduate students and half (50%) studied towards a nursing degree. Forty percent of the respondents were third-year and 37% were second-year students. The duration of the clinical placement was 4 weeks for 34% of the healthcare students. (Table 1.)

4.2. *Clinical learning environment and supervision*

Students evaluated the clinical learning environment and supervision as 'good'. The mean value of the sum variables in the main sub-dimensions that were measured on the Likert scale (1–5) varied between 3.98–4.56 (Table 2). The sub-dimension *Premises of nursing on the ward* received the highest evaluation (mean 4.56, SD 0.55). The *Supervisory relationship* sub-dimension received the second highest average out of the results (mean 4.55, SD 0.76). The lowest evaluation amongst the sub-dimensions was in the *Role of the nurse teacher* (mean 3.98, SD 0.87). Students evaluated highest the section, which described the *Relationship among the student, mentor and nurse teacher*, and the weakest were *The nurse teacher was like a member of the nursing team* (mean 3.29, SD 1.30).

4.3. *Factors that affect the clinical learning environment and supervision*

The factors affecting the five areas of the CLES+T scale of the clinical learning environment and supervision included recommending the unit to other students, the occurrence of supervision, frequency of separate private unscheduled sessions with the supervisor, planning of the learning

outcomes with the named supervisor, the students' degree programme and their term of studies. Five binary logistic regression models were found to be most fitting (Table 3).

Students who were likely to not recommend the work unit to fellow students assessed the functionality of the supervisory relationship poorer (*OR* = 0.02, 95% *CI* = 0.01-0.03, $p < 0.001$), evaluated the pedagogical atmosphere (OR = 0.01, 95% CI= 0.003-0.01, $p < 0.001$), and the teacher´s contribution in their own learning worse *(OR= 0.43, 95% CI = 0.25-0.73, p = 0.002)* than students who were willing to recommend the work unit to fellow students. They also evaluated the premises of nursing in the work unit *(OR= 0.06, 95% CI= 0.03-0.12, p < 0.001)* and management style of the ward manager poorer *(OR = 0.02, 95% CI = 0.01-0.04, p < 0.001)* than students who were likely to recommend the work unit to fellow students. Students who did not have a named supervisor or whose supervision did not proceed as planned (*OR* = 0.32, 95% *CI* = 0.19-0.55, $p < 0.001$), as well as students whose supervisor changed in the middle of the clinical placement or daily (*OR* = 0.49, 95% *CI* = 0.28-0.85, $p < 0.01$) evaluated the supervisory relationship poorer than those students who had a named supervisor or whose supervision proceeded as planned.

Those students who had one-to-one reflection time only once during their clinical placement (*OR* = 0.30, 95% *CI* = 0.14-0.66, $p = 0.003$) and students who did not have one-to-one reflection time during their clinical placement at all (*OR*= 0.22, 95% *CI* = 0.10-0.48, $p < 0.001$) evaluated poorer functionality in the supervisory relationship and pedagogical atmosphere *(OR = 0.41, 95% CI = 0.22-0.77, p= 0.005)* than students who had one-to-one reflection time with their named supervisor three or more times during the clinical placement. Students who had one-to-one reflection time with their named supervisor only once during their clinical placement evaluated the contribution of the nurse teacher responsible for the clinical placement poorer *(OR = 0.57, 95% CI = 0.42-0.78, p < 0.001)* than those students who had one-to-one reflection time three or more times during their

clinical placement. Also such students evaluated the management style of the ward manager poorer *(OR=0.55, 95% CI=0.33-0.89, p=0.016)* than students who were likely to recommend the work unit to fellow students.

Students who did not discuss their learning outcomes with their named supervisor assessed poorer functionality in the supervisory relationship (*OR* = 0.39, 95% *CI* = 0.24-0.65, $p < 0.001$) than students who discussed learning outcomes with their named supervisor. Licensed practical nursing students evaluated the contribution of the nurse teacher responsible for the clinical placement better *(OR = 2.25, 95% CI = 1.35-3.74, p = 0.002)* than registered nursing students. Also, students who studied in a university of applied sciences degree programme other than in nursing (bioanalyst, physiotherapist, radiographer, dental hygienist, occupational therapist, rehabilitation counselor) evaluated the management style of the ward manager better *(OR= 2.30, 95% CI= 1.29-4.09, p=0.005)* than registered nursing students. Finally, third-year students assessed the premises of nursing in the work unit poorer *(OR= 0.40, 95% CI= 0.17-0.92, p = 0.03)* than first-year students.

5. Discussion

Students who would have recommended the work unit to fellow students and who had one-to-one reflection time with their named supervisor three or more times, experienced a more positive clinical learning environment and supervision. Mutual respect and approval in the supervisory relationship was evaluated the highest in the supervisory relationship sub-dimension. The functionality of the supervisory relationship was evaluated as good particularly amongst students who had a named supervisor with whom they discussed their learning outcomes with and when supervision was completed as planned. In previous studies, the most satisfied students have been those who have had a named supervisor and whose supervision has been completed as planned, compared to students whose supervisor changed each day (Papastavrou et al., 2016). A formal

supervisory relationship (Saarikoski et al., 2007) and individualistic supervision (Antohe et al., 2016) increase students` overall satisfaction during clinical placement.

The pedagogical atmosphere on the ward was evaluated as good, and students were brave enough to participate in discussions on the work unit. Particularly students who were likely to recommend the work unit to fellow students and who had one-to-one reflection time with their named supervisor three or more times experienced a positive pedagogical atmosphere on the work unit. The results strengthen the importance of a good pedagogical atmosphere (Warne et al., 2010), a positive learning environment (Antohe et al., 2016; Higgins et al., 2007,) and student-centred culture (Bisholt et al., 2014; Papp et al., 2003; Salminen et al., 2010).

Premises of nursing on the ward received the best evaluation from students. Third-year students were more critical than first-year students and assessed the premises of nursing in the work unit more poorly. This can be possibly explained by third-year students having the capability for more critical reflection of nursing practice and having a more in-depth understanding of the essential content of nursing competence: client-centeredness, ethics and professionality in nursing as well as documentation and reporting (Morrow et al., 2015).

In the leadership style of the ward manager sub-dimension, the lowest evaluation was received by the feedback from the ward manager could easily be considered a learning situation. Students studying in programmes other than in nursing assessed the management style of the ward manager better than registered nursing students. Registered nursing students are increasingly supervised in the clinical learning environment by nurses rather than ward managers. Even though the role of the ward manager in supervision is ever decreasing, the role of the ward manager on the atmosphere of the work unit has been found to be significant in prior studies (Levett-Jones et al., 2009).

The role of the nurse teacher was evaluated by students as the poorest out of all the CLES+T scale's sub-dimensions. Licensed practical nursing students assessed the contribution of the teacher more positively than registered nursing students. In this study, students experienced that the nurse teacher was not a member of the nursing team and he/she was not able to give his/her expertise to the clinical team. This is most likely a consequence of decreasing resources for teachers to supervise students due to organizational changes in Finland and also elsewhere in Europe (Hall-Lord et al., 2013; Saarikoski et al., 2009). Nurse teachers participated in midterm and final evaluations percentage wise more frequently amongst licensed practical nursing students than registered nursing students. This may contribute to explain why licensed practical nursing students evaluated the contribution of the nurse teacher better.

5.1. Limitations

This study had limitations. The Pedagogical atmosphere on the unit (mean 4.47) sub-dimension was missing the item "The ward can be regarded as a good learning environment" from the original CLES+T scale (Saarikoski et al., 2008). However, the sub-dimension was consistent with a low standard deviation (0.71) and high Cronbach´s alfa value (0.93). In the Leadership style of the ward manager sub-dimension (mean 4.41), the original CLES+T scale (Saarikoski et al., 2008) item "The ward manager was a team member" was missing in this study data. This sub-dimension was nonetheless consistent due to a low standard deviation (0.77) and moderate Cronbach´s alfa value (0.78). The study data represents one national healthcare organization, and the study data has been collected in the hospital context. Although, a large data sample (response rate 79%) ensures that the results are not coincidental as well as increases the study`s external validity. Thus, the results are generalizable in similar contexts to that of this study. (Polit and Beck, 2012.)

6. Conclusion

This study supports the realization of an individualized and goal-oriented supervision and the significance of the student-centred atmosphere in the clinical learning environment. The role of the nurse teacher during clinical placement is to work as a pedagogical support and collaboration individual. The responsibility of healthcare staff in supervision is great, therefore staff should be offered mentoring education. High-quality supervision supports the holistic professional development of the student. The continuous quality assessment and development of clinical learning environments and supervision is a way to ensure the clinical competence of future healthcare professionals, which enhances patient safety. Positive learning assists the student in reaching the competence requirements and outcomes set for healthcare education, in which case the student gains the skills needed in the healthcare work life. The health workforce is vital in tackling the many challenges faced by healthcare systems around the globe, and sustainable human resources in health is a current initiative of the World Health Organization. A substantial part of healthcare education is carried out in clinical placements where students practice clinical skills in order to reach the competencies needed as healthcare professions. In this study, third-year healthcare students were more unsatisfied with their clinical learning environment and supervision during their clinical placements, which emphasises the need to improve students´ supervision.

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Table(s)

Table 1. Background of the participants (*n* = 1973)

BACKGROUND INFORMATION	n	%
Age		
Under 24 years	1025	52.0
25-29 years	357	18.1
30-39 years	410	20.8
≥40 years	181	9.2
Previous professional qualifications		
No	882	44.9
Yes	1082	55.1
Current degree programme		
Secondary level *or* University of Applied Sciences level	1921	97.7
Specializing studies (Secondary level)	6	0.3
Specializing studies (University of Applied Sciences level)	33	1.7
Master level studies (University of Applied Sciences)	6	0.3
Degree		
Registered general nurse	956	50.2
Midwife, Public health nurse, Paramedic nurse	452	23.7
Licensed practical nurse	176	9.2
Other healthcare degree (University of Applied Sciences level)	320	16.8
Term of studies		
First-year students	88	4.5
Second-year students	720	36.7
Third-year students	792	40.4
Fourth or fifth-year students	362	18.5
Likelihood to recommend unit to other students		
Very likely	1693	86.0
Most likely yes	207	10.5
Not likely	69	3.5
Occurrence of supervision		
A personal supervisor was named and our relationship worked during this placement	1180	60.1
I did not have a named supervisor or the relationship did not work during the placement	345	17.6
The supervisor changed during the placement OR the supervisor varied according to the shift or place of work	438	22.3
Planning of the learning outcomes with the named supervisor		
Yes	1734	89.2
No	210	10.8
Frequency in having separate private unscheduled sessions with the supervisor		
Three or more times	593	30.5
Twice during the placement	447	23.0
Once during the placement	487	25.0
Not at all	419	21.5

Table(s)

Table 2. The CLES+T scale's sub-dimensions and items (n = 1973)

CLES+T sub-dimensions and items	Mean	Standard deviation	Skewness	Kurtosis	Alpha
Supervisory relationship	**4.55**	0.76	-2.47	6.52	0.97
My supervisor showed a positive attitude towards supervision	4.63	0.78			
I felt that I received individual supervision	4.62	0.78			
I continuously received feedback from my supervisor	4.32	1.02			
Overall I am satisfied with the supervision I received	4.58	0.85			
The supervision was based on a relationship of equality and promoted my learning	4.56	0.84			
There was a mutual interaction in the supervisory relationship	4.62	0.77			
Mutual respect and approval prevailed in the supervisory relationship	4.64	0.77			
The supervisory relationship was characterised by a sense of trust	4.47	0.91			
Pedagogical atmosphere on the ward	**4.47**	0.71	-2.25	5.89	0.93
The staff was easy to approach	4.52	0.83			
I felt comfortable going to the ward at the start of my shift	4.44	0.86			
During staff meetings (e.g. before shifts) I felt comfortable taking part in the discussions	4.60	0.81			
There was a positive atmosphere on the ward	4.52	0.85			
The staff was generally interested in student supervision	4.13	1.11			
The staff learned to know the students by their personal names	4.44	0.94			
There were sufficient meaningful learning situations on the ward	4.57	0.80			
The learning situations were multi-dimensional in terms of content	4.58	0.78			
[a]The ward can be regarded as a good learning environment	-	-			
Role of the nurse teacher (NT)	**3.98**	0.87	-1.04	3.79	0.93
In my opinion, the NT was capable of integrating theoretical knowledge and everyday practice of nursing	4.11	0.93			
The NT was capable of operationalising the learning goals of this placement	4.16	0.97			
The NT helped me to reduce the theory-practice gap	4.00	1.30			
The NT was like a member of the nursing team	3.29	1.30			
The NT was able to give his or her expertise to the clinical team	3.40	1.28			
The NT and the clinical team worked in supporting my learning	4.00	1.07			
The common meetings between myself, mentor and NT were comfortable experience	4.29	1.02			
In our common meetings I felt that we are colleagues	4.30	1.00			
Focus on the meetings was on my learning needs	4.38	0.99			
Leadership style of the ward manager (WM)	**4.41**	0.77	-1.81	3.79	0.78
The WM regarded the staff on her/his ward as a key resource	4.58	0.76			
[a]The WM was a team member	-	-			
Feedback from the WM could easily be considered a learning situation	4.58	0.76			
The effort of individual employees was appreciated	4.06	1.18			
Premises of nursing on the ward	**4.56**	0.55	-2.12	6.77	0.81
The wards nursing philosophy was clearly defined	4.49	0.75			
Patients received individual nursing care	4.69	0.62			
Documentation of nursing (e.g. nursing plans, daily recording of nursing procedures, etc.) was clear	4.62	0.66			
There were no problems in the information flow related to patients' care	4.43	0.74			
[b] Basic familiarization was well organized	4.45	0.87	-1.97	4.13	
[b] Patient cases were used in my supervisory process	4.61	0.78	-2.52	7.05	
[b] My supervisors' supervision skills supported my learning	4.59	0.81	-2.51	6.80	

a The item that was deleted by the target organisation.

b The item that was added by the target organisation not included in the original CLES+T scale (Saarikoski et al. 2008).

Table(s)

Table 3. The factors that affect the clinical learning environment and supervision of healthcare students based on logistic regression analysis (*n* = 1973)

Independent variable	Outcome variable									
	Supervisory relationship		Pedagogical atmosphere on the ward		Role of the nurse teacher		Leadership style of the ward manager		Premises of nursing on the ward	
	OR (CI 95%)	*p*	*OR (CI* 95%)	*p*	*OR (CI* 95%)	*p*	*OR (CI* 95%)	*p*	*OR (CI* 95%)	*p*
Likelihood to recommend the unit to other students										
Very likely *(ref.)*										
Most likely yes	0.07 (0.05-0.11)	**<0.001**	0.04 (0.03-0.06)	**<0.001**	0.51 (0.37-0.71)	**<0.001**	0.15 (0.10-0.22)	**<0.001**	0.12 (0.07-0.20)	**<0.001**
Not likely	0.02 (0.01-0.03)	**<0.001**	0.01 (0.003-0.01)	**<0.001**	0.43 (0.25-0.73)	**0.002**	0.02 (0.01-0.04)	**<0.001**	0.06 (0.03-0.12)	**<0.001**
Occurrence of supervision										
A personal supervisor was named and our relationship worked during this placement *(ref.)*										
There was no named supervisor or relationship did not work during the placement	0.32 (0.19-0.55)	**<0.001**								

The supervisor changed during the placement or the supervisor varied according to the shift or place of work	0.49 (0.28-0.85)	**0.01**							
Frequency of separate private unscheduled sessions with the supervisor									
Three or more times *(ref.)*									
Twice during the placement	0.48 (0.20-1.14)	0.097	1.01 (0.47-2.16)	0.976	0.78 (0.56-1.09)	0.150	0.84 (0.48-1.46)	0.533	
Once during the placement	0.30 (0.14-0.66)	**0.003**	0.64 (0.33-1.23)	0.177	0.57 (0.42-0.78)	**<0.001**	0.55 (0.33-0.89)	**0.016**	
Not at all	0.22 (0.10-0.48)	**<0.001**	0.41 (0.22-0.77)	**0.005**	0.79 (0.56-1.10)	0.160	0.47 (0.29-0.76)	**0.002**	
Planning of the learning outcomes with the named supervisor									
Yes *(ref.)*									
No	0.39 (0.24-0.65)	**<0.001**							
Current degree programme									
Registered general nurse *(ref.)*									

Midwife, Public health nurse, Paramedic nurse				1.27 (0.96-1.68)	0.099	0.92 (0.63-1.36)	0.687	
Licensed practical nurse				2.25 (1.35-3.74)	**0.002**	1.13 (0.58-2.22)	0.721	
Other degree				0.88 (0.65-1.19)	0.396	2.30 (1.29-4.09)	**0.005**	
Year of studies								
First-year students *(ref.)*								
Second-year students							0.33 (0.10-1.05)	0.061
Third-year students							0.40 (0.17-0.92)	**0.030**
Fourth or fifth-year students							0.718 (0.30-1.72)	0.457
Omnibus test		**<0.001**		**<0.001**		**<0.001**		**<0.001**
Hosmer and Lemeshow		0.586		0.975		0.798		0.295		0.689
Cox&Snell R^2, Nagelkerke R^2	21.2% - 48.9%		21.2% - 49.9%		3.4% - 5.1%		14.9% - 29.7%		5.3% - 18.7%	
Classification	94.3%		94.2%		77.1%		90.9%		96.0%	
P<0.05 (marked in bold)								

Highlights

- The most pronounced change in healthcare education around the world can be seen in clinical placements where individualized supervision by healthcare professionals has increased.
- The decreasing role of the ward manager and the reduction of mentoring resources for the nurse teacher influence the experiences of registered nursing students most critically.
- Third-year healthcare students were more critical towards the clinical learning environment and clinical supervision compared to first-year students.
- The role of the supervisor in the supervision of healthcare students should be emphasised and further education provided for supervisors to develop their competence in supervising students.

STROBE Statement—checklist of items that should be included in reports of observational 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*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls ***Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants**
		(*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed *Case-control study*—For matched studies, give matching criteria and the number of controls per case
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*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed ***Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy**
		(*e*) Describe any sensitivity analyses

Continued on next page

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
		(c) *Cohort study*—Summarise follow-up time (eg, average and total amount)
Outcome data	15*+	*Cohort study*—Report numbers of outcome events or summary measures over time
		Case-control study—Report numbers in each exposure category, or summary measures of exposure
		***Cross-sectional study*—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 cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

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.