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Self-assessed competence of final-year nursing students

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Abstract

Aim: To examine the overall level of self-assessed competence of final-year nursing 'bachelors' degree students in the Czech Republic. In addition, the study aimed at the factors associated with the students' level of competence.

Design: A cross-sectional observational study.

Methods: Data were collected with the Czech version of the Nurse Competence Scale from 274 final-year nursing students of the bachelor's nursing program. Data were analysed using descriptive statistics and multiple regression analyses.

Results: Majority of the students (80.3%) assessed their level of competence as good or very good. The highest level of competence was assessed in the category of 'managing situations' (VAS mean 67.8) and 'work role' (VAS mean 67.2). Previous work experience in healthcare and successful supervisory experience had a positive association with self-assessed competence. Students who completed clinical placement during the COVID-19 pandemic assessed their level of competence as lower than students before the pandemic. No Patient or Public Contribution.

KEYWORDS
COVID-19, Czech Republic, nurse competence scale, nursing education, nursing students, professional competence, self-assessment

1 | INTRODUCTION

Competence is a vital attribute for the provision of quality and safe care and professional standards (Flinkman et al., 2017). Therefore, self-recognition of nurse's own level of competence should be assessed during nurse education and be evaluated along the continuum of a nurse's professional career (Kajander-Unkuri et al., 2014; Kajander-Unkuri, Meretoja, et al., 2021; Lejonqvist & Kajander-Unkuri, 2021). Nursing students' competence has been predominantly evaluated in the period before graduation (Lejonqvist & Kajander-Unkuri, 2021; Kajander-Unkuri et al., 2014; Kajander-Unkuri, Meretoja, et al., 2021; Numminen et al., 2017). The development of nurses' competence and its contributing factors has been the subject of extensively growing research efforts worldwide. The clinical learning environment represents one of the factors enhancing nurses' competence development.

Learning in the workplace is widely recognized as an optimal setting for nursing students to apply competence to clinical nursing performance in real-life situations (Visiers-Jiménez et al., 2021). Various factors associated with clinical learning (previous professional education in healthcare before nursing education, previous work experience in healthcare, the organization of clinical practice, type and duration of clinical placement, the supervisory relationship and the final clinical practicum characteristics) have been explored as contributing factors of competence level (Kaihlanen et al., 2021;Kajander-Unkuri et al., 2014, 2021; Visiers-Jiménez et al., 2021). Findings from recent European studies revealed the associations between the nursing students'

experience of their final clinical practicum and the level of their self-assessed competence (Kajander-Unkuri et al., 2014, 2021; Visiers-Jiménez et al., 2021) and easier transition experience (Kaihlanen et al., 2021). However, these European studies were conducted before the COVID-19 pandemic. Palese et al. (2022) found that new nurses graduating during the COVID-19 pandemic assessed their competence as lower than new nurses who graduated before the COVID-19 pandemic in Italy. It is important to investigate whether the situation is the same in other countries.

Many clinical settings where clinical placements usually take place were cancelled entirely during the first wave of the pandemic COVID-19, for example elective surgery and non-urgent procedures that are required placements according to the EU directive (2005/36/EC). Instead, there were caring for COVID-19 patients. Therefore, nursing students lost the opportunity to practice some nursing skills. COVID-19 workplace conditions had a profound impact on the organizational changes of the final clinical practicum and therefore on nursing students' experience of their clinical practicum and their learning opportunities (Barisone et al., 2022; Collado-Boira et al., 2020; Ulenaers et al., 2021; Velarde-García et al., 2021). During this period, final-year nursing students in many countries were confronted with the necessity of work obligations, changing clinical placement planning, missing traditional clinical supervision and insufficient support from the clinical placement site. Nursing students were facing challenges of concerns for limited learning opportunities, workplace safety, increased workload and limited or missing interaction with their clinical placement mentor (Barisone et al., 2022; Ulenaers et al., 2021; Velarde-García et al., 2021). These factors could have a noticeable impact on the final-year nursing students' self-assessed competence level.

2 | BACKGROUND

There are many competence requirements for nurses globally, for example American Nurses Association [ANA], 2015; Australian Nursing and Midwifery Council [ANMC], 2016; Canadian Nurses Association [CNA], 2015; Nursing & Midwifery Council [NMC], 2014; Singapore Nursing Board [SNB], 2018. The requirements for the competence of nurses in the European Union are based on the common requirements for the professional competence of nurses incorporated in Directives 2002/36/EC and 2013/55/EU of the European Parliament and the Council (European Commission, 2005, 2013). The harmonization of competence requirements, their implementation into European directives and the establishment of a congruent approach to their assessment have been the endeavour of several European projects (*Tuning educational* structures in Europe, Tuning, 2005; European Healthcare Training and Accreditation Network, EHTAN, 2005) and European Federation of Nurses Associations (EFN) has published a guideline for the implementation of competence requirements into national nursing education programs (EFN, 2015).

Despite these harmonization efforts, the definition of 'competence' in the nursing literature is ambiguous and confusing, with terms such as competence, competency and performance being used inconsistently and often interchangeably (Kajander-Unkuri et al., 2013; Pijl-Zieber et al., 2014). The concept of nurse competence has been also broadly explored by many authors (McMullan et al., 2003; Pijl-Zieber et al., 2014; Watson et al., 2002; Wu et al., 2015). Current literature reviews (Cowan et al., 2005; McMullan et al., 2003; Pijl-Zieber et al., 2014; Watson et al., 2002; Wu et al., 2015) identify three main conceptualizations and approaches to defining the concept of competence. The first approach is a behavioural- and performance-oriented approach. The second approach, referred to as generic, focuses on a wider range of skills that are conceptually linked. The third approach is a comprehensive, holistic approach, in which competence is defined as a dynamic, constantly changing construct, integrating the knowledge, skills and attitudes of the individual with the context in which they can be applied (McMullan et al., 2003; Watson et al., 2002). In the Czech Republic, a behavioural approach dominates, which is reflected in the evaluation of clinical competencies of nursing students. Much of the ambiguity and misinterpretation of the term competence is based on the dominance of the behavioural approach, respectively, use of the term in a descriptive than normative sense, resp., its reference to activity and not to quality or state of being (McMullan et al., 2003). Pijl-Zieber et al. (2014) emphasize the importance of holistic conceptualization of the concept, its connection with quality, resp., state of being relating to the overall ability of a person to carry out a particular activity. *The International Council of Nursing* (1997) also defines in the definition of competence its contextual aspect, the application of knowledge, skills and judgement. Therefore, in our work, we proceed from the third holistic approach in which competence is defined as adequate and to the required degree of integrated knowledge, skills, attitudes and values in the specific context of situations in nursing practice (Meretoja, Leino-Kilpi, & Kaira, 2004). Ambiguity in the definition of nurses' competence is also reflected in differences in approaches to their evaluation (Wu et al., 2015).

Only scarcity of papers have been focused on the generic competence evaluation of nursing students in the Czech Republic measured by valid and reliable instruments. Multinational research projects (e.g., COMPEUnurse, Kajander-Unkuri, Koskinen, et al., 2021) have significantly contributed to empirical evidence related to the graduated nurses' competence development. Previous studies performed in the Czech Republic examined fulfilling the competencies of members of a nursing team in acute care hospitals (Mikšová et al., 2014) or used specific instruments (e.g. for measuring moral judgement competence, Bužgová & Sikorová, 2013). These studies did not include an explicit conceptualization, an approach to the measurement of this concept or instruments without reported psychometric properties used. Students' self-assessment tools are one of the methods of assessing students' competence level. Their use by final-year nursing students can be an effective means of reflection and internal motivation for the student, gaining

an objective picture of their competence, based on which the student can purposefully plan their further progress.

The aim of the study was to examine the overall level of self-assessed competence of final-year nursing 'bachelors' degree students in the Czech Republic. We focused also on the analysis of factors associated with the level of students' competence, including the COVID-19 pandemic period.

2.1 | Research question

The research questions to be answered are

- What is the level of competence of final-year nursing students in the Czech Republic based on their self-assessments?
- What factors are associated with the level of competence?

3 | THE STUDY

3.1 | Design

The study has a cross-sectional observational study design.

3.2 | Method

3.2.1 | Sample

The target group of this study was final-year nursing students studying at universities in the Czech Republic. Nursing education of general nurses in the Czech Republic follows the EU Directives. There are 15 universities where nursing can be studied. The length of bachelors' study program in nursing is 3 years in total. In 2019, the mean annual number of graduating nurses per 100,000 inhabitants in the Czech Republic was 28.7 (OECD, 2020). In addition, in 2019, there were 1460 graduates in general nursing in the Czech Republic (Ministry of Health in the Czech Republic, 2021).

Participants were selected for the research sample on the basis of inclusion criteria (final year of the bachelor's study program in full-time or part-time form, consent to participate in the study), with the guarantee of anonymity. The sample size was estimated by a power analysis: the statistical power of 80%, the significance level of 0.05 (two-tailed) and the relevant NCS total mean difference as five points and SD 15.7. The minimum sample size was 156 respondents (Kajander-Unkuri et al., 2014). A total of 274 final-year nursing students from four universities in the Czech Republic took part in the research.

3.2.2 | Instrument

A questionnaire set consisting of two parts was used for data collection. The first part consisted of items related to demographic data and other background questions (Table 1). In the second phase of data collection, job-related data were collected during the COVID-19 pandemic. The second part of the questionnaire set consisted of Nurse Competence Scale items (NCS, Meretoja, Isoaho, & Leino-Kilpi, 2004), which were back-translated in COMPEUnurse study project (Kajander-Unkuri, Koskinen, et al., 2021) and validated (Pěrůžková et al., 2022). The NCS is a generic self-assessment tool designed to assess the competence of nurses from different areas of practice, cultures and years of practice. However, it is also widely used to evaluate the competence of graduating nursing students (Flinkman et al., 2017; Kajander-Unkuri, Koskinen, et al., 2021). The conceptual framework of the tool is the theoretical categories of Benner's work - From novice to expert (Benner, 1984). The tool is based on a holistic approach to conceptualizing

TABLE 1 Sample characteristics ($n = 274$).

Variable		Descriptive statistics
Age	Mean	26.6
	±SD	±6.9
	Min-Max	20–48
Gender	Female	250 (91.9%)
	Male	22 (8.1%)
Previous professional qualification in healthcare	Yes	184 (68.4%)
	No	85 (31.6%)
Work experience before or/and during this education in healthcare besides clinical placements	Yes	169 (62.6%)
	No	101 (37.4%)
Leaving intentions	Never	113 (41.9%)
	Fairly seldom	112 (41.5%)
	Fairly often	38 (14.1%)
	Often	7 (2.6%)
Nursing as the 1st study choice	Yes	193 (72.6%)
	No	73 (27.4%)
Occurrence of clinical supervision	None appointed/ no named supervisor	42 (16.0%)
	A personal supervisor, strained relation	15 (5.7%)
	Unplanned change of supervisor	6 (2.3%)
	Situational supervisor (supervision varied according to the placement/hospital ward)	72 (27.5%)
	Group supervision	30 (11.5%)
	Successful supervisory experience (one, functioning relation)	95 (36.3%)
	Other	2 (0.8%)

nurses' competence. It was created to overcome the shortcomings of tools for assessing nurses' competence—the absence of theoretical and methodological basis and rigorous psychometry (Flinkman et al., 2017; Lejonqvist & Kajander-Unkuri, 2021). It contains of 73 items grouped into seven categories (Table 2). The competence level in each item is assessed using a visual analogue scale (VAS) ranging from 0 (low level) to 100 (high level). For a more accurate description of the competence level, the VAS score is divided into the following areas: a score ≤25 indicates low, >25–50 indicates rather good, >50–75 indicates good and >75–100 indicates very good competence level. The relevance of the use of competence items is assessed on the basis of a frequency scale from 0 (not related to work) to 3 (used very often). The internal consistency of the individual subscales of the original NCS version, assessed by Cronbach's alpha coefficient, ranged from 0.79 to 0.91 (Meretoja, Isoaho, & Leino-Kilpi, 2004). In this study, Cronbach's alpha coefficient ranged from 0.84 to 0.95 showing strong internal consistency (Pěrůžková et al., 2022).

3.2.3 | Data collection

A total of 11 Czech universities were contacted for the purposes of the study. To gain permission for the study, one of the researchers contacted the head of the nursing department or other responsible persons at each university where the Bachelor's Study programme in nursing in full-time or part-time form is offered. Data collection was carried out in the period 2018–2021 in two phases. In the first phase, data collection took place from February 2018 to July 2019 in the Competence of Nursing Students in Europe (COMPEUnurse) project at four universities in the Czech Republic with a return rate of 30% (710 were distributed and 213 questionnaires were returned). In the second phase, data collection took place from February 2021 to September 2021. In the second phase, 10 universities were contacted; however, only students from three universities took part in the research. In one university, data collection took place in paper form, 58 questionnaires were distributed and 57 were returned. Data were collected in close cooperation with the contact person of each included university. Students were asked to complete a questionnaire during class time and drop it in a dedicated box in a sealed envelope to ensure anonymity. The return rate was 98%. Only four questionnaires were returned from the universities where the questionnaires were distributed and completed online.

3.3 | Analysis

The method of descriptive and inductive statistics was used for data analysis. Quantitative variables were evaluated by arithmetic mean, standard deviation, absolute abundance (*N*) and relative abundance (%). The normality of the quantitative data was verified using the Shapiro–Wilk normality test and skewness. Almost all variables were normally distributed with skewness <1.00. Only the age and length of previous work experience in healthcare had skewness >1.00. Based on the results of the normality test for the overall NCS score and for NCS categories according to the observed variables (age, previous professional qualification in healthcare, previous work experience in healthcare, length of previous work experience in healthcare, nursing as the first study choice, leaving intentions, occurrence of clinical supervision and clinical placement before/during the COVID-19 pandemic) (see Table 1), appropriate parametric (Pearson correlations, Student's *t* test) or non-parametric tests (Spearman correlations, Mann–Whitney test) were chosen. According to the multinational European study (Warne et al., 2010), we divided nursing students' experience with clinical supervision into two groups: some variation of unsuccessful supervisory experience (no named supervisor, the unplanned change of supervisor, a personal supervisor was named, but the relationship with this person did not work, group supervision) and successful individual supervisory experience.

For exploring the relationship between variables, multiple linear regression analyses were used. These multiple regressions were hierarchical over the blocks, but statistical (stepwise) in the blocks

TABLE 2 Level of competence and frequency of using the competence items (NCS).

NCS competence category				
Category	Level of competence (mean)	Level of competence (±SD)	Frequency of using competence items[a] (%)	Cronbach's alpha
Helping role	57.2	18.2	68.4	0.841
Teaching – coaching	59.8	19.9	65.9	0.944
Diagnostic functions	61.8	19.8	65.1	0.870
Managing situations	67.8	19.2	72.3	0.903
Therapeutic interventions	61.3	20.6	61.9	0.922
Ensuring quality	54.6	21.6	49.7	0.888
Work role	67.1	18.9	69.2	0.951
Overall score	62.2	17.0	64.6	0.981

[a]Competence items are used occasionally or very often.

(Tabachnik & Fidell, 2001). Linear regression analyses were performed to investigate the relationship between the overall score and categories of the NCS (dependent variables) and the following independent variables: age, previous professional qualification in healthcare, previous work experience in healthcare, length of previous work experience in healthcare, nursing as the first study choice, leaving intentions, occurrence of clinical supervision, clinical placement before/during the COVID-19 pandemic. Except for the age and length of previous work experience in healthcare, all independent variables were dichotomized (Table 1). Age, previous professional qualification in healthcare, previous work experience in healthcare and length of previous work experience in healthcare were entered stepwise in the first block; nursing as the first study choice, leaving intentions, occurrence of clinical supervision and clinical placement before/during the COVID-19 pandemic were entered stepwise in the second block. One of the outputs of the multiple regression is also a multicollinearity test, which gives a VIF (variance inflation factor) statistic and a tolerance statistic. Multicollinearity of variables was measured by correlation coefficients, variance inflation factor (VIF) and the tolerance index before the regression analysis. If the tolerance index is 0.2 or less, then multicollinearity exists in the data. Similarly, a VIF of 5 or greater indicates multicollinearity. In our data, values of VIF ranged between 1.00 and 2.05 for all variables. The tolerance index was higher than 0.2 for all variables (Yu et al., 2015). A significance level of $p = 0.05$ was chosen. IBM SPSS Statistics for Windows, Version 20.0 statistical software was used for statistical processing.

3.4 | Ethics

The research study was approved by the Ethics Committee of the Faculty of Medicine of the University of XXXX (Nos. 14/2017 and 16/2020). The study was a part of COMPEUnurse study project which has permission from the copyright holders for translating and using the NCS. To gain permission for the study, one of the researchers contacted the head of the nursing department or other responsible persons at each university where the Bachelor's Study programme in nursing in full-time or part-time form is offered. Informed consent to inclusion in the research was included in the questionnaires in online and paper form. In the case of paper questionnaires, consent was expressed by signing it; in the online form, consent was expressed by answering a question concerning informed consent. The informed consent included an explanation that the respondents' participation in the research is anonymous, voluntary, with the opportunity of revoking the consent to be included in the research at any time.

4 | RESULTS

The characteristics of the selected research sample are described in Table 1. Fifty-six (98.2%) out of 61 students were involved in work duty, and the highest number of 32 students (56.1%) worked as a nurse. A total of 5 (8.8%) students believed that they did not carry out activities at all during their work duties according to the achieved competencies. The highest number of students 21 (36.8%) stated that they carried out activities during their work duty very often.

4.1 | Level of self-assessed competence

Students´ overall level of competence was good (VAS mean 62.2, SD 17.0). A significant part of students (58.7%) assessed their level of competence as good (VAS > 50–75), about one-fifth (21.6%) as very good (VAS > 75–100) and only 3.1% as low (VAS ≤25).

The highest level of competence was assessed by students in the category of Managing situations (VAS 67.8, SD 19.2) and Work role (VAS 67.1, SD 18.9). On the contrary, they assessed their competence as lowest in Helping role (VAS 57.2, SD 18.2) and in Ensuring quality (VAS 54.6, SD 21.6) (Table 2).

4.2 | Factors related to the level of self-assessed competence

The level of competence differed mainly in terms of previous work experience in healthcare and methods of supervision (Table 3). Previous experience with work in healthcare had a positive relationship with the self-assessed competence of final-year nursing students ($p = 0.017$), especially in Managing situations ($p = 0.003$), Work role ($p = 0.018$) and Helping role ($p = 0.010$). Students with a successful individual form of supervision reported a higher level of overall competence ($p = 0.001$) in the following categories: Managing situations ($p = 0.001$), Therapeutic interventions ($p = 0.009$) and Work role ($p = 0.001$).

Students who completed clinical placement during the COVID-19 pandemic assessed their competence level as lower than students before the pandemic (Table 3). Statistically significant differences in terms of placement before and during the pandemic were found in the overall competence ($p = 0.008$) and the four categories of the NCS: Helping role ($p = 0.023$), Managing situation ($p = 0.001$), Therapeutic interventions ($p = 0.001$) and Work role ($p = 0.010$). No statistically significant relationship was found between age, length of work experience, total NCS score and NCS categories (Table 4).

The stepwise multiple regression analyses indicated that only three of the seven categories (Managing situations, Therapeutic interventions and Work role) were affected by the selected independent variables. Overall score of the NCS was predicted by two factors (previous work experience in healthcare and occurrence of clinical supervision), explaining only a total of 5% of the variance. However, the percentages of variance explained by these factors were low and, therefore, results suggest that the level of self-assessed competence is not strongly associated with previous work experience in healthcare and occurrence of clinical supervision. In addition, previous work experience in healthcare and successful

TABLE 3 Factors related to the level of self-assessed competence (group comparison).

Competence category/factor		Helping role mean (SD)	Teaching/ coaching mean (SD)	Diagnostic functions mean (SD)	Managing situations mean (SD)	Therapeutic interventions mean (SD)	Ensuring quality mean (SD)	Work role mean (SD)	Overall score mean (SD)
Previous professional qualification in healthcare[a]	Yes	57.81 (17.03)	60.84 (18.79)	62.08 (19.06)	69.97 (17.55)	62.57 (19.15)	55.07 (21.01)	68.13 (17.16)	69.30 (15.26)
	No	58.03 (18.02)	59.92 (19.65)	63.65 (18.38)	67.83 (18.56)	60.72 (21.06)	55.68 (20.01)	67.62 (18.82)	62.40 (17.07)
Work experience before or/ and during this education in healthcare besides clinical placements[a]	Yes	**60.06* (16.28)**	62.34 (17.60)	64.19 (17.16)	**71.65** (15.42)**	63.98 (18.80)	56.71 (20.73)	**70.32** (16.08)**	**65.22*** (14.06)**
	No	**54.60 (18.35)**	57.88 (20.71)	60.05 (20.93)	**63.87 (20.56)**	59.23 (20.67)	53.16 (21.21)	**64.36 (19.43)**	**59.68 (17.73)**
Leaving intentions[b]	Never/seldom	58.67 (16.98)	61.31 (18.58)	62.98 (18.53)	69.58 (16.93)	62.36 (19.24)	55.49 (20.63)	68.17 (16.91)	63.48 (15.38)
	Fairly often/often	53.69 (18.43)	55.99 (20.74)	59.97 (20.20)	63.33 (21.87)	60.22 (22.21)	53.88 (22.69)	66.42 (21.06)	60.22 (17.75)
Nursing as the first study choice[b]	Yes	57.80 (17.78)	60.31 (19.13)	62.89 (18.61)	68.38 (17.77)	62.33 (19.57)	54.40 (20.01)	67.53 (17.683)	62.92 (15.63)
	No	58.10 (16.41)	60.96 (19.19)	61.61 (19.57)	69.96 (17.83)	62.07 (19.71)	57.73 (23.03)	69.61 (17.20)	63.56 (16.42)
Period of clinical placement[b]	Before the COVID-19 pandemic	**57.98* (19.05)**	60.36 (20.88)	62.33 (20.22)	**69.37* (19.77)**	**63.17 (21.20)***	53.34 (22.45)	**68.22* (19.51)**	**63.26** (17.83)**
	During the COVID-19 pandemic	**54.69 (14.88)**	57.91 (17.98)	60.00 (18.39)	**62.55 (16.39)**	**54.96 (17.34)**	52.23 (18.41)	**63. 35 (16.49)**	**58.91 (13.69)**
Organization of supervision[a]	Unsuccessful supervisory experience	56.47 (16.18)	58.89 (18.61)	60.07 (17.99)	**63.54*** (18.85)**	**57.96 (19.39)****	52.88 (20.41)	**63.66** (17.39)**	**59.88** (15.41)**
	Successful supervisory experience	59.41 (17.43)	61.71 (18.89)	64.39 (18.53)	**72.09 (16.02)**	**64.64 (19.15)**	56.82 (20.96)	**71.01 (16.63)**	**65.21 (15.15)**

The bold values are statistically significant values.

[a]Data (NCS categories and NCS overall score) were normally distributed for the tested parameter (t test was used to determine statistically significant differences between groups).

[b]Data (NCS categories and NCS overall score) were not normally distributed for the tested parameter (Mann–Whitney test was used to determine statistically significant differences between groups).

$^{*}p<0.05$; $^{**}p<0.01$; $^{***}p<0.001$.

TABLE 4 Spearman correlations between self-assessed competence, the length of work experience in healthcare and the age of students.

		Helping role	Teaching/coaching	Diagnostic functions	Managing situations	Therapeutic interventions	Ensuring quality	Work role	Overall competence	Age	Work experience
Overall competence	Rho	0.774**	0.867**	0.861**	0.877**	0.864**	0.815**	0.902**	1	0.053	-.041
Age	rho	0.068	0.036	0.038	0.075	0.057	−0.029	0.050	0.053	1	0.729**
Work experience	rho	0.003	−0.098	−0.088	0.053	0.014	−0.140	0.007	−0.041	0.729**	1

** $p < 0.01$.

supervisory experience contributed to a higher level of two areas of self-assessed competence: Managing situations and Working role. Only 2% of total variance in therapeutic intervention was accounted for by nursing students' experience of their final clinical practicum during the COVID-19 pandemic. Low percentage of the variance suggests that the level of self-assessed competence is not strongly affected by previous work experience in healthcare, occurrence of clinical supervision or nursing students' experience of their final clinical practicum during the COVID-19 pandemic. Other characteristics of nursing students had no significant relationship to the level of self-assessed competence (Table 5).

5 | DISCUSSION

The aim of this study was to examine the overall level of self-assessed competence of final-year nursing 'bachelors' degree students in the Czech Republic and to analyse the factors associated with the level of students' competence.

The results of our study revealed that most of the final-year nursing students assessed their level of competence as good or very good. The highest assessments were in 'managing situations' and 'work role' before completing their bachelor's studies. This result may be a logical consequence of the focus on clinical practice in the university hospital setting and of the specific period (COVID-19 pandemic)—the predominance of acute conditions, the short length of hospital stays and the need for prompt nurse responses. In this clinical learning environment, therefore, emphasis may be placed on collaborative care and recognizing changing situations and prioritizing activities flexibly and appropriately (Meretoja, Isoaho, & Leino-Kilpi, 2004). However, European studies have also identified considerable variability in students' level of competence across European countries (Kajander-Unkuri, Koskinen, et al., 2021; Nilsson et al., 2019). Comparative European studies evaluating the competence level of nursing students in different EU countries were carried out before the COVID-19 pandemic. Part of the sample of this study (22.3%) consisted of final-year students in the bachelor's study program general nursing, who graduated during the COVID-19 pandemic. Most of them (98.2%) were ordered to work as nurses. However, medical and nursing students in their final year of education were called by government resolution to work duty (Government of the Czech Republic, 2020). This resolution of the Government of the Czech Republic was adapted as a part of series of early population-wide interventions and measures to mitigate the epidemic situation and to prevent the overcrowding of healthcare facilities. The duty resolution (Government of the Czech Republic, 2020) has been used to compensate for the critical shortage of staff in overloaded hospitals. Many nursing students worked as auxiliary staff during the crisis.

Compared with previous European comparative research (Kajander-Unkuri, Koskinen, et al., 2021; Nilsson et al., 2019), students in our cohort reported a lower rate of competence assessment in several NCS categories. We also found differences in our

TABLE 5 The association of the background factors with overall competence and competence categories analysed with stepwise logistic regression.

Predictor	*R*	R^2 change	b	T	*p*
Overall competence ($F = 6.47^{**}$)					
Previous work experience in healthcare	0.16	0.025*	−0.145	−2.34	0.020
Occurrence of clinical supervision	0.22	0.024*	0.157	2.53	0.012
Constant			13.523		
Managing situation ($F = 11.99^{***}$)					
Previous work experience in healthcare	0.20	0.041**	−0.182	−2.99	0.003
Occurrence of clinical supervision	0.30	0.047***	0.219	3.59	0.000
Constant			12.794		
Therapeutic interventions ($F = 8.99^{***}$)					
Clinical placement before/during the COVID-19 pandemic	0.23	0.053**	−0.205	−3.28	0.001
Occurrence of clinical supervision	0.26	0.015*	0.123	1.95	0.05
Constant			10.706		
Working role ($F = 8.06^{***}$)					
Previous work experience in healthcare	0.154	0.024*	−0.137	−2.21	0.028
Occurrence of clinical supervision	0.247	0.037*	0.194	3.14	0.002
Constant			12.564		

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

research sample. Students who completed clinical placement during the COVID-19 pandemic as part of their work duties rated their competence level lower than students before the pandemic. This might be due to that during the COVID-19 pandemic, many students completed several clinical placements without the traditional model of individual clinical supervision assigned by the mentor. The role of supervisory relationship between student and mentor should be emphasized as it has been found to promote competence development (Visiers-Jiménez et al., 2021) and professional development (Saukkoriipi et al., 2020). If the supervision during the pandemic was limited, this supports the finding that competence was assessed lower. The Italian study (Palese et al., 2022) likewise confirmed the changes in nursing students' perceived competence levels due to the impact of the COVID-19 pandemic. The changes and measures taken in undergraduate education to address the impact of the COVID-19 pandemic may have influenced new graduates' perceptions of their own competence and their employment status after graduation (Palese et al., 2022).

The relationship between the attributes of a nursing students' final clinical learning environment with the level of their self-assessed competence was investigated in several multi-country European studies (Kaihlanen et al., 2021; Visiers-Jiménez et al., 2021). The contribution of the students' perceptions of their final clinical learning environment, good supervisory relationship to a better level of self-assessed competence and to the success of the transition of newly graduated nurses was highlighted (Kaihlanen et al., 2021; Visiers-Jiménez et al., 2021). During clinical placement, students are in two different but interconnected contexts that affect their learning process in clinical settings—*the context of learning and the context of caring*. The ideal clinical environment can make reasonable use of and bring together these two contexts, that is it gives the conditions for professional growth, the development of competence combined with the development of independent thinking and openness to change (Gaberson et al., 2015).

During the ordered work duty, the interconnection of the mentioned contexts was absent, and the students performed individual activities that resulted from the needs of the workplace, without any connection to the goals of education. Students faced limited learning opportunities, organizational changes in the final clinical practicum or missing interaction with the clinical placement mentor (Allande-Cussó, 2020; Dziurka et al., 2022; Goni-Fuste et al., 2021; Ulenaers et al., 2021; Velarde-García et al., 2021).

The COVID-19 pandemic brought many changes in nursing education worldwide, and some studies described negative impacts

on clinical learning (Angasu et al., 2021; Kang & Hwang, 2023). In the Polish qualitative study (Dziurka et al., 2022), students expressed fear that cancellation of classes during lockdowns may affect their future work. The impact of changes in nursing practicum caused by the COVID-19 pandemic on new graduate nurses has been investigated in a Korean study (Kang & Hwang, 2023) and the results revealed a significant difference in the difficulties in nursing tasks if nursing students experienced substitute of nursing practice. Although students in our sample were able to continue with clinical practice during pandemic, the content of practice was adapted to the needs of hospitalized patients. For example, there were cancelled elective surgical procedures and many departments were temporarily transformed and served as COVID-19 departments. In addition, students experienced significant changes in the nursing curriculum due to online theoretical courses and restrictions during clinical practice. In the latest systematic review and meta-synthesis (Shorey et al., 2022), it was confirmed that nursing undergraduates experienced many sudden and extreme changes during remote and online education, and they had to rapidly adapt and accept them. Moreover, key clinical skills and competencies were perceived to be less developed (Shorey et al., 2022) as continuity of learning was interrupted due to difficulties with visualizing, understanding and linking theoretical knowledge to practice. These factors may also be one of the explanations for the different perceptions of students' competence before and during the COVID-19 pandemic. What another European study revealed can not be omitted is that having a good final clinical practice has significant impact on a simpler transition from student to nurse (Kaihlanen et al., 2021) as it can enhance a successful transition (Kaihlanen et al., 2020a) and is associated with turnover intentions (Kaihlanen et al., 2020b).

In addition to the time of clinical placement (before and during the COVID-19 pandemic), other variables affecting levels of self-assessed competence were confirmed—previous work experience in healthcare and the method of supervision. Previous work experience in healthcare has a positive association with the level of competence self-assessment of final-year nursing students, especially in the category of managing situations and work role. Similar findings are reported by comparative European studies (Kajander-Unkuri, Koskinen, et al., 2021; Nemcová et al., 2021; Nilsson et al., 2019).

For a significant part of the students in our sample (72.6%), decision to study to become a general nurse was their first study choice. However, the relationship between the first study choice and the development of competence was not found to be statistically significant in our study. The decision to study general nursing as the first choice is considered a factor in the nurses' competence—in terms of the greater orientation of nursing students for care and expertise (Kajander-Unkuri, Meretoja, et al., 2021). This factor has been studied in several studies (e.g. Kajander-Unkuri et al., 2021; Nemcová et al., 2021), but with mixed results. Only a small amount part of the students in our study (16.7%) considered leaving intentions often or very often. Although the amount is small, it is worrying that students who have not even graduated and worked as registered nurses had already considered leaving. The intentions to leave the nursing profession were unrelated to any of the categories of competence.

The complexity, the dynamism of the clinical setting and the multifactorial conditionality of the process of gaining clinical experience and competencies in students also imply the complexity of its research. One of the areas that we can influence on the part of educational institutions is the strategies and methods of clinical supervision by mentors and teachers, the healthcare staff itself, facilitating the learning process in the clinical departments. The results of our cross-sectional study highlight the importance of student supervision during clinical practice as one of the factors influencing the competence self-assessment in nursing students. The form of supervision was mainly monitored in relation to the perception of the clinical department. Studies in Western EU countries (Saarikoski et al., 2013; Warne et al., 2010) clearly confirm the change from traditional group supervision to an individualized supervisory relationship between the mentor and the student. Thus, the effectiveness of students' individual supervision has strong empirical support (Saarikoski et al., 2013; Warne et al., 2010). The method of supervision, the frequency of supervision meetings and the length of clinical practice were identified as factors that significantly affect students' assessment of the clinical learning environment. The relationship between the mentor and the student and the pedagogical atmosphere of the final clinical learning environment are highlighted as contributing factors of competence level (Kaihlanen et al., 2021; Visiers-Jiménez et al., 2021). Further research should focus on monitoring the relationship between the clinical environment and competence development. Moreover, it is necessary to develop efficient clinical practice education for nurses that will respond appropriately to any pandemic situation. Clinical practice needs to pay more attention to the adaptation of new graduate nurses to compensate for the insufficient clinical practice during the COVID-19 pandemic.

5.1 | Limitations

This study has some limitations. The first limitation is the character of the scale used. Self-assessment scales are characterized by a considerable degree of subjectivity, students may overestimate or underestimate their competence known as self-assessment bias. However, self-assessment is an established part of competence assessment. The second limitation of the study is the highly unbalanced gender ratio of the sample since the actual ratio of the available male and female Czech nursing students is unbalanced. The third limitation of the study is the low return of the questionnaires. Questionnaires could have only been completed by motivated students, and this could have had an impact on the results obtained. However, the sample size was based on the power analysis, and this study is among the first studies where the level of competence of Czech nursing students has been assessed. However, the sample size is not representative of all final-year nursing students in the Czech Republic as it came from four universities. Therefore, the results cannot be generalized to the entire population.

6 | CONCLUSION

The evaluating competence of final-year nursing students is a part of the quality assurance of nursing education in the Czech Republic and an important tool for the competence requirements during the professional education of nurses. Most students rated the level of their competence as good or very good. Previous work experience in healthcare and successful supervisory experience, the final clinical practicum before the COVID-19 pandemic contributed to a better level of self-assessed competence of these nursing students. There is a need for further studies investigating the impact of the COVID-19 students' clinical learning environment and learning opportunities during this critical period on the graduating nursing students' self-assessed competence level and the transition process of newly graduated nurses.

AUTHOR CONTRIBUTIONS

RZ, EG, RP, LŠ, DJ, SK-U: Made substantial contributions to conception and design, acquisition of data or analysis and interpretation of data. RZ, EG, RP, LŠ, DJ, SK-U: Involved in drafting the manuscript or revising it critically for important intellectual content. RZ, EG, RP, LŠ, DJ, SK-U: Given final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content. RZ, EG, RP, LŠ, DJ, SK-U: Agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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CONFLICT OF INTEREST STATEMENT

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

DATA AVAILABILITY STATEMENT

All data generated during this study are included in this published article.

RESEARCH ETHICS COMMITTEE APPROVAL

The research study was approved by the Ethics Committee of the Faculty of Medicine of the University of Ostrava (nos. 14/2017 and 16/2020).

REPORTING GUIDELINE

The STROBE checklist for observational cross-sectional studies was followed for reporting the research study.

PATIENT CONSENT STATEMENT

Not needed.

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