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Faculty experiences and perspectives of teaching standardised nursing language to nursing students: an ethnographic research study

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ABSTRACT

Despite advancements in health care, the implementation of the NNN system – standardised nursing language incorporating NANDA-I diagnoses, NOC outcomes, and NIC interventions – within Estonia's health information system has been slow. Studies across various healthcare settings reveal persistent gaps in nursing documentation, compounded by limited technological support and inadequate backing from colleagues and leadership. These issues compromise patient care quality, service continuity, and information sharing among healthcare professionals.

Empirical observations indicate that nurses lack sufficient education on the importance and practical use of standardised nursing language. To address this, an ethnographic study was conducted at Tallinn Health Care College (now Tallinn Health University of Applied Sciences), analysing the nursing curriculum and interviewing 13 educators to identify both facilitators and barriers in teaching NNN to students. Learning NNN classifications accounts for 125 of the 210 ECTS credits in the curriculum, with progressively complex situation-based assignments. Challenges include students' reliance on existing materials rather than independent reasoning, particularly in selecting appropriate NIC and NOC. Faculty interviews produced 84 codes, grouped into eight main themes, highlighting strengths and areas for improvement. Based on these insights, we aim to enhance practical NNN training within the curriculum and offer continuing education for working nurses.

1. Introduction

A common and standardised language is essential for planning, delivering, evaluating, and communicating quality nursing care to other healthcare professionals and healthcare consumers. Standardised nursing language (SNL) provides a structured terminology that facilitates uniform and consistent communication of patient health information and the nursing process, which should be routinely used in both clinical and educational contexts. Integrating SNL into the nursing curriculum enables nursing students, healthcare providers, consumers, and policymakers to recognise, measure, and enhance the effectiveness, efficiency, and quality of nursing care. Furthermore, accurate nursing documentation using SNL supports quality improvement in nursing practice and patient outcomes (Taghavi Larijani and Saachi 2019). Consequently, SNL serves as the global standard for advancing nursing care.

The NANDA International Nursing Diagnoses classification (NANDA-I), the Nursing Interventions Classification (NIC), and the Nursing Outcomes Classification (NOC) form the NNN system of SNL. When used throughout the nursing process, this system represents an enhanced, evidence-based approach, referred to as the Advanced Nursing Process, which takes into account the nursing concepts underpinning nursing science (Gallagher-Lepak 2014). This method employs validated concepts for health assessment, nursing diagnoses, interventions, and outcomes, distinguishing it from traditional nursing processes lacking SNL integration (Müller-Staub et al. 2015; Leoni-Scheiber et al. 2019). Of the nursing classifications endorsed by the American Nurses Association (ANA), NANDA-I, NIC, and NOC are the most scientifically validated and widely applied worldwide (Rabelo-Silva et al. 2017; Leoni-Scheiber 2023).

Since 2012, Tallinn Health Care College (now Tallinn Health University of Applied Sciences), the largest of the two institutions responsible for undergraduate nursing education in Estonia (1.4 million inhabitants), has included the Estonian NANDA-I in its nursing curriculum, followed in recent years by NIC and NOC. In 2023, NIC and NOC were also translated into Estonian, enabling a complete NNN system to be taught in nursing education. A joint declaration in 2017 set an ambitious national goal to fully integrate the NNN system into the country's electronic health information system by 2025 (Puusepp 2019). In conjunction with the Ministry of Social Affairs and related institutions, efforts are underway to develop electronic technologies to facilitate NNN-based documentation across healthcare settings (Gaidajenko and Puusepp 2023).

Despite progress, studies among local registered nurses (RNs) reveal persistent challenges in adopting the Advanced Nursing Process and accurate documentation, with errors commonly seen in nursing records (Naelapää 2018; Nool et al. 2023). Documentation of nursing diagnoses, interventions, and outcomes varies considerably, with only half of the records demonstrating partial compliance with the NANDA-I classification. Incomplete documentation of nursing interventions and nursing outcomes, and patient's health information – especially regarding intimacy, gender, and nursing diagnosis aetiology – further underscores the need for comprehensive training and uniform standards of nursing language and documentation for nurses (Naelapää 2018). Inadequate knowledge of SNL, and especially the inappropriate use of nursing diagnosis, seems to hinder the effective implementation of the entire NNN system in the nursing process, as basic academic knowledge has not been linked and transferred to clinical practice (Taghavi Larijani and Saachi 2019).

All relevant studies indicate a practical need to enhance nursing practice and documentation by implementing the NNN system in health care, ideally in alignment with Gordon's (1994) functional health patterns (Naelapää 2018; Nool et al. 2023). While SNL offers potential benefits for patient care, its success depends on comprehensive education, adequate support, and user-friendly electronic health record (EHR) interfaces (De Groot et al. 2020; Fennelly et al. 2021). Strengthening nursing curricula with targeted training in patient health assessment and SNL could foster positive attitudes among nursing managers and officials towards the NNN system implementation and develop evidence-based, process-oriented, analytical, and clinical decision-making skills among nursing students and nurses (Naelapää 2018).

Along with teaching NANDA-I nursing diagnoses, effective teaching strategies should be emphasised to better support students and nurses in defining, evaluating, and documenting nursing interventions and nursing outcomes, which are also key elements of comprehensive nursing care but are often totally undocumented. Several studies have highlighted the lack of documentation of desired and achieved patient outcomes following nursing interventions due to the non-use of SNL (Rabelo-Silva et al. 2017; Naelapää 2018). Similar challenges have also emerged in nursing students' use of NIC and NOC terminology in situation-solving assignments where students often either phrased NIC and NOC classifications differently from standardised terminology or omitted them entirely, which may have impeded their precise application. This highlights a broader need for consistency in instructional methodology and resources to enhance both students' and nurses' proficiency in applying standardised language in clinical tasks (Kautz et al. 2006). Therefore, achieving an advanced level of nursing process and its documentation requires more than just offering NANDA-I courses, translating classifications into the local language, or developing an e-system. Nurses and other stakeholders must be adequately trained in the knowledge, attitudes, and skills necessary to utilise the full NNN system in practice.

Research findings internationally confirm that NNN training can improve the quality of nursing care, particularly in terms of patient safety (Taghavi Larijani and Saatchi 2019), and enhance the coherence of patient care, especially during handovers, by improving communication protocols and establishing a shared understanding of patient priorities (Spilioti et al. 2019). The use of NNN has also enhanced students' clinical reasoning, fostered self-directed and collaborative learning, supported documentation, and provided them with the confidence to succeed in real-life clinical settings (Fennelly et al. 2021).

An effective training programme for the implementation of the Advanced Nursing Process through SNL requires clearly defined teaching strategies that are effective for teaching the use of all NNN classifications together as well as the clinical decision-making in nursing process both in the undergraduate nursing curriculum and in the continuing education programmes. The teaching of the nursing process has evolved from traditional lecture-based methods to digital and interactive tools, offering students practical experience in a safe environment (Mousavinasab et al. 2020). Students desire a more individualised and humanistic approach, where flexible teaching adapts to their needs, engages them with practice-based challenges that boost confidence, and fosters a supportive, empathetic, and reflective learning environment (Zhang et al. 2022). Integrating NNN classifications has standardised nursing education, providing students with a clear framework for acquiring and applying their knowledge (Mousavinasab et al. 2020).

Computer-based tools such as simulations and e-learning platforms have enhanced students' clinical decision-making abilities and confidence. Personalised feedback and digital communication have become central to supporting learning, helping students understand their strengths and areas for improvement. Moving forward, incorporating new technologies and interactive methods remains essential for enhancing the quality and effectiveness of nursing education. (Mousavinasab et al. 2020).

The literature highlights various approaches for teaching SNL, particularly through simulated learning tools such as academic electronic medical records (AEMRs). AEMRs replicate hospital systems, providing nursing students with practical experience in documentation and clinical decision-mak-

ing through realistic case studies and simulations within a controlled, technology-driven environment (Raghunathan et al. 2021). Studies confirm that AEMRs improve students' accuracy in charting and enhance critical thinking, decision-making, as well as analytical and documentation skills through hands-on, problem-based learning (Mountain et al. 2015; Bowling 2016; Mollart et al. 2020).

These simulation tools are especially beneficial when introduced early in nursing education, requiring sustained integration across curricula, strong institutional support, and adequate faculty training. Situated learning approaches further contextualise AEMR usage, enhancing student satisfaction and motivation by linking technological tools to real-world nursing tasks (Conen et al. 2016). Both students and educators report increased confidence and accuracy in using AEMRs, with hospital staff noting reduced training time in clinical settings and improved documentation accuracy (Mountain et al. 2015; Mollart et al. 2020).

Key challenges to AEMR implementation include high costs, faculty resistance, and technical issues such as connectivity and software compatibility. The complexity of the electronic medical records (EMRs) interface and the need for specific training for faculty are also barriers. Therefore, effective AEMR integration demands targeted training, mentorship for faculty, and a phased approach, with regular feedback from users to allow iterative adjustments that better address learning needs and improve usability (Mollart et al. 2020).

In addition, effective feedback that promotes critical thinking requires a supportive environment and adequately trained assessors. However, current assessment methods of clinical judgement and decision-making skills in nursing education are often non-criterion referenced, which can lead to inconsistencies and subjective biases in evaluating student performance (Clemett and Raleigh 2021). Nursing students have expressed a need for more balanced evaluations that focus on learning and growth rather than only pointing out errors, as this approach positively influences their clinical learning journey (Zhang et al. 2022).

To address these issues, Clemett and Raleigh (2021) have conducted a comprehensive review of various assessment metrics and provide recommendations for improving the evaluation process. This review highlights the effectiveness of multi-level assessment tools in evaluating nursing students' clinical decision-making skills in both simulation and direct patient-care settings. These tools provide valid data, reduce bias, and enhance objectivity. Feedback through these assessment instruments positively impacts learning and clinical judgement, especially when SNL or other common language is used. (Clemett and Raleigh 2021).

Positive faculty–student relationships, characterised by trust and constructive feedback, provide a secure learning atmosphere, motivating students to improve. Moreover, clinical nursing teachers who act as role models and demonstrate practical expertise inspire students to develop both their clinical skills and professional attitudes. (Zhang et al. 2022).

The literature review also underscores the importance of combining practice-based and written assessments (Clemett and Raleigh 2021). Flexibility in teaching allows educators to adapt methods to create an engaging learning environment, fostering multi-dimensional interactions that stimulate students' enthusiasm and confidence (Zhang et al. 2022). While written, case study-driven exams are effective, they should be supplemented with practice-based learning to evaluate a student's holistic approach to patient care (Clemett and Raleigh 2021). Self-assessment tools are beneficial for reflection and identifying learning needs but should not be used as summative assessments, as students may overestimate their performance. Traditional methods such as multiple-choice questions are less effective for assessing clinical reasoning, highlighting the need for assessments that prepare students for real-world clinical practice (Clemett and Raleigh 2021).

Also, in-service training for already working RNs on SNL, particularly through the NNN system, has been shown to advance nursing practice by improving the application of nursing diagnoses, interventions and outcomes in nursing process, and instructing nursing trainees and novice nurses at the workplace. For example, Taghavi Larijani and Saachi (2019) describe an effective educational intervention at Roozbeh Hospital in Iran, where nurses were trained to identify nursing diagnoses in the safety/protection domain, which aided in selecting appropriate interventions and setting achievable patient outcomes. Also, surveys among Estonian home care nurses from 2015 to 2018 similarly underscore the value of such training: while most nurses felt confident in their knowledge of NANDA-I, they reported limitations due to the use of multiple electronic and paper-based systems across healthcare facilities, none of which offered electronic decision support for the NNN-based documentation (Nool et al. 2023). Cross-sectional studies conducted between 2015 and 2021 in two medium-sized Estonian healthcare institutions further provide evidence for the effectiveness of NANDA-I and documentation training in improving the quality of nursing records. Following in-service training, significant improvements were observed in the documentation of patient information and care processes, particularly in the formulation of nursing diagnoses and documentation of nursing interventions. (Nool et al. 2023). These findings collectively highlight the importance of structured, continuous education to ensure accurate and effective use of the NNN system, ultimately advancing quality of care.

2. Materials and methods

The aim of this study was to describe the current state and future directions for integrating NNN (NANDA-I, NIC, NOC) teaching into the undergraduate nursing curriculum using an ethnographic approach (Gordon et al. 2001). We sought answers to three research questions:

- What are the current scope and methodology for teaching NNN in the nursing curriculum, based on curriculum observation and faculty interviews?
- What are the experiences of faculty teaching NNN to undergraduate nursing students and how do they conceptualise the learning process of NNN for the students?

- What recommendations can be derived from the existing data to enhance the teaching of the NNN comprehensive system across the nursing curriculum?

The research questions were addressed using an ethnographic research approach. The fieldwork of the research consisted of participant observation and ethnographic interviews. In spring 2023, a qualitative document analysis of the General Nurse Curriculum (TTK n.d.), including the 11 syllabi of the NNN teaching courses, and ethnographic interviews (Sherman Heyl 2001) with 13 faculty members teaching these courses were conducted at Tallinn Health Care College.

The research began with fieldwork, where the first author conducted participant observation of course structures and teaching methods of the NNN system in the college. The first author observed NNN system courses, documenting teaching strategies, student interactions, and curricular content. Field notes captured real-time observations, enriched by reflective memos. This immersion provided valuable context for understanding the implementation of the NNN system in the nursing curriculum (Rannus 2023; Rannus and Puusepp 2023). Following this, the first author conducted in-depth ethnographic interviewing (Sherman Heyl 2001), using open and semi-structured formats to encourage the sharing of faculty members' experiences and perspectives on teaching NANDA-I, NOC and NIC to nursing students. Interviews lasting 60–90 minutes allowed faculty to share detailed insights on their teaching experiences and enabled the researcher to gather real-life data not explicitly documented in course syllabi. All 13 participants provided digital informed consent, affirming voluntary participation and awareness of research ethics, and the study received institutional ethical approval. Since this research was conducted as an internal applied study to support nursing curriculum development, without collecting sensitive data, ethical committee approval was not required. Instead, approval from the institution's management was deemed sufficient to proceed with the study.

For data analysis, qualitative content analysis was employed, examining a total of 212 pages of the written text material comprised of the course syllabi and interview transcripts to identify recurring themes and patterns according to the research questions. The first author individually reviewed all papers and extracted the necessary information for analysis. The similar findings were combined and sorted into new categories and then summarised into different synthesised themes. The first part of the analysis focused on the learning outcomes and teaching methods of the NNN system selected and described by the teacher when drawing up the syllabi of their courses in the General Nurse Curriculum. The second part examined the interview data with the teachers to capture and evaluate their professional reflections on their teaching activities in practice. While participating in an interview is not a routine task for the teacher, it gives them time to reflect what they do in the classroom and what could be helpful for the future developments.

This analysis revealed significant insights into instructional practices. Throughout the process, the researcher remained reflexive, aware of her impact as a researcher on the interpretation of the data. This awareness helped her provide a more objective analysis. Finally, as a participant-observer, she stressed the importance of feedback and collaboration with faculty members to enrich the results and improve the curriculum. In summary, this ethnographic approach offers a nuanced understanding of the challenges and opportunities in integrating the NNN system into nursing education, setting the stage for future advancements in this vital area.

The choice of an ethnographic method was pivotal for capturing the complex, lived realities of teaching the NNN system. Ethnography's immersive nature enabled the first author to understand teaching practices within their natural context, while interviews provided rich narrative data reflecting educators' perspectives. This approach facilitated an in-depth exploration of nuanced phenomena, such as the interplay between institutional policies and pedagogical choices (Gordon et al 2001), enhancing the robustness of data analysis by grounding interpretations in the everyday experiences of faculty and students (as faculty members shared them). Such contextual depth is essential for generating insights that can inform educational improvements and policy development (Gordon et al. 2001).

3. Results

3.1. The scope and methodology for teaching NNN in the nursing curriculum

Understanding how the NNN system is taught in nursing education requires examining both the breadth of curricular integration and the pedagogical strategies employed. This section synthesises findings from the course syllabi and faculty interviews, highlighting nine distinct themes that illustrate the extent of NNN implementation. These themes encapsulate key components of teaching, including instructional techniques, assessment practices, and faculty perspectives on fostering students' competency in applying SNL.

Theme 1. Integration of NNN in the nursing curriculum

The NNN framework is embedded throughout the nursing curriculum, covering half of the nursing curriculum (125 ECTS out of 210 ECTS) (Rannus and Puusepp 2023). This integration spans all fundamental and clinical nursing courses, aiming to provide students with a solid foundation in NNN from the onset of their studies through to advanced clinical internships and a graduation thesis at the end of their 3.5-year studies. However, the specific academic hours dedicated to NNN instruction are relatively limited. The introduction course covers the principles of the NNN system, consisting of a 12-hour lecture followed by 12 hours of seminars and simulation practice, alongside an estimated eight hours of independent study prior to an oral examination at the end of the first semester of the nursing studies. Further teaching and independent learning hours on the implementation of NNN depend primarily on the amount of time the teacher spends on SNL within clinical specialty courses.

Theme 2. Teaching and assessment methods

NNN concepts are taught and assessed through a range of methods designed to encourage practical application, critical thinking, and patient-centred decision-making:

- **Situation-solving assignments.** Students complete oral and written tasks that involve solving clinical scenarios and developing process-based nursing care plans. These assignments are integrated with fundamental or clinical skills training, helping students apply theoretical knowledge in real-world contexts.
- **Group assignments and simulation practice.** In seminars and simulation sessions, students practice NNN principles through group discussions and simulations, fostering collaborative argumentation and decision-making.
- **Individual assignments during internships.** During clinical internships, students are given written assignments where they independently apply NNN principles, gaining experience in patient assessment and planning. These are the only real-life applications of the NNN system in the nursing curriculum, where students can plan nursing care for real patients. Clinical settings rarely support full NNN utilisation, nor do they typically provide feedback essential for NNN-based learning.
- **Oral assessment in the examination of nursing fundamentals.** The examination involves reading and oral tasks where students must demonstrate an understanding of the NNN terminology and its application to specific patient scenarios. (Rannus and Puusepp 2023).

Theme 3. Critical thinking and diagnostic prioritisation

To support accurate prioritisation and decision-making, faculty advise students to use frameworks such as Maslow's hierarchy of needs or the assessment of a patient's vital functions, depending on the clinical context. Students are encouraged to analyse available data logically, engage in reflective discussions, and participate in debates, fostering a realistic and systematic approach to diagnostics and patient needs. In clinical specialty courses, however, a patient's medical diagnosis often serves as the basis for further nursing diagnoses, which may limit autonomous critical reasoning. (Rannus and Puusepp 2023).

Theme 4. Patient-centred and safety-oriented decision making

While clinical decision-making models or tools were not specifically included in the teaching materials, faculty emphasised adherence to principles of patient safety and person-centred care. Students are taught to determine patient preferences using frameworks such as the INTENSE or MI assessment models (Rannus and Puusepp 2023). However, some educators note that reliance on reference materials can deter students from a more dynamic and holistic approach.

Theme 5. The role of literature and resources in shaping student practice

Core resources, particularly the Estonian version of NANDA-I (Herdman et al. 2022) and key English-language reference books such as Carpenito's *Handbook of Nursing Diagnosis* (Carpenito 2017), are central to the nursing curriculum. Carpenito's guide is particularly favoured by both students and faculty because it provides predefined goals and interventions for each diagnosis, which simplifies decision-making in the nursing process (Rannus 2023; Rannus and Puusepp 2023). This structure can, however, have unintended consequences. Faculty have observed that students, relying heavily on these resources, may prioritise textbook-based correctness over patient-centred decision-making. For instance, students often exclude a diagnosis if all textbook symptoms are not present in the case description rather than adapting diagnoses to reflect the patient's unique context.

As students progress through the curriculum, an over-reliance on textbooks becomes more prominent. This dependency can inadvertently inhibit the development of critical thinking and clinical reasoning skills. Faculty have noted that students often seek textbook answers when making diagnostic choices, focusing on precise wording and the inclusion of all symptoms, even at the expense of considering the patient's individualised health status. In doing so, students may miss opportunities for nuanced, patient-centred care. Additionally, some students tend to emphasise unchangeable patient factors, such as age, instead of focusing on modifiable aspects of health, which may lead to less personalised and adaptive care approaches. This growing reliance on textbooks can be seen as both a helpful guide and a potential barrier to developing independent clinical judgment and critical reflection.

Theme 6. Requirements for evidence-based referencing

While referencing requirements are relatively lenient in the early stages of the programme – primarily involving the use of NANDA-I and a general handbook – students in their second and third years are expected to incorporate professional journals and evidence-based resources to support their choices. This gradual integration of evidence-based practice aims to encourage students to substantiate their clinical decisions with the most current research and best practices. However, faculty note that the extent of this requirement can vary, with some teachers expecting more in-depth sourcing than others. Despite this variability, the emphasis on evidence-based referencing provides students with the opportunity to develop critical thinking skills and strengthen their connection between clinical decisions and the latest research.

This stepwise approach to integrating scholarly literature not only broadens students' research skills but also encourages a more evidence-informed and reflective approach to clinical practice, ultimately supporting a transition from textbook reliance to a more nuanced, research-supported understanding of patient care.

Theme 7. Focus shift with increasing clinical case complexity

As students advance and patients' situation cases become more complex, the curriculum focus tends to shift towards activity-based tasks rather than the rationale ('why') and methodology ('how') behind these actions. This shift reduces the emphasis on decision-making processes in later clinical modules, potentially limiting students' comprehensive under-

standing of NNN integration. For instance, in the second-year clinical intervention course, students primarily focus on diagnostics and interventions without connecting these to outcome planning and evaluation – a skill addressed in theory courses rather than in clinical practice. By the third year, specific courses such as primary care and adult health behaviour lack NANDA-I-based instruction altogether. This gap may stem from health care delivery models that prioritise immediate care and action over preventive strategies, reflecting a system that demands quick solutions over long-term, patient-centred outcomes. In these advanced courses, clinical teaching still centres more on procedural tasks than on evaluating impact.

Theme 8. Research-based assignments and limitations in practical decision-making

The graduation theses (10 ECTS) involving NNN are typically theoretical (literature reviews) or empirical (document analysis or surveys). Although these theses allow students to deepen their understanding of NNN, they often focus on compiling lists of diagnoses and interventions for a specific patient group rather than honing skills in real-time clinical decision-making and outcome evaluation. This theoretical focus may leave students less prepared to apply NNN in complex, dynamic patient care settings.

Theme 9. Assessment and feedback mechanisms in NNN teaching

- **Variability in guidance and assignment requirements.** Guidance and assignment requirements vary across teachers and courses, leading to potential confusion among students. A key issue is the inconsistent interpretation and application of concepts related to the NNN framework among faculty members. For instance, the approach to creating a nursing care plan can differ greatly between courses (Rannus and Puusepp 2023), and there is no unified curriculum-wide standard for what is expected in these assignments. This lack of alignment can cause uncertainty and inconsistencies in student learning experiences and outcomes.
- **Immediate feedback in initial courses.** Immediate feedback is highly valued and often seen as a beneficial teaching method. However, providing individual feedback is challenging when large groups of students are involved and written assignments are submitted. During the first-year final exam, students receive individual and oral feedback on their assignments, allowing for direct guidance. However, after the initial course and especially during clinical internship, there is a noticeable gap in immediate, individualised feedback, because 'mainly verbal summary feedback from the teacher and some fellow students, or written individual feedback if improvements are needed, is provided at the end of each course' (Rannus and Puusepp 2023).
- **Feedback challenges during clinical internship.** During clinical internships, students face a significant lack of individual feedback. Clinical mentors are often unable to provide feedback specific to NNN due to limited expertise or time constraints. As a result, the responsibility for feedback lies primarily with the academic teacher. However, because of large student cohorts, teachers are only able to offer general verbal feedback during final seminars, with individual written feedback typically reserved for those students who require further improvement. This limited interaction may hinder the development of critical thinking and the ability to apply NNN principles in clinical settings.
- **Research supervision and inconsistent support.** The guidance provided during research projects of graduation theses also varies significantly between teachers. While some teachers solely focus on overseeing the research component of student works, others provide more comprehensive guidance, including support in applying the NNN framework to their chosen research topics. This disparity can lead to students receiving unequal levels of support and feedback, affecting their ability to integrate NNN principles into their final research outputs.
- **Need for unified assessment practices.** Given the variability in assessment practices and feedback, there is a clear need for a more unified approach to both the evaluation of assignments and the provision of feedback. Standardised feedback mechanisms, particularly following clinical internships, would help ensure that students receive consistent and constructive guidance throughout their studies. Furthermore, creating clear guidelines for assignments across all courses could help align expectations and reduce confusion, providing students with a more coherent and structured learning experience.

3.2. Faculty experiences and conceptualisations of teaching NNN to nursing students

As a result of analysing the faculty interviews, a total of 84 substantive codes, with 31 overlapping, 53 subcategories, and 8 main themes were synthesised that encapsulate the multifaceted nature of nursing education. These categories not only reflect the current landscape but also provide insights for future improvements in the college's nursing curriculum and teaching methodologies (Table 1).

Theme 1. Educational approaches and methodologies

Based on the interviews with faculty members, several key themes emerged regarding effective teaching strategies in nursing education. **Group work and seminars** were widely recognised as crucial for fostering collaborative learning experiences that enhance student engagement and promote deeper knowledge retention. '*In seminars, students are encouraged to collaborate and explore different approaches, but some prefer to stay passive unless directly involved in group discussions.*' (Translation of a quote from Interview 5). The importance of **feedback and assessment of outcomes in teaching and learning** was also emphasised, with participants highlighting the value of timely, constructive feedback in guiding students' academic and professional development. '*The oral exam is unique because it provides immediate feedback. Students can understand their mistakes and correct them on the spot.*' (Translation of a quote from

Table 1. The subcategories and main themes of the faculty experiences and conceptualisations of teaching NNN to nursing students

Subcategories	Main themes
Group work and seminars	Educational approaches and methodologies
Feedback and assessment of outcomes in teaching and learning	
Emphasis on patient-centred approach	
Teaching styles	
Use of e-learning videos	
Illustrative examples and case discussions	
Integration of NANDA-I, NIC, and NOC into curriculum	
Challenges in utilising learning materials	Challenges in nursing education
Difficulties in understanding and assessing nursing outcomes related to diagnoses	
Resistance and different understandings of medical diagnosis and its relation to nursing diagnosis	
Faculty reluctance towards NANDA-I and other nursing systems and models	
Lack of unified vision and approach among faculty	
Insufficient availability of materials in Estonian	
Absence of the electronic health information systems	
Language barriers in learning materials	
Different approaches to teaching core concepts	
Terminology and language barriers	
Faculty disagreements and the impact of practice	
Conflicts between practice and terminology	
Student preconceptions and lack of realism	
Practical experience in intensive care	Practical experience and clinical training
Role and impact of practice	
Independent work and increased student responsibility	
Clinical decision-making	
Importance of simulation and practical training	
Integration of theory and practice	
Role of support structures and supervision from the internship base	
Difficulties and errors in developing nursing care plans	
Need for faculty support from mentors	Support and development needs
Need to change faculty attitudes	
Training and awareness raising for faculty	
Encouragement of learners in making choices	
Addressing faculty workload and resource needs	
Need for training and support for faculty	
Emphasis on nursing outcomes	Measurement and assessment of nursing outcomes in the nursing process
Current gaps in education	
Skill development for outcome evaluation	
Impact on clinical practice	
Immediate feedback and outcome monitoring in learning	
Learning outcomes and their assessment	
Questions regarding the use of NANDA-I, NIC, and NOC	Integration of advanced nursing frameworks
Use of the NNN integrated system in curriculum	
Supervision of theses related to NNN	
Unaddressed nursing outcomes in NNN-related theses	
Incorporation of health-promotion and risk diagnoses in the framework	
Development of clinical thinking	Clinical reasoning and thought processes
Gap between theory and practice	
Diagnostic focus and teaching difficulties	
Students' fear of making mistakes	
Continuity of the learning process	
Use of scientific literature as educational material	Research and resource utilization
Need for understanding and translating teaching resources	
Availability and use of support materials (e.g. textbooks, electronic resources)	

Interview 5). A strong consensus emerged around the **patient-centred approach**, underscoring the necessity of prioritising patient needs and preferences in both education and clinical practice. '*We emphasise that nursing is about understanding the patient holistically, not just solving a specific problem. But this requires a mindset shift for many students.*' (Translation of a quote from Interview 5).

In exploring **teaching styles**, interviewees noted the diversity of pedagogical approaches and their varying impacts on student outcomes, suggesting the need for adaptability in teaching methods. '*We teach the system, a systematic approach, and that should be the focus. Regardless of which system the hospital uses, the plan, diagnoses, interventions, and evaluations must always remain.*' (Translation of a quote

from Interview 3). The integration of **e-learning videos** was identified as a valuable tool for increasing the accessibility and flexibility of learning resources, particularly for complex theoretical content. '*E-learning videos have made it easier for students to revisit complex topics. It's especially useful for theoretical concepts like nursing diagnoses.*' (Translation of a quote from Interview 5). Additionally, the use of **illustrative examples and case discussions** was highlighted as an effective strategy for bridging theoretical knowledge and real-world practice. '*Using real-life case studies bridges the gap between theory and practice. It helps students connect what they learn in the classroom to real patient care.*' (Translation of a quote from Interview 5). Finally, faculty members emphasised that **NANDA-I, NIC, and NOC frameworks** should be more extensively integrated into nursing curricula. They stressed the importance of revisiting and teaching these frameworks consistently throughout the programme rather than limiting instruction to the first year of study. This approach would better ensure students' familiarity with and application of these standardised frameworks in practice. '*It is actually important how it is taught in the first year and to what extent it is used later, for example, in clinical courses.*' (Translation of a quote from Interview 1). '*In teaching the nursing process, we always incorporate assessment, diagnosis, goal setting, interventions, and evaluation based on the NNN framework. It provides a logical structure for students.*' (Translation of a quote from Interview 6).

Theme 2. Challenges in nursing education

The interviews with faculty members revealed several significant challenges in nursing education. Among these, the **utilisation of learning materials** emerged as a key issue, with barriers hindering the effective integration of educational resources into the curriculum. '*Many don't even open the book or struggle to find the right sections. It's not about the content – it's about knowing how to use it effectively.*' (Translation of a quote from Interview 5). Faculty also identified the **difficulty in understanding and assessing nursing outcomes related to diagnoses** as a major hurdle for students, reflecting the complexities of applying theoretical nursing concepts to practical situations. '*Students often fail to connect diagnoses to outcomes. They stop at identifying the problem without thinking about what we aim to achieve with the patient.*' (Translation of a quote from Interview 5).

A recurring challenge was **resistance and misunderstandings regarding medical diagnosis and its relation to nursing diagnosis**, which highlighted the need for clearer explanations of how different international classification systems align with nursing practice. '*There's this notion that nursing diagnoses are somehow less valid. Some students see them as unnecessary compared to medical ones.*' (Translation of a quote from Interview 5). '*The students need to recognise both the medical diagnosis and the nursing diagnosis. These must be connected logically, but often students struggle to align them properly.*' (Translation of a quote from Interview 6). Similarly, **faculty reluctance towards adopting NANDA-I and other standardised nursing models** was noted, often stemming from differing perspectives on their applicability. '*I know there are actually teachers who do not believe in NANDA at all. They told students outright that, oh, it isn't used in hospitals anyway, and they themselves didn't believe in it at all.*' (Translation of a quote from Interview 1). These issues were further compounded by a **lack of unified vision and approach among faculty members**, leading to inconsistencies in teaching philosophies and methods. '*Some faculty members grasp NANDA better than others, while a few see it as unimportant, and that creates inconsistency in how we approach teaching.*' (Translation of a quote from Interview 6). '*Some faculty members are not "NANDA believers", which affects the overall attitude towards integrating the framework into teaching.*' (Translation of a quote from Interview 7).

Additional barriers included **insufficient availability of materials in Estonian**, which limited students' access to vital resources. Also, the **absence of digital systems** restricted opportunities for technology-enhanced learning. '*When the information system becomes electronic, these NNN frameworks could be better integrated into the healthcare system.*' (Translation of a quote from Interview 2). **Language barriers** in educational materials, including unfamiliar terminology, posed further difficulties for students in mastering core concepts. '*The terminology is difficult even for those fluent in English. Translating these concepts into Estonian while keeping their original meaning is a real challenge.*' (Translation of a quote from Interview 5).

Faculty also highlighted **different approaches to teaching fundamental nursing concepts**, which sometimes created confusion among students. '*Each teacher has their own approach, and while diversity is good, it often confuses students when key concepts are taught inconsistently.*' (Translation of a quote from Interview 5). This issue was exacerbated by **disagreements among faculty regarding the practice experience**, which influenced the quality and consistency of clinical training. '*We don't have contact between teachers; each one teaches their subject. While we try to create connections, sometimes there's no continuity. For instance, if NNN is part of one subject but excluded from another, it can cause confusion for the students.*' (Translation of a quote from Interview 8). Moreover, **conflicts between practice experiences and academic terminology** were reported, reflecting a disconnect between theoretical instruction and real-world application. '*In practice, this is not used, and student feedback often questions why the NNN system is so prominent in the curriculum when no one applies it in real-life practice.*' (Translation of a quote from Interview 3). Finally, **student preconceptions and unrealistic expectations about nursing roles** were identified as obstacles to effective learning. '*Students sometimes set overly ambitious goals, like expecting an overweight patient with a BMI of 48 to reach a BMI of 24 in six months. It's critical to guide them towards realistic objectives.*' (Translation of a quote from Interview 6).

Theme 3. Practical experience and clinical training

The faculty interviews underscored the critical role of **practical experience in intensive care**, which presents unique challenges and invaluable learning opportunities for nursing students in high-stress environments. Also, teachers note that

students with working experience as nurse assistants tend to navigate the classifications more adeptly. '*I think those who are already working in intensive care as care assistants or nursing aides today find it much easier to formulate diagnoses because they perceive the real patient and their condition.*' (Translation of a quote from Interview 9). The **role and impact of practice** were highlighted as essential for shaping students' professional competencies, fostering confidence, and bridging the gap between theoretical knowledge and real-world application. '*Clinical internship is the only setting where students learn to connect diagnoses, interventions, and outcome evaluations to real-life contexts.*' (Translation of a quote from Interview 7). Faculty emphasised the importance of **independent work and increased student responsibility**, encouraging nursing students to engage in self-directed learning and take accountability for their decisions. '*Students are required to find one patient and a case during their clinical internship where they can apply the entire process – from health status assessment to planning and interventions, followed by evaluating outcomes.*' (Translation of a quote from Interview 3).

Clinical decision-making emerged as a pivotal skill, requiring the cultivation of critical thinking processes to enable effective nursing care decisions. '*I always tell students to ask "Why?" Why does the patient feel this way? Why did they behave like this? The goal is to identify the root cause, not just address the symptoms.*' (Translation of a quote from Interview 6).

The **importance of simulation and practical training** was universally recognised as indispensable in preparing students for real-world scenarios. '*Simulated scenarios and real-life cases allow students to apply theory and understand why they are doing what they're doing. They develop confidence by practicing critical skills.*' (Translation of a quote from Interview 6). '*Simulation exercises are essential. Without them, students are unprepared for the complexities of real patient care.*' (Translation of a quote from Interview 5). The **integration of theory and practice** was viewed as necessary to ensure a seamless transition from classroom to clinic. '*Right now, we teach NANDA in theory, but there's no way for students to consolidate it in practice since it's not used systematically in most clinical settings. If digital tools were available, students could apply theory directly in patient care situations.*' (Translation of a quote from Interview 8). The role of **support structures and supervision from internship bases** was also emphasised, with mentorship identified as a cornerstone of student success during clinical internships. '*Good supervision during internships makes all the difference. When students feel supported, they're more likely to succeed and learn effectively*.' (Translation of a quote from Interview 5). Finally, faculty noted **difficulties and errors in developing nursing care plans**, highlighting the need for enhanced guidance and training to address these common challenges. '*Errors in care planning often stem from a lack of understanding the full process. Students need clearer guidance on linking diagnoses, interventions, and outcomes.*' (Translation of a quote from Interview 5).

Theme 4. Support and development needs

The interviews revealed several areas where faculty and student support could be strengthened. The **need for faculty support from mentors** was seen as crucial in facilitating professional development and improving teaching efficacy. '*For example, ... has been very helpful in this field, especially in the beginning when I had serious doubts about whether I could handle this topic at all.*' (Translation of a quote from Interview 9). Faculty expressed a **need to change attitudes**, advocating for a shift towards more innovative and student-centred teaching practices. **Training and awareness-raising for faculty** were identified as priorities to ensure educators remain informed and effective in their roles. '*Training sessions to remind us why and how we do this would be important. Raising awareness is the most crucial aspect.*' (Translation of a quote from Interview 3).

Encouraging **learners in making choices** was another key theme, with a focus on fostering autonomy and decision-making skills among students. '*The main purpose of NNN is to make nurses think critically, but current implementation doesn't always encourage that.*' (Translation of a quote from Interview 7). '*We should push students to make decisions on their own rather than spoon-feeding them the answers.*' (Translation of a quote from Interview 5). Faculty also noted the impact of **workload and resource needs**, underscoring how excessive demands can hinder teaching quality and student support. '*Faculty are stretched thin, and it affects how much time we can dedicate to individual students. The quality of support suffers when resources are limited.*' (Translation of a quote from Interview 5). The **need for structured training programmes for faculty** was further highlighted, recognising the necessity of ongoing professional development to enhance both teaching and student outcomes. '*There's a need for structured training programmes for faculty so we can all be on the same page about teaching and expectations.*' (Translation of a quote from Interview 7).

Theme 5. Measurement and assessment of nursing outcomes in nursing process

A strong emphasis was placed on the **integration of nursing outcomes** within the teaching of nursing process, ensuring students understand their critical role in patient care. '*It is clear that we do not currently teach how to assess the impact of nursing interventions. This should be an integral part of the learning process.*' (Translation of a quote from Interview 3). Faculty identified **current gaps in education** related to nursing outcomes in the NNN framework, which were seen as contributing to educational shortcomings. '*They don't really know how to deal with these nursing outcomes... and the nursing outcomes, teachers say, are not measurable; they're not realistic.*' (Translation of a quote from Interview 9). The **development of skills for outcome evaluation** was viewed as vital for enabling students to measure and assess outcomes effectively, thus improving patient care. '*... if you don't use NOC, then you don't know what to base your evaluations on, right? And if you don't know, if you haven't discussed it with the patient, then you can't determine what to use as the*

basis for evaluating outcomes.' (Translation of a quote from Interview 1).

Additionally, the **impact of nursing outcomes on clinical practice** was underscored, particularly in evaluating the effectiveness of interventions. '*In clinical practice settings, no one sets nursing outcomes as goals or evaluates them, which leads to a loss of trust in NOCs.*' (Translation of a quote from Interview 2). Faculty also stressed the importance of **immediate feedback and outcome monitoring**, enabling students to refine their skills in real-time. '*This immediate feedback helps them refine their skills.*' (Translation of a quote from Interview 6). '*Students are frustrated when they don't get individual feedback – generalised feedback during seminars doesn't help them improve.*' (Translation of a quote from Interview 7). Finally, the **clarity of learning outcomes and their assessment** was highlighted as a critical factor in guiding teaching and evaluation strategies. '*Learning outcomes should be more specific. If students don't know exactly what they're working towards, the whole process becomes unclear.*' (Translation of a quote from Interview 5). '*The learning outcomes should focus on measurable goals – students must know how to assess whether the nursing intervention achieved the intended result.*' (Translation of a quote from Interview 6). '*There's no unified understanding among faculty on what level of competence students should achieve, and new teachers have their own ways of doing things. ... Clearer learning outcomes in the course descriptions would make it easier for both students and faculty to stay focused on what's important.*' (Translation of a quote from Interview 7).

Theme 6. Integration of enhanced nursing frameworks

Faculty raised **questions regarding the use of NANDA-I, NIC, and NOC frameworks**, highlighting the challenges and implications of implementing standardised models in nursing education. '*Many ask why we teach NANDA when it's barely used in practice. I explain that it provides a unified language and is essential for the future when digital solutions come into play. Still, many struggle to see its immediate relevance, especially without a clear link to practical use.*' (Translation of a quote from Interview 8). The **use of the NNN integrated system in curricula** was emphasised as essential for fostering comprehensive understanding and consistency. '*If the topic is related to the NNN system, it encompasses the entire framework, and students must understand how the three components – NANDA-I, NIC, and NOC – are interconnected.*' (Translation of a quote from Interview 3). '*Implementing NIC and NOC without aligning them with NANDA creates confusion – students often copy interventions and goals without understanding their relevance.*' (Translation of a quote from Interview 7). The **supervision of theses related to the NNN framework** was also discussed to advance nursing knowledge and align academic research with practical needs. '*In thesis work, I ask students to justify why they chose specific nursing diagnoses and interventions – this develops their critical thinking and ensures alignment with the NNN framework.*' (Translation of a quote from Interview 6).

However, **unaddressed nursing outcomes in NNN-related theses** were identified as a gap, indicating missed opportunities for deeper exploration. '*Many theses focus on diagnoses and interventions, but outcomes are often missing. This leaves a major gap in understanding the full process.*' (Translation of a quote from Interview 5). Faculty also advocated for the **incorporation of health-promotion and risk diagnoses** within the framework, emphasising the importance of addressing preventive health measures in nursing education. '*We need to include more preventative measures in our curriculum. Nursing isn't just about reacting to problems – it's about preventing them.*' (Translation of a quote from Interview 5). '*Risk diagnoses are often overlooked in care plans, and we need to guide students to focus on these more systematically.*' (Translation of a quote from Interview 7).

Theme 7. Clinical reasoning and thought processes

The development of **clinical thinking skills** was recognised as a cornerstone of nursing practice, requiring deliberate cultivation through education. '*... I guide them towards articles, asking "Where do your diagnoses come from? Do the articles indicate that these diagnoses are valid, or where do you get them from? You can't just arbitrarily choose some diagnoses."*' (Translation of a quote from Interview 1). Faculty identified a persistent **gap between theory and practice**, noting the challenges students face when applying theoretical knowledge in clinical contexts. '*Let's take it from the patient's perspective ... I often have them write down the objective indicators to get a better picture of the patient.*' (Translation of a quote from Interview 9). **Diagnostic focus and teaching difficulties** were highlighted as key obstacles, reflecting the complexity of effectively teaching diagnostic skills. '*We assess the reasoning and justification – not just the choice of diagnosis.*' (Translation of a quote from Interview 2).

The **students' fear of making mistakes** was also recognised as a significant barrier to learning, underscoring the need for supportive environments that encourage experimentation and confidence-building. '*... some students don't even bring the book to the exam and have no idea about anything. It's not just a language barrier – it's the fear of not understanding or doing something wrong. ... I've noticed that in practical exercises, many hesitate to take the lead because they are afraid of getting it wrong, and it shows in their exams too. ... They don't seem to realize that making mistakes is part of learning. Instead, they just want to get it over with, as if passing is enough.*' (Translation of a quote from Interview 5). '*I have been confronted with fears about the accuracy and errors and imperfections of using NANDA-I diagnosis. And it makes a person rigid. And he/she thinks of nothing but doing things right on paper, he doesn't reconcile that with practice. Plus, there is our world of practice, where many hospitals are not of the NANDA faith at all. Even though they pretend to be.*' (Translation of a quote from Interview 4). Faculty stressed the importance of **continuity in the learning process**, advocating for a cohesive approach that connects various educational experiences into a coherent journey. '*One professor emphasises the philosophy behind nursing, while*

another focuses only on reaching the diagnosis – there's no unified method to connect these approaches, and it confuses the students. ... When NOC is left out in later courses, it breaks the logical process they started learning with NANDA and NIC. Continuity is key to mastering the system. ... The curriculum must connect all elements – diagnoses, interventions, outcomes – so students can see how they build on one another. Right now, these parts feel disconnected.' (Translation of a quote from Interview 5).

Theme 8. Research and resource utilisation

Faculty emphasised the importance of **using scientific literature as educational material**, advocating for the integration of current research to enhance students' learning experiences. '*I really like that now our school has more opportunities ... for example, databases like Scopus and Web of Science, which they can use to search for literature.*' (Translation of a quote from Interview 1). The **need for understanding and translating teaching resources** was also highlighted, with a focus on ensuring materials are accessible and comprehensible to students. '*As these translations become available, I believe the NNN system will become more coherent and understandable for many.*' (Translation of a quote from Interview 2). Finally, the **availability and use of support materials**, such as textbooks and electronic resources, was identified as a critical factor in supporting both teaching and learning in nursing education. '*This book, by the way, the introduction section, has a great few hundred pages of theory ... and a separate chapter that provided guidance for teachers on how to teach.*' (Translation of a quote from Interview 9).

3.3. Recommendations for enhancing the teaching of NNN in the nursing curriculum

The recommendations from faculty members on improving the teaching of the NNN system in the nursing curriculum were categorised into ten overarching themes.

Theme 1. Enhancement of teaching materials and resources

Developing Estonian-language learning materials and digital systems aids students in better understanding and applying the NNN system. '*We urgently need an Estonian NIC/NOC book ... the language barrier with English texts makes learning more challenging for some students.*' (Translation of a quote from Interview 6). '*If digital tools were available, students could apply theory directly in patient care situations.*' (Translation of a quote from Interview 8).

Theme 2. Emphasising the philosophy of nursing care

Emphasising the philosophy of nursing care means helping students understand the holistic purpose of nursing diagnoses, demonstrating how they connect to patient-centred care and outcomes, and fostering a mindset that views nursing as a comprehensive process rather than a series of isolated tasks. '*We should focus more on why nursing diagnoses matter – how they link to patient care and outcomes. Students need to see the bigger picture, not just isolated tasks. ... Nursing is more than procedures; it's a mindset. The curriculum should highlight this philosophy to guide students' understanding of the nursing process.*' (Translation of a quote from Interview 5).

Theme 3. Standardising teaching methods among faculty

Standardising teaching methods among faculty ensures consistency in delivering NNN concepts, reducing student confusion and creating a cohesive learning experience by aligning all lecturers towards shared educational outcomes. '*Students need better guidance in structuring care plans, from prioritising diagnoses to setting measurable goals and deciding appropriate interventions.*' (Translation of a quote from Interview 6). '*There needs to be more consistency among lecturers. If one focuses only on diagnoses and another on interventions, students get confused. A unified approach would help. ... We've discussed this in team meetings – everyone should aim for the same outcomes, even if their teaching styles differ.*' (Translation of a quote from Interview 5).

Theme 4. Strengthening practical learning

The use of practical exercises and simulations helps students comprehensively grasp the application of the NNN system. '*We should use case scenarios more often. Let students analyse, plan, and execute care plans step-by-step – it's the only way to solidify their understanding of NNN.*' (Translation of a quote from Interview 5). Clinical internship is the only setting where they learn to connect nursing factors, interventions, and evaluations with the real context. '*If they don't learn it there, they might never learn it.*' (Translation of a quote from Interview 7).

Theme 5. Training and harmonising faculty understanding

Raising faculty awareness and employing standardised teaching methodologies ensure consistent and effective instruction of the NNN system. '*Organising training sessions helps faculty understand the importance of the NNN system and standardise teaching practices.*' (Translation of a quote from Interview 13). '*Faculty members themselves need time and resources to better understand the NNN framework. We should have workshops and opportunities to deepen our knowledge.*' (Translation of a quote from Interview 6). '*There's a need to train new faculty members so we can align our understanding of how to assess and guide students' work. Without this, there are too many inconsistencies.*' (Translation of a quote from Interview 7).

Theme 6. Ensuring continuity and integration in the curriculum

Teaching the NNN system should be continuous and integrated throughout the curriculum to ensure its practical application. '*Faculty must ensure that the teaching of the NNN system occurs in all relevant courses, not just the foundational ones.*' (Translation of a quote from Interview 10). '*Learning about NANDA alone without a clinical context doesn't help much. ... NNN needs to be embedded across all subjects. Learning NANDA alone doesn't help if they can't connect it with interventions and outcomes in a clinical context.*' (Translation of a quote from Interview 7).

Theme 7. Enhancing critical thinking and the use of evidence-based materials

Enhancing students' critical thinking and ability to use scientific literature helps them make informed and justified decisions within the NNN framework. '*Students should be encouraged to justify their choices and analyse how they arrived at diagnoses and interventions.*' (Translation of a quote from Interview 11).'*Teach them how to use the books, not just read them. They must learn how to search for information, apply it, and critically assess its relevance. … Students should practice writing care plans using evidence-based resources. This builds both confidence and competence in applying the NNN framework.*' (Translation of a quote from Interview 5).

Theme 8. Improving collaboration between practice and education

Aligning methodologies used in practice and education helps students acquire practical aspects of the NNN system. '*We need better collaboration with internship bases. If supervisors at the clinical bases don't understand NNN, students lose motivation and stop seeing its relevance.*' (Translation of a quote from Interview 7). '*Students often don't connect what they learn in class to what they see in clinics. We need to make these connections clearer, perhaps by involving clinical examples in lectures. … Internships should include structured mentorship programmes where supervisors guide students in applying NNN principles systematically.*' (Translation of a quote from Interview 5).

Theme 9. Reducing anxiety and fear of making mistakes

Reducing students' fear of making mistakes by providing opportunities to err and learn in a supportive environment. '*The fear of making mistakes is the worst … and you know, they don't even connect it with practice.*' (Translation of a quote from Interview 4).

Theme 10. Enhancing individual feedback for students

Providing detailed and individualised feedback is crucial for students' learning and skill development, yet time and resource constraints often limit its availability in nursing education. '*Students want to know how they did. I believe they have a right to detailed feedback on their work, but we lack the time and resources to provide it individually.*' (Translation of a quote from Interview 7). '*When their work is missing a key part, like nursing diagnoses or interventions, I send it back and say, "This section is incomplete." I give them individual feedback to ensure they understand what's expected in the learning outcomes.*' (Translation of a quote from Interview 8).

4. Discussion

This study offers valuable insights into the status and directions of integrating the NNN system (NANDA-I, NIC, NOC) into the undergraduate nursing curriculum. The findings highlight key areas for improvement, aligning with existing literature on the challenges and benefits of standardised nursing language (SNL).

The incorporation of the NNN system into the nursing curriculum is crucial for developing students' competencies in utilising SNL. Although the NNN framework is embedded in the curriculum, the study reveals a need for more consistent and practical application across courses. This is consistent with Naelapää (2018) and Nool et al. (2023), who emphasise the importance of comprehensive training and uniform standards in nursing documentation to improve patient care quality.

Teaching nursing diagnoses, outcomes, and interventions is foundational to the nursing process, yet persistent challenges remain in effectively teaching and applying the Nursing Outcomes Classification (NOC). A key issue is the lack of emphasis on setting expected outcomes during education, leading to gaps in students' ability to measure and assess these outcomes (Kautz et al. 2006; Rabelo-Silva et al. 2017). The complexity of NOC itself also presents barriers, with limited educational resources and teaching strategies available to convey its use (Müller-Staub et al. 2015). This was also reported by the teachers who took part in this study. This lack of clarity impacts the measurement of outcomes, compromising the quality of care and patient well-being. Addressing these challenges requires better educational materials, comprehensive training, and a focus on the practical application and evaluation of nursing outcomes both in educational and clinical settings.

The use of diverse teaching and assessment methods, such as situation-solving assignments, group work, and simulations, is essential for fostering critical thinking and patient-centred decision-making. However, the study identified a reliance on existing materials and a lack of independent reasoning among students, particularly in selecting appropriate NIC and NOC classifications. This finding corroborates Kautz et al. (2006), who stress the need for consistency in instructional methodology to enhance proficiency in applying standardised language in clinical tasks.

The study underscores the significance of faculty training and support in teaching the NNN system effectively. Faculty members reported challenges related to the availability of learning materials, resistance to adopting standardised nursing models, and inconsistencies in teaching approaches. These issues align with the recommendations of Taghavi Larijani and Saachi (2019), who advocate for continuous and structured faculty development to ensure the accurate and effective use of the NNN system.

The development of students' critical thinking skills and their ability to utilise scientific literature is vital for making informed decisions within the NNN framework. The study found variability in the integration of evidence-based practice, despite increasing referencing requirements in later years. This gradual approach, transitioning from textbook reliance to a more nuanced, research-supported understanding, is in line with the suggestions of Clemett and Raleigh (2021).

Practical experience and clinical training are crucial for bridging the gap between theoretical knowledge and real-world application. The study highlighted the need for en-

hanced guidance in developing nursing care plans and immediate feedback during clinical internships. These findings align with literature emphasising the role of simulation and practical training in preparing students for real-world scenarios (Mousavinasab et al. 2020).

A supportive learning environment is essential for reducing students' fear of making mistakes and fostering confidence and competence. The study's findings on the importance of such an environment are echoed by Zhang et al. (2022), who stress the need for positive faculty–student relationships and constructive feedback.

The need for an electronic health record (EHR) system supporting the NNN system in nursing documentation is clear from both the literature and the findings of this study. Currently, Estonia lacks an academic EHR system that enables students to practically apply the NNN system, presenting a barrier in both education and clinical practice.

Integrating technology into nursing education, such as the use of academic electronic medical records (AEMRs), enhances critical thinking, decision-making, and documentation skills by providing realistic case studies and simulated learning experiences (Mountain et al. 2015; Bowling 2016; Mollart et al. 2020). However, the absence of such systems in Estonia limits students' ability to apply their knowledge in practice, leading to documentation inconsistencies and a lack of confidence in using the NNN system effectively (Naelapää 2018; Nool et al. 2023).

While challenges such as high costs and technical issues (Mollart et al. 2020) persist in implementing EHR systems, their benefits are evident, including immediate feedback and improved accuracy in nursing records, ultimately enhancing patient care (De Groot et al. 2020; Fennelly et al. 2021). In conclusion, there is a pressing need for the development of an academic EHR system in Estonia that supports the NNN system. This would allow students to refine their documentation skills in a simulated environment, bridging the gap between theoretical knowledge and practical application. It would also better prepare students for real-world clinical settings, improving the quality of nursing care and patient outcomes.

Recommendations. Based on the findings, several recommendations can be made to enhance the teaching of the NNN system in nursing education. These include the development of local language learning materials, strengthening practical learning through simulations, harmonising faculty understanding and teaching methodologies, creating clear guidelines for assignments and using valid assessment instruments across all courses, ensuring continuity in the integration of the human-centred philosophy and the NNN system across the curriculum, and improving collaboration between practice and education.

To enhance learning, students need to be taught to independently collect and analyse the data of a patient's health status using a variety of validated measures, to document the results of the measurements, to discuss the clinical reasoning of their choice of diagnoses, interventions and expected outcomes, and to justify their decisions to reach a common consensus. Teachers should place more emphasis on the importance of setting human-centred nursing goals and assessing both nursing-sensitive and patient-reported outcomes and teach students to use NIC (Butcher et al. 2018, 2023) and NOC (Moorhead et al. 2018, 2023) textbooks in Estonian for clinical decision-making. The assessment of learning outcomes must involve a diverse and structured set of metrics (Clemett and Raleigh 2021), and feedback to the student should be immediate and rather in the form of individual reflection and dialogue.

These recommendations align with broader literature on the need for consistent and comprehensive training in SNL to improve nursing practice and patient outcomes (De Groot et al. 2020; Fennelly et al. 2021).

5. Conclusions

This study highlights key areas of improvement in nursing education. The integration of nursing outcomes across the curriculum is essential for applying theoretical knowledge in practice. Faculty development is critical, ensuring educators are equipped to adapt to evolving nursing frameworks, directly impacting educational quality.

A human-centred approach remains vital, and students must be prepared to embrace this philosophy. The lack of Estonian-language educational materials for NOC and NIC frameworks has been already addressed with the recent publication of these resources.

Fostering critical thinking and clinical reasoning is key, supported by simulation-based learning and mentorship with experienced nurses in internship bases. However, many practicing nurses lack confidence in using the NNN system, emphasising the need for comprehensive training to ensure effective student mentorship.

Collaboration among educators and professionals is crucial for ongoing improvement in nursing education. The faculty members serve as advisors to national institutions, advocating for the integration of the NNN system into the development of a unified electronic health information system to support nursing clinical decision-making and documentation. An online course, Practical Implementation of the 3N System, has been introduced, with a survey underway to assess its impact on students' knowledge and attitudes towards the enhanced nursing process.

Data availability statement

The curriculum and course information analysed in this study are fully included within the article. Due to the sensitive nature of the qualitative interview data and the need to protect participant confidentiality, the full transcripts or raw data cannot be made publicly available. All findings are reported in a generalised and anonymised manner.

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Õppejõudude kogemused ja seisukohad standardiseeritud õenduskeele õpetamisel õendusõppe üliõpilastele: etnograafiline uurimus

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Hoolimata edusammudest tervishoius on NNN-süsteemi – standardiseeritud õenduskeel, mis hõlmab NANDA-I diagnoose, NOC tulemusi ja NIC sekkumisi – rakendamine Eesti terviseinfosüsteemis olnud aeglane. Uuringud erinevates tervishoiuasutustes näitavad jätkuvaid lünki õendusdokumentatsioonis, mida süvendavad piiratud tehnoloogiline tugi ning kolleegide ja juhtkonna ebapiisav toetus. Need probleemid kahjustavad patsiendihoolduse kvaliteeti, teenuste järjepidevust ja terviseinfo jagamist tervishoiutöötajate vahel.

Empiirilised vaatlused näitavad, et õdedel on puudulik haridus standardiseeritud õenduskeele olulisuse ja praktilise kasutamise osas. Selle probleemiga tegelemiseks viisime Tallinna Tervishoiu Kõrgkoolis läbi etnograafilise uuringu, analüüsides õe õppekava ja intervjueerides 13 õppejõudu, et tuvastada NNN-süsteemi õpetamist soodustavad ja takistavad tegurid. NNN-klassifikatsioonide õppimine moodustab õppekavas 210 EAP-st 125, hõlmates järjest keerukamaid juhtumipõhiseid ülesandeid. Väljakutseks on tudengite kalduvus tugineda olemasolevatele materjalidele iseseisva kliinilise mõtlemise asemel, eriti sobivate NIC-sekkumiste ja NOC-tulemuste valimisel. Õppejõudude intervjuudest koondati 84 koodi, mis jagati kaheksasse põhikategooriasse, tuues esile nii tugevused kui ka parendusvaldkonnad. Nende tulemuste põhjal soovime arendada NNN-i praktilist õpet õppekavas ning pakkuda täiendkoolitust juba töötavatele õdedele.