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## Research

## Digital Documentation—A Nonprioritized Subject in Higher Nursing Education. A Qualitative Study With Educators

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## A B S T R A C T

## Keywords:

nursing education  
 postgraduate program  
 digital documentation  
 anesthesia care  
 operating room nursing  
 intensive care nursing

**Purpose:** To explore how educators in postgraduate nursing programs in anesthesia care, operating room care, and intensive care nursing—both in academic and clinical settings—experience teaching digital documentation in theory and practice.

**Design:** Qualitative descriptive study using thematic analysis by Braun and Clarke.

**Methods:** Individual interviews were conducted between April and August 2023 with 12 participants, including faculty members at the universities and clinical supervisors (10 women, 2 men). The participants were between 37 and 72 years of age (mean, 52 years) and had between 1 and 15 years (mean, 6 years) of work experience.

**Findings:** Two themes were identified: (1) “Faculty members’ contradictory attitudes and opinions regarding the content, importance, and need for documentation in patients’ electronic medical records in perioperative care” and (2) “The relationship between universities, healthcare providers, and individuals.” Subthemes included the lack of consensus on teaching digital documentation, factors influencing successful teaching, prioritizing patient-oriented competencies and tasks, and viewing documentation as a potential obstacle to care.

**Conclusions:** The topic of documentation is often a low priority. Higher education and clinical practice lack a consensus on the purpose, content, and methods for teaching documentation. Thus, greater attention is needed to clarify the purpose of documentation, particularly digital documentation, and to define relevant teaching content. Digital competence can better prepare students for future work and reduce technostress. The goal should be to narrow the gap between “work as imagined” and “work as done.”

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## Digital Literacy in Nursing Education

Digital literacy is defined as the skills required to live, learn, and work in a digital society.<sup>1</sup> It requires skills in health informatics, blending theoretical knowledge with the utilization of diverse digital tools, such as electronic medical records (EMR, here also referred to as information technology systems)<sup>2</sup> within an interprofessional context.<sup>3</sup> EMRs include patients’ medical history, diagnoses, and past and current prescriptions in a digital format.<sup>4</sup> In a scoping review, Nes et al<sup>5</sup> highlighted that higher nursing education (in postgraduate nursing programs) must provide nurses with the necessary knowledge and skills needed to use technical tools, as the health care work environment becomes more technology-based.

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Such knowledge and skills can be gained through simulated electronic documentation, using diverse teaching methods, and evaluating knowledge.

Alowais et al<sup>3</sup> presented several pedagogical strategies to ensure the development of competencies necessary in health informatics, pointing out that success in digital education requires collaboration between workplace system designers and institutions in higher education, particularly through the assessment of digital tools and competencies in health informatics.<sup>3</sup> Besides developing necessary skills in health informatics, consistent access to EMRs and structured training for nursing students, offered as mandatory modules, are important to gain competency in digital literacy.<sup>6</sup> Stanceski et al<sup>5</sup> reported wide variations in teaching methods, with some programs providing mandatory EMR training, and others offering none. Moreover, factors such as age, education, prior experience using EMRs, and involvement in developing the digital systems have been associated with competence levels.<sup>7</sup> In their study, Kinnunen et al<sup>7</sup> found that only half of the nurses had received training on technology, and that one-third reported insufficient training.<sup>7</sup>

Another study revealed that nurses who had received training in information management, data protection, information security, and information systems had higher competence in nursing informatics, specifically in electronic documentation. Younger nurses, and nurses in specialized and elderly care, had the highest levels of competence.<sup>8,9</sup>

Digital literacy, including health informatics, is considered one of the most important skills nurses must master in the 21st century. It is therefore essential that digital literacy be integrated into nursing curricula and maintained through continuous education in clinical practice.<sup>10</sup> Earlier studies suggest that there has been little focus on technological literacy and competence in the undergraduate nursing curriculum,<sup>11</sup> a gap that persists even today. Ralph et al<sup>12</sup> claimed that courses in digital literacy and health informatics together accounted for only 2.7% or 2.1% of the undergraduate nursing curriculum in Australia. Similarly, in Sweden, as in Norway, national guidelines recommend that nursing education include digital competence and health informatics.<sup>13</sup>

Despite having good skills in using social networks and common software programs, a study by Costa et al<sup>14</sup> indicated that students still had a low level of digital literacy. Other studies have found a wide range in students' computer competencies.<sup>15,16</sup> Nes et al<sup>5</sup> revealed that educators teach and measure technological literacy in nursing in different ways, and that the maintenance or long-term learning and assessing is often unsatisfactory. These findings highlight the need for educators to develop a comprehensive understanding of what, how it should be taught, and when instruction should occur.

### Swedish Higher Nursing Education

In Sweden, nursing education is offered at two levels: a 3-year undergraduate program leading to a Bachelor's degree in nursing sciences, and a 1-year postgraduate program leading to a Master's degree in nursing sciences, along with a professional qualification in their respective field (such as anesthesia care, operating room care, or intensive care).

To be eligible for the postgraduate program, most universities and university colleges require at least 1 year of work experience in nursing. This means that postgraduate students are already acquainted with health care documentation before entering the program. The postgraduate program spans 40 weeks, approximately 10 of which are dedicated to clinical placements. The remaining 30 weeks consist of theoretical coursework and writing a thesis.

Clinical placements are planned and arranged by a clinical supervisor, usually a more senior nurse with training in clinical teaching. During the placement, students are usually assigned one or two preceptors with whom they work closely. Together with the

preceptor, the student develops a placement plan tailored to the student's goals and learning needs, with support from the clinical supervisor. An increasing number of units are also adapting peer-learning as a model for clinical teaching.

### Health Informatics—A Core Competency in Nursing

Competence in informatics is defined as the ability to “use information and technology to communicate, manage knowledge, mitigate error, and support decision making.”<sup>17</sup> In Sweden, health informatics is recognized as one of six nursing core competencies. This includes the ability to work in high-technology environments, participate in the development of EMRs, and ensure the secure transmission of patient information throughout the entire care process.<sup>18–20</sup> Competence in health informatics, along with the ability to document, locate, and understand information, is also imperative to ensure patient safety.

Competence in health informatics is integrated into the nursing program. During clinical training, students are assessed on their ability to effectively communicate information about patient care orally within the health care team, as well as on their proficiency in using EMRs correctly. They must also understand how to collect and use information to support the development and improvement of patient care.<sup>21,22</sup>

### The Context of Perioperative Care and Documentation Effects in the Work Environment

Perioperative care is unique due to its complex nature.<sup>23</sup> Perioperative nurses (such as nurse anesthetists and operating room nurses) must prioritize direct patient care while simultaneously documenting that care in the patient's EMR. In particular, during “emergency situations,” immediate patient care must proceed effectively even without reliance on the EMR.<sup>2</sup>

Documentation in perioperative care mainly involves gathering information before surgery or anesthesia, including the patient's health history, allergies, nutritional status, planned surgical or anesthesia methods, individualized nursing care plans, and patient monitoring. Documentation occurs in real time, for example, recording vital signs, medications given and other actions taken, instruments used during surgery, performed procedures, and postoperative orders. The cognitive workload, often referred to as a cognitive strain in the context of cognitive ergonomics, relates to the amount of information a nurse must process, remember, and document. For example, after an emergency, recalling and accurately recording all necessary details can be mentally demanding and may be perceived as stressful.

The shift from paper-based medical records to EMRs has been gradual in perioperative organizations, placing new demands on health care workers and adding new work tasks.<sup>24,25</sup> This shift has been associated with increased physical,<sup>26</sup> mental,<sup>27</sup> and cognitive<sup>28</sup> workload.<sup>25</sup> Stress caused by the use of EMRs is often referred to as technostress.<sup>29</sup> Goldschmidt<sup>30</sup> emphasized that nurses need adequate knowledge and competence to provide safe patient care via digital tools. Furthermore, she argued that prerequisites, such as knowledge, education and training, organizational support, leadership,<sup>30</sup> and well-designed digital or EMR systems,<sup>31</sup> were needed for safe and effective technology use in the organization and for reducing technostress.

Although EMRs are well known in health care today, the rapid development of new applications is still challenging for nurses, indicating that EMRs have not yet reached their full potential to ease the workload and improve efficiency, cost-effectiveness, and patient safety.<sup>32–34</sup> Protecting patient safety, identity, and integrity is essential in perioperative settings, especially when working with patients' EMRs.

In summary, with the development of new digital systems within EMRs, new challenges are placed on nurses, contributing to increased workload and stress in perioperative care. Digital literacy is an essential prerequisite for effective EMR usage; however, research raises questions about whether nurses possess the competencies required in health informatics. Research also indicates that successful digital education for nursing students requires closer collaboration between higher education institutions and clinical settings. Notably, there is a lack of studies specifically addressing the education of perioperative nurses in digital documentation within perioperative settings.

## Purpose

To study how educators in postgraduate nursing programs in anesthesia care, operating room care, and intensive care nursing—both in academic and clinical settings—experience teaching digital documentation in theory and practice.

## Methods

### Design

This study had a qualitative descriptive design, which is well-suited for capturing people's experiences and perspectives.<sup>35</sup> It followed the Consolidated Criteria for Reporting Qualitative Research checklist.<sup>36</sup>

### Participants

Twelve educators (two men and 10 women) involved in postgraduate nursing programs in anesthesia care, operating room care, and intensive care at four universities, two university hospitals, and

one county hospital in Sweden were invited to participate; all accepted. Inclusion criteria were university lecturers and clinical supervisors who were involved in, or responsible for, teaching students in postgraduate specialist nursing programs in anesthesia care, operating room care, or intensive care, either on-campus or at clinical sites. There were no exclusion criteria.

Of the participants, five were university faculty members: two associate professors, one adjunct and clinical supervisor, three adjuncts, and three clinical supervisors, all of whom had Master of Science degrees. The participants were between 37 and 72 years of age (mean, 52 years), and had between 1 and 15 years (median, 6 years) of experience in education.

### The Interview Guide

An interview guide with semi-structured open-ended questions was designed for this study (Table 1). The main questions were about how documentation in patients' EMRs was taught during on-campus teaching and clinical training; the goals of this teaching and how learning was examined; how patient safety issues in connection with documentation were addressed; how teaching elements were evaluated and adapted to meet the demands placed on students in their future work environments; and how work environment issues were discussed. Follow-up and probing questions were asked, and participants were asked to give examples from their interactions with students to enrich the depth of the interviews.

### Data Collection

The last author, who has experience in qualitative research, conducted the interviews between April and August 2023. All interviews, which took between 27 and 65 minutes (mean 47 minutes), were performed via video conference (n = 8) or telephone (in

**Table 1**  
The Interview Guide

Background Question	Age, Gender, Occupation, Experience, Academic Education
Main questions	<p><i>University personnel in anesthesia care, operating room care, and intensive care</i></p> <ol style="list-style-type: none"> <li>How much of the curriculum of your educational program is dedicated toward digital tools, such as documentation in patients' electronic medical records? <ul style="list-style-type: none"> <li>● What is the goal of this content of the curriculum?</li> <li>● What teaching of theoretical knowledge do you have?</li> <li>● What kind of hands-on training is there?</li> <li>● How is this part of the curriculum examined?</li> </ul> </li> <li>How do you discuss patient safety and other security aspects pertaining to digital documentation, and particularly in connection to technical disturbances or hostile actions?</li> <li>Priorities and safety aspects regarding the patient: how do you discuss strategies and prioritization in the case of patient emergencies (eg, hemorrhaging or other situations requiring full focus on the patient)?</li> <li>In your opinion, how well does your curriculum and examinations prepare the students for clinical work?</li> <li>How does your teaching correspond to the demands of clinical reality? <ul style="list-style-type: none"> <li>● What are your ways of ensuring this?</li> <li>● How do you ensure the congruity between the content taught and clinical needs?</li> <li>● How is the teaching content regarding documentation in patients' electronic medical records evaluated, and what opinions have been uttered by the students?</li> <li>● How do you use the student's opinions when developing your teaching?</li> </ul> </li> <li>How well would you say your students are prepared for challenges in regards of digital technology in their future work?</li> <li>How do you discuss the student's future occupational environment during the educational program?</li> <li>Is there anything you'd like to add?</li> </ol> <p><i>Questions to clinical supervisors and adjuncts in perioperative settings</i></p> <ol style="list-style-type: none"> <li>How and what do you teach about documentation in patients' electronic medical records in clinical settings? <ul style="list-style-type: none"> <li>● What is the main teaching form at the clinical sight? Group sessions or individual learning by "following their clinical preceptors"?</li> </ul> </li> <li>What kind of hands-on training do you offer? Please describe how with real-life examples.</li> <li>How do you discuss patient safety and other security aspects pertaining to digital documentation, and particularly in connection to technical disturbances or hostile actions?</li> <li>Priorities and safety aspects regarding the patient: how do you discuss strategies and prioritization in the case of patient emergencies (eg, hemorrhaging or other situations requiring full focus on the patient)?</li> <li>Is there anything you'd like to add?</li> </ol>
Probing questions	Please tell more. What do you mean? Please explain.

**Table 2**  
The Thematic Analysis Steps According to Braun and Clarke

1. Reading through the interview several times to grasp the whole. This is a familiarization phase, and reflective notes were recorded.
2. Coding, reflecting together, and recoding.
3. Preliminary themes were identified based on similarities and differences in the codes.
4. Themes were revised.
5. Defining the final themes and describing their contents. The interviews were then read through by the end, this time with the themes in mind, to ensure that they reflected the entire data.
6. Writing the results. The content of the final themes was written.

case of technical issues,  $n = 4$ ). All interviews were audio recorded and transcribed verbatim for analysis.

The first interview was considered a test interview. As no changes were deemed necessary in the guide after the first interview, this interview was included in the final analysis.

#### Data Analysis

The six steps of the thematic analysis method, according to Braun and Clarke,<sup>37</sup> were chosen as the analytical method. The analysis was conducted inductively with an open mind (Table 2). The results presented are based on several discussions among all the authors. No new information was identified after eight interviews. However, the rest of the interviews were analyzed to minimize the risk of overlooking important information. An example of the analysis process is presented in Figure 1.

#### Ethical Considerations

The study was approved by the Swedish Ethical Review Authority (Dnr 2023-01916-01). It followed the Declaration of Helsinki

regulations,<sup>38</sup> as well as local ethical guidelines and regulations. Informed consent was obtained from each participant before the study.

#### Findings

Two themes and five subthemes were identified. The themes and their content are presented in Figure 2.

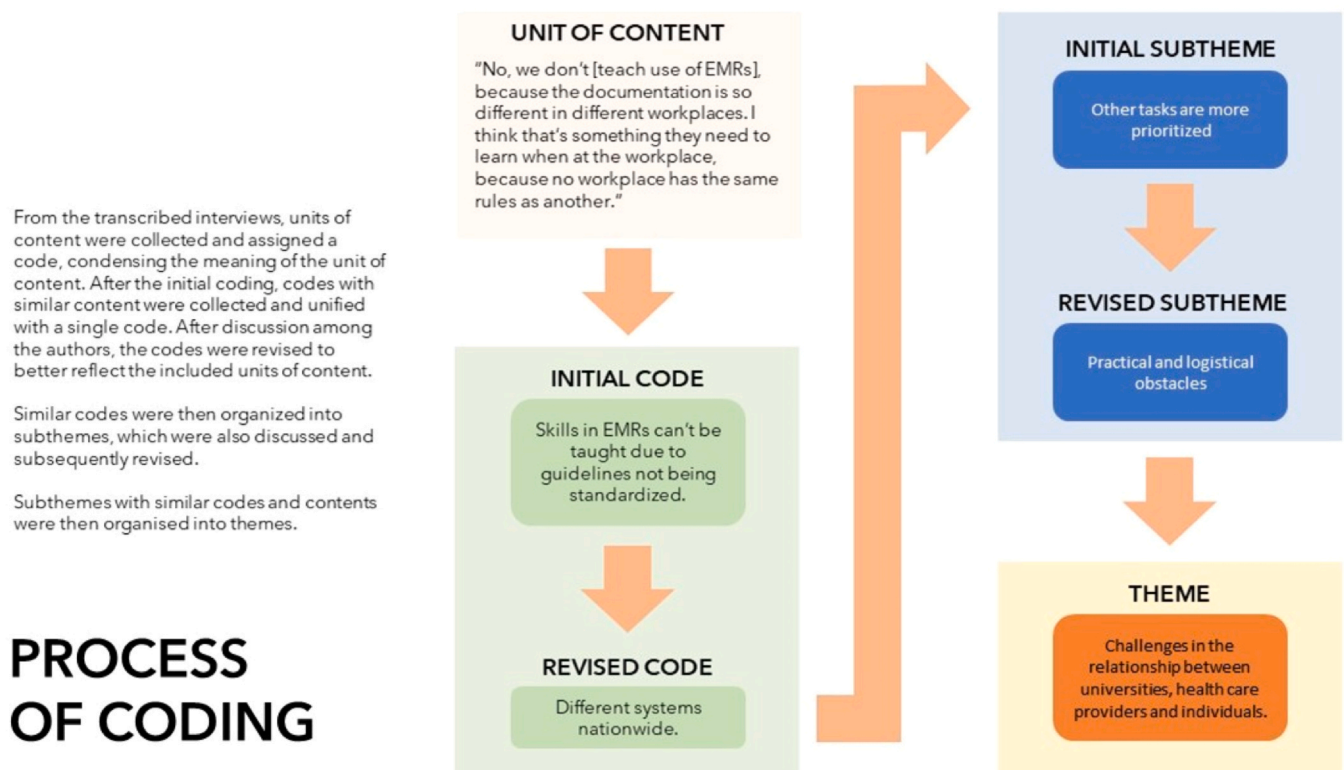
##### Theme 1: Faculty Members' Contradictory Attitudes and Opinions Regarding the Content, Importance, and Need for Documentation in Patients' EMRs in Perioperative Care

Informants voiced personal opinions about the content, the importance of teaching digital documentation and EMR systems in clinical and perioperative settings, and the importance of mastering these tools in relation to other clinical skills needed. They also described the issue as having two sides. As informant 3 expressed, "how much time should we [universities and colleges] put toward documentation in patients' EMRs and steal from the students' clinical training?" This indicates that EMRs were sometimes deemed less significant compared to other skills.

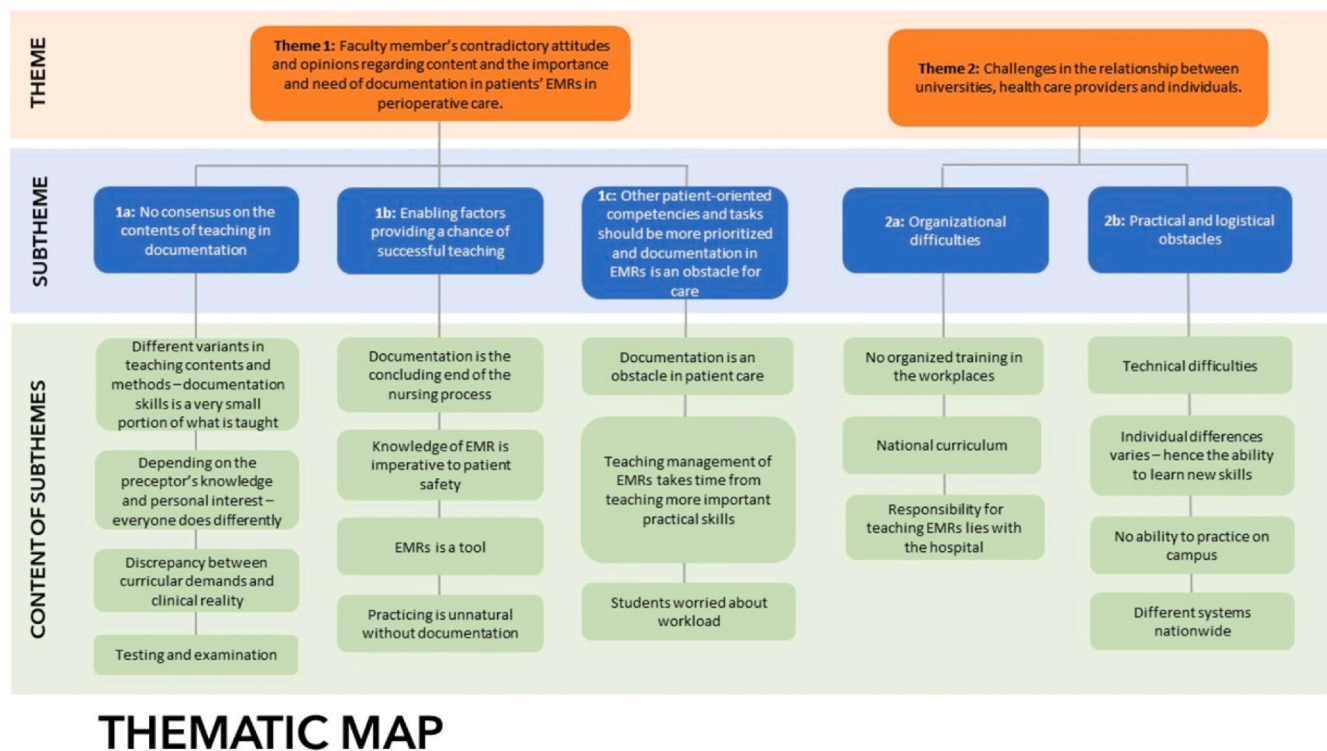
##### Subtheme 1a: Lack of Consensus on the Content of Teaching Documentation in Perioperative Care

Teaching regarding documentation in EMR-related skills and tools made up only a very small portion of the curriculum. These elements were generally taught as part of other topics, such as discussions about specific cases or other seminars, and mostly during clinical training.

Faculty members from different universities pointed out that their curricula focused on general theoretical knowledge, for example, the content of documentation, rather than teaching specific



**Figure 1.** Process of coding. EMR, electronic medical records. This figure is available in color online at [www.jopan.org](http://www.jopan.org).



**Figure 2.** Thematic map. EMR, electronic medical records. This figure is available in color online at [www.jopan.org](http://www.jopan.org).

tasks and routines about the documentation in patients' EMR applied at their respective hospitals. This was due to national regulations governing the content of educational programs and the fact that the degree awarded made it possible to work anywhere in the country.

*"[Documentation is] a teeny tiny bit [of the curriculum]; it's about digital tools... Some little theoretical moment, but pretty much only during clinicals."* (Informant 7)

There was no apparent consensus regarding the content in the subject of documentation, and teaching varied across the included universities and colleges. Those who reported they had more specific training in documentation skills had a broader focus on documentation itself rather than on the use of EMRs. Informants emphasized that students must be able to handle digital tools as part of informatics and know where to find relevant information within different digital systems.

It was revealed that teaching content in documentation and informatics varied among the participating universities in this study. Some focused on the structure of informatics (Informant 2), learning what parts are essential to document (Informants 2, 3, and 7), following patient security regulations (Informants 1 and 5), documenting deviations from "typical" nursing care (Informant 2), or that one was obligated to document according to the law (Informants 2 and 3), for example, following the Swedish Association for Anesthesia and Intensive Care guidelines (Informant 3). Others focused on teaching different checklists and risk evaluations, such as the World Health Organization's surgical safety checklist (Informant 6), evaluation scales such as pain or sedation scales (Informant 4), and documenting care plans (Informants 2, 6, 7, and 8).

*"Informatics, its structure, and the reasons for the structure, standards, classifications, terminology...legal aspects of documentation, that we are obligated to document, the goals, the plan we make, and*

*the evaluation of care in a care plan— are what I teach (at the university)"* (Informant 2)

Students in anesthesia care were required to document physiological parameters, with a special focus on the airway, as well as care measures such as keeping the patient warm to prevent hypothermia, for example, and documenting patient positioning. Operating room nurses, on the other hand, focused on documenting pressure marks on the patient's skin in addition to the instruments used during surgery. Both groups also documented any deviations from the "normal care process," verified patient identity, and recorded the organ being operated on. Informant 10 highlighted concerns about changes in documentation for specialist nurses in anesthesia and operating rooms, noting that "nurses are good at documenting, but the way documentation is done in specialist care is not the same [as for registered nurses who work in settings other than perioperative care]." This reflects that specialists must chart differently and are governed by the existing templates within the EMR documentation systems.

According to the informants, documentation skills were assessed during clinical training as part of the curriculum, together with other components of patient care. Faculty members at the universities generally "trusted the preceptor's judgment" (Informant 1).

The informants also reported that there were no formal teaching elements regarding the work environment, including the increased workload caused by EMRs, cybersecurity, or preparatory measures available in case of major digital system breakdowns. However, issues regarding the work environment and patient safety were discussed based on students' experiences after clinical training.

#### *Subtheme 1b: Enabling Factors Supporting Successful Teaching of Documentation in Perioperative Care*

Enabling factors included positive views toward documentation in patients' EMRs; for example, the ability to master digital

documentation tools was seen as essential for achieving patient safety, and documenting one's work was viewed as a natural end to the care process, serving as a way to evaluate the effectiveness of nursing and medical interventions.

Some informants expressed that they had actively worked to integrate digital documentation more fully into educational elements, such as simulation exercises and other on-campus clinical training.

*"When they [students] do the simulation, many of them think it's quite unnatural, since the normal procedure is to chart what has been done, [...] that's kind of the ending of the care process, and I've actually missed that before."* (Informant 5)

#### *Subtheme 1c: Other Patient-oriented Competencies and Tasks Should Take Priority, as Documentation in EMRs Is Seen as an Obstacle to Care in the Operating Room*

The view that other patient-oriented clinical skills should be prioritized mainly came from the opinion that documentation in patients' EMRs tended to be more of an obstacle in patient care, diverting focus away from the patient.

Teaching students to master digital tools and, more specifically, documentation in the EMRs, was viewed as taking time away from learning more critical practical skills closely connected to patient care. Informants reported that students expressed concerns regarding their future work environments in relation to the EMR systems: *"we're having a full plate trying to keep up when we're two students [peers in clinical training], so how do they [the preceptors and the employees] manage on their own?"* (Informant 3), pertaining to the mental workload imposed by EMRs.

*"Charting takes time from the patient, especially when charting needs to be done in several different EMR systems [parallel with patient care activities] ... and instead of focusing on the patient, students end up looking at different computer screens."* (Informant 8).

*"... in the clinical training, they [preceptors] often say, 'oh, don't worry about charting right now; you're supposed to learn anesthesia. I [the preceptor] can do the charting, and you can learn it later.'" (Informant 5)*

Informants also stated that *"the digital documentation can become an obstacle when people haven't learned to use it properly; it kind of becomes a safe space"* (Informant 12). This means that both students and clinicians sometimes prioritize EMRs over taking care of the patient because the computer is a safe haven of information when things become stressful and critical. As humans, we naturally gravitate toward what feels known and safe.

#### *Theme 2: The Relationship Between Universities, Health Care Providers in Perioperative Care, and Individuals*

Several challenges were reported regarding the relationship and cooperation between universities, hospitals, and preceptors in health care settings, particularly around their shared responsibilities. These challenges impaired the possibility of successful and productive teaching of digital documentation.

#### *Subtheme 2a: Organizational Difficulties in Perioperative Care*

The organizational difficulties mainly stemmed from a discordance between the nationally regulated curriculum and the needs of clinical practice. Informants exemplified this with the curricular requirement for students to produce a care plan. While care plans are rarely used in perioperative care, they are more common in intensive care. Informants also noticed variability in the training in the use of

EMR systems that health care providers offer their staff. According to the informants, this inconsistency could lead to situations where the staff and, more particularly, the preceptors, often had differing levels of competence, which depended heavily on personal interest and individual attitudes. As a result, students sometimes received very different strategies and guidance from their preceptors.

*"There are colleagues [who are preceptors] that don't even open the EMR to read the patient's chart, and think they just need to know that the patient has a fracture on their right femur..."* (Informant 1)

Informants noted that continuing education for preceptors was often lacking. Thus, students' clinical training was more of a "learning by doing" process, based on the individual knowledge and working methods of their preceptors rather than on a structured teaching approach.

Several informants expressed that responsibility for training in certain EMR systems rested with the employer, not the educational institution (university and college).

As informant 7 highlighted,

*"the product I deliver is general competence; then it's the employer's responsibility to teach their employees about the particular makes and models in use in their particular workplace."*

*"The clinic is heavily burdened and doesn't have the resources to organize some kind of theoretical tuition for the students about the digital documentation [in patients' EMRs], so they [the students] need to tag along with their preceptor and then it's simply learning by doing."* (Informant 12)

To synchronize the content of theoretical and clinical teaching in general, several meetings were held between the universities and clinics according to the informants; however, these meetings did not specifically address documentation or EMRs.

#### *Subtheme 2b: Practical and Logistical Obstacles in Perioperative Care*

The practical and logistical obstacles mainly stemmed from individual differences within the student body, such as age, previous experience, and computer skills. Informants described these as complicating factors, instigating variability in students' ability and need to master new skills, making it difficult to develop curricular content suitable for most students. They also reported a range of issues of a more technical character, such as the lack of campus access to mock versions of EMR software and the absence of personal EMR accounts for students during clinical training. These limitations impaired students from becoming familiar with the EMR systems. Informants also expressed that students were already acquainted with working with several software programs from their previous nursing careers and that skills such as informatics should be taught in the general nursing program, as these are considered core competencies for nurses.

*"The issue is that everyone new is from different age categories. Some are new to anesthesia. They can be everywhere from 30 to 40 to 50, almost 60 when they specialize, and then they have a totally different experience from using the systems."* (Informant 12)

*"We [at the universities] don't have anything [access to software systems for documentation in EMRs in healthcare], since they're supposed to chart in three different digital EMR-systems. It's totally impossible to do, make time for, and especially to gain access to these different systems for teaching [as the systems exist in the hospitals and are not available for the universities to use]."* (Informant 2).

Informants also noted that the ability to teach about EMR systems was impaired by the fact that multiple EMR systems are used across health care organizations nationwide.

Because students may encounter a myriad of digital systems depending on their choice of future employer, faculty members stated that it was impossible to educate them on all EMR systems. One informant explained, “*we are educating for the whole country, so that’s something they [the students] need to learn in the workplace.*” (Informant 8).

## Discussion

The most important finding in this study was the lack of consensus on “what” the subject of documentation should contain. Although the focus of teaching was on content, participants described that different material was taught at different universities and university colleges. In our opinion, clarifying and agreeing on the “what” should be the first step before addressing “how” and “where” to chart in patients’ EMRs. Kinnunen et al.<sup>7</sup> highlighted that one-third of nurses lacked training, while Alowais et al.,<sup>3</sup> Nes et al.,<sup>5</sup> and Stanceski et al.<sup>6</sup> confirmed the need for education in health informatics to increase competency and digital literacy among nurses. These findings point to the need for collaboration between educators, systems designers, and clinical settings.

Another essential step in reaching consensus and setting a direction for the curriculum is to understand “why” correctly executed documentation is necessary—and for whose sake the documentation is being done—besides simply knowing that it is to secure an information transfer between professionals, wards, and facilities. It is also critical to understand the negative consequences of misplaced information for patient care. For example, documenting with the purpose to address legal aspects and trace events when something goes wrong (medication and so on) is different compared to documentation needed to support postoperative care or to provide the surgical ward with essential information after surgery. Kaihlanen et al.<sup>39</sup> confirmed the connection between education in information management, data protection, and information security and related competencies. Interestingly, here, an emphasis on security issues was lacking in the theoretical education. This responsibility, too, was largely transferred to the clinical setting.

It seemed that when talking about documentation, faculty members understood it as the EMR systems, rather than with the EMR basics, that is, their “why,” “what,” and content. As the universities lacked access to EMR systems for practice, it was clear that the responsibility for teaching the “how” automatically relied on the clinics. Very little attention was given to the digital work environment (ie, possibilities and hindrances—physical, organizational, social, and cognitive, created by digital support systems and tools<sup>31</sup>), technostress, or issues related to the increased workload caused by digital documentation in patients’ EMRs.<sup>40</sup> The absence of consensus on what should be documented and everyone documenting in their own way may affect the digital work environment negatively, contributing to stress and reduced patient safety. Without a clear path to follow nationally, the responsibility for teaching the “how” fell to preceptors, each with different ways of working with patients’ EMRs. In our view, this may have resulted in discrepancies between what was taught and what was actually done, that is, work as imagined and work as done in operating rooms. Nes et al.<sup>5</sup> proposed that simulation and other teaching methods could be valuable in educating students about electronic documentation, and that evaluating knowledge is equally important.

The third salient finding was the prevailing attitude that documentation detracts from actual patient care. Informants tended to view the two as separate—there is patient care, and there is documentation, which is concerning. Almost all participants agreed that documentation was a diminished part of the total curriculum, with students instead learning it primarily through a learning-by-doing approach during clinical training. On the other hand, clinical

supervisors reported being unable to offer a collective teaching to students other than students “following the example of their supervisors.” These perceptions, combined with the limited time available in the 1-year specialist nursing program—which must cover many topics, may be the reason why documentation is given such low priority despite its central role in nursing activities and patient care. Additionally, learning from the different practices of documentation executed by various preceptors may result in the future workforce having diverse skill levels and approaches.

The participants also appeared to adopt more of a “button pressing perspective,” viewing documentation more as a matter of learning how to operate an EMR system. In teaching, however, the focus should instead be on understanding what, why, and where to document so that colleagues can easily find relevant information for the patient’s further care. It should also emphasize how different systems can be used in the immediate care of the patient as tools for interpreting different data and detecting changes in the patient’s well-being.

In total, the topic of the digital work environment and related technostress received little attention in the education program. This gives the impression that students’ preparation for these challenges begins when they start working, whereas we believe this issue should also be addressed during their education.

We argue that laying a stable ground in digital literacy should begin at the university level and be further developed in the workplace.<sup>2,3</sup> As postgraduate nursing programs are taught in close collaboration between universities and clinical settings or workplaces, it is important to clearly describe who is responsible for each part, what the content of each part should include, and how these should be taught and examined. It is also important to continue to educate nurses in their workplace in developing their work processes to avoid technostress and unhealthy workarounds, as health care is going toward more advanced digital EMRs.

Today, digitalization itself—through diverse digital systems—often controls and shapes the structure of documentation while also highlighting its shortcomings. This places higher demands on user participation<sup>41</sup> in the development of these systems, as well as on user education regarding both the use and overall purpose of these systems. The number of different EMR systems used for digital documentation in Sweden and other countries, such as Finland,<sup>7</sup> works against the standardization of electronic documentation. Elementary knowledge regarding documentation during curriculum preparation for the specific digital work environment in clinics could not only ease the burden of technostress but also help nurses understand how patient data should be organized and displayed. This understanding would also enable future nurses to make informed demands and actively participate in the development of EMRs, making the systems more manageable and useful.

Nurses should therefore engage in advocating for, promoting, and supporting changes that align with their workflow and informational needs in patient care. While this ability may be limited by decisions made at higher up in the organization, it is crucial to address and overcome such barriers. In addition, knowledge and collaboration with experts in human factors are needed to ensure that EMR solutions are well-suited to nurses’ work environments. This would, in turn, likely generate a more positive attitude toward EMRs, enhance their use in patient care, and contribute to a more accurate and standardized documentation process.

## Clinical Implications

Looking ahead, when teaching digital documentation and providing necessary skills in digital literacy,<sup>6</sup> higher education institutions should keep pace with developments in the field by incorporating these advancements into nursing education programs.

Teaching alone is not sufficient; evaluating knowledge is also important, for example, through certification in digital documentation. The alignment between what is taught and what is done in clinical settings should be strengthened. Finally, teaching digital documentation should adopt a holistic approach, addressing not only the mechanics of just clicking in the patients' EMRs or EMR systems but also addressing the underlying purpose of documentation and agreeing about the content.

#### Methodological Considerations and Limitations

Trustworthiness was ensured through research triangulation and peer debriefing to support the study's credibility. Several researchers conducted the analysis, ensuring that the results emerged directly from the raw data. To achieve confirmability, a detailed description of the analysis process was presented. Quotations from the interviews further confirmed that the findings emerged from the data. The analysis steps were described as clearly as possible, allowing readers to assess dependability. The authors' expertise in qualitative research and in relevant areas, that is, work environment, including digital work environments, perioperative care, and teaching at undergraduate and postgraduate levels in nursing, strengthened the scientific rigor of the findings, reflecting reflexivity.

The issues of preunderstanding and objectivity were discussed throughout the study. Professional preunderstanding can provide a deeper understanding of the context, but it also carries the risk of overlooking familiar facts and not being objective in the analysis. To minimize these risks, the text was read through multiple times, and the issues of preunderstanding and objectivity were continuously discussed by the authors of this study, making sure our own preunderstanding did not interfere with the data analysis. Additionally, these risks were further reduced by the diversity of the authors' backgrounds and clinical experience, which contributed to achieving credibility, trustworthiness, and rigor.<sup>35</sup>

The number of participants may be seen as a limitation of the study; however, it was considered sufficient because the data were rich and repeated itself after eight interviews. Qualitative research focuses on "information power" and the "richness of data" rather than the number of participants.<sup>42</sup>

Transferability of the results in qualitative research is considered on a case-by-case basis and is dependent on similar settings.<sup>35</sup> The results of the present study may therefore be valuable in similar settings.

#### Conclusion

The topic of documentation was not prioritized in perioperative care education. There was a disagreement between higher education institutions and clinical settings about why, what, and how documentation should be taught. Documentation in digital form within EMRs is an important and recurring part of perioperative nurses' work tasks, patient care, and the secure transfer of information. Therefore, the purpose and content of digital documentation—and how it should be taught and examined—should be clearly defined. This can be done by clarifying the division of responsibilities between universities and clinics. Educating and training students in digital literacy and health informatics can better prepare them for the future digital work environment in preoperative care and decrease technostress, while also promoting meaningful user participation in the development of EMR systems. Finally, the goal should be to align "work as imagined" with "work as done," ensuring that what is taught in higher education equips perioperative nurses with the knowledge and skills needed to work effectively in real-world practice.

#### ORCID iD authorship contribution statement

**Anna Dahlgren:** Writing – review & editing, Formal analysis. **Magnus Svartengren:** Writing – review & editing, Validation, Resources, Methodology, Funding acquisition, Formal analysis, Conceptualization. **Erebouni Arakelian:** Writing – review & editing, Writing – original draft, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Jessica Lindblom:** Writing – review & editing, Formal analysis. **Björn Eriksson:** Writing – review & editing, Writing – original draft, Validation, Methodology, Investigation, Formal analysis.

#### Declaration of Competing Interest

None to report.

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#### Appendix A. Supplementary Materials

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.jopan.2025.10.013.

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**Appendix A. List of Definitions**

Anesthesia care: Care provided during surgery in which patients receive general, local, or regional anesthesia.

Cognitive ergonomics: The amount of information one needs to retain and document.

Digital literacy: The skills needed for someone to live, learn, and work in a digital society. In other words, this involves gaining skills in health informatics by mixing theoretical knowledge with the utilization of diverse digital tools.

Intensive care: A level of advanced care in Sweden where critically ill patients are always monitored.

Operating room or OR: Care provided by a scrub nurse or operating room nurse during surgery. Operating room nurse or OR-nurse is the title used for a specialist nurse in Sweden who works in the operating room, assisting the surgeon during surgery.

Perioperative context: Care given before, during, and after surgery.

Technostress or digital stress: A high level of stress caused by using an EMR is known as technostress. The concept of technostress originates from the organizational theory of socio-technical systems, where two aspects in organizations become important, namely the social aspect, meaning skills, attitudes, and values; and the technological aspect, which is the work done with the help of technology. Technostress occurs when these two aspects within an organization become imbalanced.