

Nursing students' application of knowledge about pain assessment in surgical practice

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Abstract

Title: Nursing students' application of knowledge about pain assessment in surgical practice

Background: The International Association for the Study of Pain (IASP) has developed specific learning objectives for bachelor nursing students' pain curriculum. Earlier studies emphasise the importance of strengthening knowledge of pain management in nursing programs. Nevertheless, there is little research exploring how nursing students develop and achieve their learning outcomes related to the topic of pain. **Aim:** The aim of the study was to explore how surgical practice students apply their knowledge about pain assessment, and what might affect their learning outcomes. **Methods:** The study followed a qualitative research methodology with a descriptive design. Data were collected from two different modules and student groups in the bachelor program. Part 1: Document analysis of theoretical exam answers (N=12). Part 2: Two group interviews was conducted where students in surgical practice participated (N=6). A qualitative content analysis was carried out resulting in descriptive subtopics and findings. **Findings:** The findings illustrate that participants in surgical practice utilised much of the knowledge described in the exam answers. However, their specific application of knowledge couldt be limited by the supervision situation and unclear routines in the clinic. **Conclusion:** The study illuminates the importance of further research both within theoretical and clinical studies to improve student`s knowledge in pain management.

Key words: *nursing education, pain management, learning objectives, qualitative methods*

Abstrakt

Tittel: Sykepleierstudenters anvendelse av smertekartleggingskunnskap i kirurgisk praksis

Bakgrunn: The International Association for the Study of Pain (IASP) har formulert spesifikke læringsutbyttebeskrivelser innen temaet smerte som er retningsgivende for bachelor-utdanningen i sykepleie. Tidligere forskning fremhever viktigheten av å styrke sykepleierstudentenes kunnskaper innen smertebehandling. Likevel er det gjort lite forskning på hvordan studenter utvikler og oppnår forventede læringsutbyttet relatert til temaet smerte.

Hensikt: Studiens hensikt var å kartlegge hvordan studenter i kirurgisk praksis anvender sine teorikunnskaper om smertekartlegging, og hva som påvirker deres oppnåelse av læringsutbyttene. **Metode:** Studien fulgte et kvalitativt beskrivende design. Data ble innsamlet fra to ulike moduler og studentgrupper i sykepleierutdanningen. Del 1: Dokumentanalyse av skriftlige eksamensbesvarelser (N = 12). Del 2: To gruppeintervjuer av studenter i kirurgisk praksis (N =6). Det ble utført kvalitativ innholdsanalyse som resulterte i beskrivende undertema og funn. **Funn:** Funnene illustrerer at deltakerne i kirurgisk praksis nyttiggjorde mye av den kunnskap som ble beskrevet i eksamensoppgavene. Likevel kunne selve veiledningssituasjonen og uklare praksisrutiner virke hemmende på deres konkrete anvendelse av kunnskap. **Konklusjon:** Studien belyser viktigheten av videre forskning både innen teori- og praksisstudiene med sikte på å styrke studentenes kunnskaper innen smertebehandling.

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3 **Nøkkelord:** sykepleierutdanning, smertebehandling, læringsutbytter, kvalitativ metode
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7 **Nursing students' application of knowledge about pain** 8 **assessment in surgical practice** 9 10 11 12 13

14 **Background** 15 16 17

18 Poorly controlled postoperative pain is a comprehensive and unresolved health problem
19 associated with increased morbidity, disability and lower quality of life, prolonged use of
20 opioids and increased health costs (1). According to the American Pain Society (2) deficient
21 pain assessment is considered the main cause of inadequate pain relief. The International
22 Association for the Study of Pain (IASP) refers to pain as a complex phenomenon that
23 requires comprehensive and continuous assessment and effective treatment (3). The nurse
24 is expected to be able to assess and treat pain, and theoretical knowledge must be applied in
25 practice. Specific objectives for the pain curriculum of bachelor nursing students are
26 described by IASP (3). Earlier studies confirm the importance of strengthening pain
27 management in nursing programs. Keefe and Wharrad (4) describe inadequacy in education
28 as the main barrier to comprehensive pain management. By strengthening nursing students'
29 knowledge of and attitudes to pain management, future patients will experience better pain
30 relief. Romero-Hall (5) highlights the need for better pain management and assessment skills
31 among nurses, and more attention should be paid to this subject in nursing education.
32 Mackintosh-Franklin (6) also considers pain to be a neglected area of the nursing curriculum.
33 Chow & Chan (7) emphasise that pain management is a priority area in nursing, but students
34 find it challenging. Nurse educators need to understand the students' knowledge of and
35 attitudes to pain, and design interventions which strengthen their preparedness in practice.
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3 Granheim, Raaum, Christophersen and Dihle (8) show that nurses and students at surgical
4 wards has theoretical knowledge about pain assessment, but in patient related theoretical
5 cases this knowledge do not always appear. The study illuminates the need to improve
6 knowledge and attitudes related to side effects of opioids. Research shows varied results
7 regarding how Norwegian pain education is organised, the number of instrucyion hours, and
8 teachers' competence (9). The Norwegian pain society (10) has draftet recommended
9 learning outcomes for universities and university colleges educating healthcare personnel.
10 However, these learning outcomes has not been implemented in all bachelor programs in
11 nursing. One of the recommended outcomes is that the student can assess and evaluate
12 patients' pain, including various ways of reporting pain, self-reporting and observation-based
13 assessment (10). The present study was conducted in a Norwegian bachelor's degree
14 program in nursing offering both full-and part-time study program. According to the
15 curriculum`s learning outcomes, postoperative pain management and assessment is a key
16 both in the theoretical module and surgical practice in the second year (Fig. 1). In the
17 theoretical module the topic of pain assessment is presented within the flipped classroom
18 model, where use of varied student-active learning methods promotes students' learning
19 performance (11,12). The module is completed by an exam showing how the students
20 perform knowledge from the literature. In the current surgical practice the peer-learning
21 supervision model is used. Here students are supervised in pairs without immediate
22 influence by the contact nurse. They support and learn from each other through practical
23 critical thinking, collaboration, reflection, problem solving and independence (13).
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25 Søderstrøm and Bjørk (14) distinguish between learning as a relatively permanent change in
26 behaviour and knowledge, and performance as a time-limited and observable skill or
27 knowledge related to an acquisition process. In clinical studies, the students' theoretical
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3 knowledge could be developed and applied in real patient situations, under the supervision
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5 of authorised nurses (15). Situated learning implies that the knowledge is presented in the
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7 situations in which it normally occurs, embedded within activity, context and culture (16).
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10 The aim of the present study was to explore how surgical practice students apply the
11
12 knowledge base from the theory module, and what might affect their learning outcome
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14 about pain assessment. This leads to the following research question: *How do nursing*
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16 *students apply theoretical knowledge about pain assessment in surgical practice?*
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25 Methodology

26 Design and setting

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29 The study followed a qualitative research methodology with a descriptive design (17–19).
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32 We chose a combination method (20) where we used exam answers and group interviews as
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34 empirical material. Data was collected from November 2017 to February 2018.
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40 **Part 1.** A document analysis of exam answers in nursing science (N= 12) was carried out with
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42 limitation to the following sub-assignment: *"Explain how the nurse assesses postoperative*
43
44 *pain after a surgical procedure"*. This was a three-day home exam using all available aids. The
45
46 answers manifest the students' knowledge after completing the theory module (Fig. 1). Table
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48 1a illustrates the main topics.
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53 **Part 2.** Later two semi structured group interviews was carried out with nursing students
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55 (N=6). They were in the last week of the clinical studies in surgical wards (Fig. 1). The literature
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57 (21) emphasise that group interviews have a relatively strict and structured form in which the
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3 interviewer has more active control than in focus groups. As well, group interviews are
4
5 suitable to elicit common and individual views from the participants (22). We developed a
6
7 semi structured interview guide (23) including the main topics related to pain assessment
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9 (Table 1 b). The interviews was conducted in a meeting room at the hospital, and each of them
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11 lasted one hour. An audio recorder was used, and all narratives was anonymised.
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16 **Insert: fig. 1**
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19 20 **Sample**

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23 We chose a purposive sample of nursing students from both full-time and part-time bachelor
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25 program. The principle of intern valididy was safeguarded (19). They followed the same
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27 curriculum, but had passed different modules of the study program. Their theoretical and
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29 practical knowledge base is illustrated in figure 1.
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34 **Part 1:** We sent a request to 20 students asking to use parts of their exam paper in the
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36 study. The school's exam office had access to e-mail addresses and grade lists, and
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38 forwarded the information to the first 20 names from the exam list. 12 answered yes, three
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40 no, and five did not respond. The student's name and grade were anonymised for the
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42 researchers, but the inclusion criterion was a pass grade.
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47 **Part 2:** The first author sent a request by e-mail to a group of 13 students at two surgical
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49 wards caring for patients undergoing gastro- or orthopaedic surgery. Repeated information
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51 was given by phone during their clinical group reflection with the lecturer. Seven answered
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53 yes, one missed the interview, and six said no. Three students from each ward participated.
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56 No one had been notified of failure to pass their clinical studies. All students had
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3 participated in pre- and postoperative nursing duties, and were in their last week of clinical
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5 studies.
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8 9 **Ethical considerations**

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12 The study has been approved by the Norwegian Centre for Research Data (24) (# 56225),
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14 and met the requirements for voluntary participation, informed consent and confidentiality.

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17 The study was evaluated as a quality development project.
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24 25 **Analysis**

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28 Two separate units of analysis served as the starting point. The first author conducted a
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30 qualitative content analysis (25,26) which concentrates on word and phrase counts as well
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32 as numerical measures of textual expression (27). The second author appraised the quality
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34 in all steps of the analysis.
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39 **Unit of analysis 1. Exam answers**

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42 All exam answers were first read in their entirety. Afterwards, we identified the meaning
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44 units in each answer, which were labelled with different text colours and topics. The text
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46 was then condensed to preserve the key content. Some quotes were left unchanged to
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48 illustrate the findings. We compiled a table (1a) in which text from each answer was placed
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50 under the same topic, and further simplified into three categories. This led to further
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52 subtopics/ findings that showed the underlying knowledge emerging from the answers (25).
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55 In certain places we chose to do a quantification of some issues in the text (27).
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Unit of analysis 2. Group Interviews

The analysis began in the interview situation where the participants' self-understanding was expressed through descriptions and reflections from actual clinical practice (26). The interviewer (first author) specified the purpose of the study and emphasised that everyone would be heard. In the event of ambiguities, the interviewer posed clarifying questions to the participants to verify what they meant. The first author transcribed the interviews verbatim, and did spot-checks on parts of the recording (28). The further design of the meaning units, categories and findings follow the steps described above (25). To more easily systemise the findings, we chose the same categories as in the analysis of unit 1. Common patterns/ tendencies of the two groups formed the basis for subtopics/findings (Table 1 b).

Insert table 1

Findings

The participants in part 1 (Fig. 1) were anonymous and had passed the exam with grades ranging from B to E. They are further quoted as #1-12. The participants in part 2 (Fig. 1) consisted of female students ranged in age from 20 to 40. Participants from the gastro-surgical ward is called `Group 1` and each member is quoted as #1a, b or c. Group 2 entailed the participants from the orthopaedic ward and are quoted as #2a, b or c.

Part 1. Exam answers

1. Pain affects the patient's well-being, mobilisation and rehabilitation

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3 Eight participants pointed out assessing the location, quality and intensity of the pain. It was
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5 emphasised that the location of pain gives an indication of whether the pain is related to the
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7 surgery, previous pain, or stressful pre- and postoperative prone positions. The quality of the
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9 pain may vary, and is experienced as, e.g., *"burning, shooting, heavy or aching"* (#4).

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12 Regarding intensity, one wrote: *"You need to know how much pain the patient is in"* (#5). Six
13
14 mentioned the importance of promoting well-being, mobilisation and rehabilitation, and
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16 that *"Pain contributes to increased activation of the body's reaction to stress"* (#2). Another
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18 wrote: *"In the postoperative phase, effective pain relief is important, as it will help the*
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20 *patient achieve earlier mobilisation and resume normal function"* (#3). Five stressed that
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22 postoperative pain is most severe the first 48 hours after surgery. In this phase pain should
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24 be frequently assessed both in activities and rest. It was also emphasised that the patient
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26 should be able to cope and experience being in control, as well as that untreated pain can
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28 develop into prolonged states of pain. Their answers demonstrated knowledge of the
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30 connecting pain relief and mobilisation.
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41 **2. One-dimensional assessment tools are recommended, but unclear reasoned by** 42 43 **knowledge of acute pain.** 44 45

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48 All participants described that one-dimensional pain scales are suitable tools for post-
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50 operative pain assessment. Eight also mentioned assessment tools for prolonged pain or
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52 dementia. Two specifically wrote that postoperative pain is an acute pain condition, and two
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54 others demonstrated this knowledge by, e.g., writing: *" Numeric Rating Scale (NRS) is used for*
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56 *acute injuries and postoperative pain"* (#7). Five mentioned that registration and
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3 documentation are important for assessing the presence of pain, evaluation of pain-relieving
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5 measures, and how patients experience being in control. The choice of pain scale must be
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7 adapted to each individual patient, and the same scale is used for every assessment. One
8
9 wrote: *"The usefulness of a pain scale is that assessments are systematically performed and*
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11 *can be compared, which also makes it easier to check the effect of pain treatment" (#6).* Seven
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13 explained the levels of the NRS in their answer, e.g., *"NRS is a self-reporting pain assessment tool in*
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15 *which the patient rates how they experience pain on a scale from 0 to 10, where 0 is no pain and 10 is*
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17 *the worst thinkable pain the patient experiences" (#7).* Others gave imprecise descriptions of the
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19 scales, e.g., *"If the scale is not numerically divided, it is called the Visual Analogue Scale (VAS) and*
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21 *the patient can freely rate their pain" (#8).* Some also emphasised the importance of the nurse
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23 informing and giving the patient guidance about expected pain, and on the use of the pain scale. The
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25 answers illustrated that one-dimensional assessment tools are recommended, and some distinguished
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27 themselves positively. As well, their understanding of postoperative pain as an acute pain condition
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29 seemed unclear.
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39 **3. Assessment tools should be supplemented with clinical observations and dialogue**

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42 All participants emphasised that the assessment tools are not suitable alone. Eleven
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44 emphasised the vital signs as key pain parameters. In addition, several mentioned the
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46 importance of observing pain behaviour such as facial expressions, crying/moaning, motion
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48 patterns/muscle tension, whether the patient rubs the painful area, dreads moving, or
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50 focuses on their pain during the conversation. Individual variations in pain communication
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52 were also highlighted, including cultural aspects, past pain experience and patients who hide
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54 their pain. *"The patients express pain in different ways, some describe the characteristics of*
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56 *their pain. -"The patients express pain in different ways, some describe the characteristics of*
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58 *their pain, others simply say they are in pain (...). It is very important that the nurse listens to*
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3 *the patient to ensure that sufficient pain relief is actually given" (#6). Another emphasised:*
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5 *"Research shows that nurses often underestimate postoperative pain" (#1). It was also*
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8 mentioned that the patient should feel they are believed, because pain is a lonely
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10 experience. One wrote: *"It is important to assess the patient's communication capacity after*
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12 *surgery. Some patients will mostly communicate non-verbally, and the nurses need to use*
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14 *their `clinical view` to detect pain" (#5). Others emphasised the importance of patient's own*
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16 descriptions, e.g.: *"This can be done by asking the patient to describe their pain.. what makes*
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18 *the pain worse, and what relieves the pain?"* In addition one wrote: *"The nurse should have*
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20 *knowledge to recognise signs of pain, and what they should pay attention to in the*
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22 *postoperative phase" (#7). The answers highlighted that patients experiences and*
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24 communicate pain differently, and that clinical observations and dialogue are key to pain
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26 assessment.
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35 **Part 2: Group interviews**

36 **1. Participants experienced relationship between pain relief and postoperative** 37 38 39 40 41 42 **mobilisation**

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45 Group 1 generally registered that patients who underwent major gastro-surgical procedures
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47 most often received epidural pain relief, and this was related to anticipated pain. -*"If they*
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49 *had undegone a major abdominal surgery, breathing properly can be painful. In addition,*
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51 *they have pain due to intestinal gas" (#1a). They registered that impaired bowel function*
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53 which causes pain often hampered mobilisation. In general, patients seemed most affected
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58 by pain early in the morning, and this improved after receiving morning medications, eating
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3 breakfast and mobilisation. Group 2 had attended preoperative orientation day for patients
4 who were undergoing fast-track hip and knee replacement surgery, and were given
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6 instructions about multimodal pain relief. They noted that patients who were operated in
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8 the knee, leg and ankle often had worse pain than hip surgery patients. They also described
9
10 that elderly persons with cognitive impairment could be difficult to mobilise after fractures,
11
12 and they were uncertain whether this was due to pain or other health challenges. They
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14 pointed out that pain relief is essential for rehabilitation and the patient's well-being. *"It's*
15
16 *largely about the recovery. Pain will also affect mental health and patients become*
17
18 *depressed. We have talked a little (with the contact nurse) about it, but not much. This is*
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20 *what we have read previously"* (#2a). Both groups related that the purpose of pain
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22 assessment is to check the efficacy of analgesics, the intensity, nature and location of pain,
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24 and whether the pain is related to the surgical wound or other factors. They related the
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26 knowledge that pain relief is a prerequisite for mobilisation, but did not refer to theoretical
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28 knowledge about the pain patterns of the various groups of patients.
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42 **2. Participants emphasised the use of Numeric Rating Scale, but experienced** 43 44 **unclear practice routines** 45 46

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48 Group 1: *"I feel that there has been a lot of focus on assessing pain of patients with an*
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50 *epidural pain treatment.. in order to control the effect of the epidural catheter"* (#1a). With
51
52 other pain management regimes, they experienced that the nurses did not systematic use
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54 pain scales, but carried out clinical observations. The participants did not experience that
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56 nurses explained the different levels of the pain scale to the patient: *"They only explain that*
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3 *0 is no pain, and 10 is the worst thinkable pain" (#1c). The fellow student added: "But I have*
4 *never seen whether the patient has an.. 8, 9 or 10.. It's always been around 3 or 4" (#1a).*
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8 Group 2: *"On the day of surgery, the nurses were aware of it all the time. 'Okay, do you feel it*
9 *now, when we know the anaesthesia will soon stop working, do you need painkillers?' They*
10 *assessed pain quite often.. using NRS and NEWS" (#2a). Later in the postoperative phase,*
11 *they noted that some nurses assessed NRS regularly, while others just asked "Are you in*
12 *pain?" (#2a, #2c). They also experienced that patients could have an unclear understanding*
13 *of the use of NRS, and some patients reported NRS of 20. The nurses instructed patients how*
14 *to use the scale, e.g.: " `If 0 is nothing.. and 10 is the worst thinkable..?` , then the patient will*
15 *answer. If they don't answer, they can ask the patient to move a little..for example sit on the*
16 *edge of the bed. You can quickly see if the patient is in severe pain" (#2b). Both groups*
17 *experienced that although NRS was used in pain assessment, the results were rarely*
18 *recorded in the nursing documentation. Group 1 had the impression that NRS was only*
19 *recorded on the observation form for epidural treatment. One participant from Group 2*
20 *stated: "The treatment plan states that we are to use it (NRS), but I have not observed that*
21 *the nurses have done so" (#2c). They experienced that if NRS was recorded, it was usually by*
22 *students. "We document, and then the nurses look it over... then we get feedback on*
23 *whether we should have done it differently. So it's more like we're trying it out" (#2a). They*
24 *experienced the lack of a comparative basis with previous scores when it was written, e.g:*
25 *"The patient was given painkillers with good effect" (#1a), or "Was given 5 mg oxycodon with*
26 *good effect" (#2b). The participants emphasised that NEWS (Norwegian Early Warning Score)*
27 *was routinely performed on all patients, and this could also be used as part of pain*
28 *assessment. -"They have the NEWS where we register pulse, blood pressure, temperature,*
29 *and respiratory rate" (#1b). They emphasised that pain can affect the vital signs. Especially*
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3 after abdominal surgery, the respiration is affected by incision and intestinal gas pain.

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5 The answers illustrated that the participants endeavoured to conduct an NRS, but

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7 experienced unclear practice routines.
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10 11 12 13 14 **3. Participants emphasised the patient's individual pain experience but experienced a** 15 16 17 18 **lack of supervision in their own dialogue** 19

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21 Both groups emphasised the patient's responsibility in reporting pain. They noted that some
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23 people were stoic and put on a "mask" during the doctor's visit. - *"Sometimes it seems like*
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25 *the elderly feel that they are supposed to endure pain.. this is expected.. they have had pain*
26
27 *before, so it will be fine (#1a, #1b).* The participants encouraged patients to *"pull the cord"* to
28
29 call the nurse in the event of a change and worsening of their pain" (#1b, 2b). *"This is*
30
31 *because many think it's unpleasant to speak up, and don't want to bother"* (#2a). This was
32
33 exemplified by a female patient who had brought her own analgesics in her purse. They also
34
35 described pain as an individual experience, even if the given NRS score and pain behaviour
36
37 do not always match. - *"You can't think: 'no, you can't be in that much pain,' or give them*
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39 *fewer painkillers... or just wait. One patient, for example, had given an NRS of 10, while lying*
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41 *in bed talking on the phone and seemed to be doing very well"* (#2c).
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49 In addition to dialogue with the patient, the participants used their knowledge of vital pain
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51 signs. -*"Regarding pulse and blood pressure and things like that, we know how to do.. that's*
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53 *what we learned at school. I have at least talked about it with the contact nurse... It can be*
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55 *an indicator (of pain).. along, for example, with sweat, and.."* (#2a, 2c). The participants
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57 followed up their patients, but often without specific supervision and feedback on how they
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3 assessed pain. -*"We were given feedback when we had group leader responsibilities and we*
4 *collected information about the patient. I was allowed to ask questions while the nurse*
5 *listened in the background. Afterwards, she could say: `Yes, that's good`. But I haven't*
6 *received proper feedback about it." (#1c). The contact nurses otherwise asked the*
7
8 participants to assess pain, and then they used previous knowledge and relayed their
9
10 observations to the nurse. -*"The contact nurse says, e.g.: 'Ask how the patient slept last*
11 *night, has the patient been in any pain? And if he has... where does he feel pain.. is he*
12 *nauseous..? We didn't get any special tips, but we know a lot of this from before. 'Are you in*
13 *pain, where do you have pain..is the pain constant or alternating?'` If the patient is in pain, I*
14 *pass this on to the contact nurse" (#1a). In such situations, they reported that the contact*
15
16 nurse conducted a new dialogue with the patient. *"She often checked whether it had been a*
17 *long time since they had been given painkillers, and then they asked what kind of pain they*
18 *had. I think some double checking is involved" (#1b). Group 2 had similar experiences: "We*
19 *only relay on what the patient says. We go to the nurse and say 'The patient says he is in pain*
20 *and has a NRS of 7'. We become an intermediary" (#2a). "After the patient has been given*
21 *painkillers (by the nurse), we ask 'How is it now?'" (#2b). They also experienced that it was*
22
23 difficult to understand the patient's pain if the patient used other terms and descriptions. *"If*
24 *I ask 'Are you in pain?', they might say 'Naah, I don't know.. It's not like it's painful....'. Then I*
25 *might ask more questions to find out whether they experience pain or other symptoms.*
26
27 *Giving a description is hard for many. In that case, I have to pass the information on to the*
28 *contact nurse, because I don't know what to do" (#2a). The findings illustrate how the*
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30 participants observed the patient's pain, but they lacked guidance on how to communicate
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32 and evaluate pain-relieving measures.
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Discussion

The participants in the group interviews manifested much of the knowledge described in the exam answers, but their application of knowledge was limited by both the supervision situation and unclear routines in the clinic. The findings are discussed according to the three common categories.

Purpose of pain assessment

It emerged in both the exam answers and the group interviews what comprise pain assessment and how adequate pain relief promotes postoperative mobilisation. In the interviews, the participants also reported that there could be other circumstances affecting mobilisation, such as cognitive impairment or intestinal gas pain. They experienced that it could be difficult to assess the location and nature of the pain, and that elderly people often under-communicated their pain. This illustrates their awareness of how postoperative patients, particularly the elderly, require a holistic approach that integrates various forms of knowledge. Prowse (29) emphasises that acute pain management in hospitalised elderly people is complex due to physiological and pharmacological factors, as well as the social construction where they often adopt a subservient role. The participants were aware that targeted pain regimens had been developed for abdominal procedures and replacement surgery, respectively, but they did not link this directly to curricular knowledge or research literature. Their pain observations were seemingly related to anticipated pain, and they also observed how the nurses prioritised pain assessment. Clabo (30) describes this as an example of a stereotypical pain assessment based on defined clinical pathways. One of the

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3 challenges with accelerated clinical pathways is that established pain and training programs
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5 easily override the individual assessments each nurse should make (31). Specht, Kjaersgaard-
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7 Andersen, Kehlet and Pedersen (32) emphasise that nurses have taken over several of the
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9 surgeon's and physiotherapists' guidance tasks. They are also expected to safeguard the
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11 patient's individual need related to mobilisation, pain management and discharge.
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16 **Use of assessment tools**

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20 It was emphasised in the exam answers that one-dimensional pain scales are recommended
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22 and that the same scale is used for each assessment. Instructing the patient to use the scale
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24 was also emphasised. The participants in the group interviews related the same
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26 understanding but experienced unclear practice routines in pain assessment and guidance of
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28 patients. The fact that patients in the gastro department did not use the upper part of the
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30 scale, or that patients in the orthopaedic department went much higher than the scale's
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32 extremes, can indicate a lack of guidance of the patient. At the same time, the extent to
33
34 which such observations were brought up in reflection dialogue between students and the
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36 contact nurse is unclear. Vinales (33) emphasises the importance of the contact nurse as a
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38 role model, and the fact that students will learn from role models whether the learning is
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40 planned, intended, unplanned or unintended. Romero-Hall (5) highlights the importance of
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42 meaningful clinical experiences and role models that help reinforce vital pain management
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44 knowledge and practice. Our study showed that the participants noted deficiencies in
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46 clinical routines, but still endeavoured to act in line with knowledge and current guidelines.
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48 It is nonetheless unclear to what extent they acquired reinforced pain assessment as a skill,
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50 and whether their observations were challenged. Working in line with evidence-based
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52 practice and ethical principles is rooted in clinical studies` learning outcomes. The fact that
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3 the participants experienced being alone when documenting pain can be regarded as an
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5 ethical challenge. Pedersen and Sivonen (34) emphasise the importance of a common ethical
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7 standpoint between student and nurse to develop the student's moral competence. They
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9 may otherwise be left alone with their moral judgments, and experience vulnerability when
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11 they are to stand up for their views. Henderson, Cooke, Creedy and Walker (35) highlight
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13 that students easily adapt to the clinical site's culture and action patterns, and that there
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15 often is poor focus on innovative thinking and discussion of the rationale of actions. The fact
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17 that our participants worked in peer-learning teams may have resulted in mutual support to
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19 follow the current documentation guidelines, even if they experienced unclear routines.
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26 **Dialogue and individual adaptation**

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29 Both the exam answers and the group interviews emphasised that the use of pain scales
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31 should be combined with dialogue and that the patient's self-reporting is key. In addition,
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33 observation of clinical pain signs and behaviour was emphasised. Clabo (30) views it as a
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35 problem that some clinical cultures unilaterally focus on observable signs of pain, whereas
36
37 the participants in our study emphasised that the experience of pain and pain behaviour are
38
39 not always in concordance. They related that they encouraged patients to report pain, but
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41 did not nuance to any extent how they communicated and built a trusting relationship. They
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43 showed a basic understanding of the patient's responsibilities, but the professional and
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45 ethical responsibility of the nurse was unclear, regardless of the patient's reporting (36). This
46
47 may be related to the fact that the participants received little guidance in their own
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49 interactions with the patient, and quickly handed the pain assessment over to the nurse. It
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51 could appear that the learning process stopped and no space was provided for "reflection-
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53 on-action" (37). The participants were given little insight into how the nurses made their
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3 assessments, and the basis of their further observations and actions. At the same time, the
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5 students demonstrated an ability to act to some extent and remain focused on the patient's
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7 pain relief. This illustrates some of the dilemmas that can occur in clinical studies. The nurses
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9 have the overall professional responsibility for providing pain relief to patients, while the
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11 students' focus is to learn and act within their area of responsibility and competence. The
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13 fact that the participants had responsibilities proved that the nurses relied on their
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15 competency. Pålsson et al (13) emphasise that the peer-learning model affects nursing
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17 students' self-efficacy, i.e., an individual's belief in his ability to succeed in a particular
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19 situation, to a greater degree than traditional supervision. Nygren and Carlson (15)
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21 emphasise that the model gives students the opportunity for reflection and independence,
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23 but also that many nurses and students feel ill-prepared to use the model, and need more
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25 training. Our study provided some unclear findings on how the students mutually developed
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27 each other's knowledge, or how they were motivated by the nurse to argue professionally.
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29 This may be related to the development of self-directed methods, in which the responsibility
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31 for learning is largely transferred to the learner (38). Earlier research shows that the
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33 misconception that one should work and deal with situations alone has resulted in the faulty
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35 drilling of certain skills in nursing school, which in turn are perpetuated by newly qualified
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37 nurses (38). Helping students connect scientific knowledge with practice is a crucial part of
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39 nurses' supervision tasks (39). At the same time, Romero-Hall (5) emphasises that nursing
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41 students' knowledge of pain management can also be influenced by outdated and incorrect
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43 information from both supervisors and the school's curriculum. As well, nurses do often
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45 refer to knowledge from their own education program rather than updated research in pain
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47 knowledge (5).
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The strengths and limitation of the study

The strength of our study is that it is based on empirical data from two different modules in the nurse education program. The exam answers illustrated the knowledge participants had extracted from the literature. At the same time the answers did not demonstrate their overall understanding or whether it was written independently. The participants in the group interviews had undergone similar theoretical instruction, but their knowledge of pain was not individually mapped. There was also a limitation in terms of few participants and only two groups from the same hospital. However, the groups had a good dynamic, in which they confirmed and nuanced each other's statements. The fact that they were in their second clinical studies in hospitals probably made them more confident of their own observations. The interviewer had prior research experience in the topic of pain and qualitative interviews, which helped strengthen the participants' informational power (40). Our data would probably have been more nuanced if the contact nurses had also been interviewed.

Conclusion

Our study highlights that students developed their learning performance in pain assessment practices by varying degrees, and further research with a larger sample is recommended. We recommend qualitative and quantitative studies exploring the achievement of learning outcomes through different phases of the study program, and also how students and contact nurses interact about pain observations.

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Figure 1. The participant's theoretical and practical knowledge base according to the actual pain curriculum

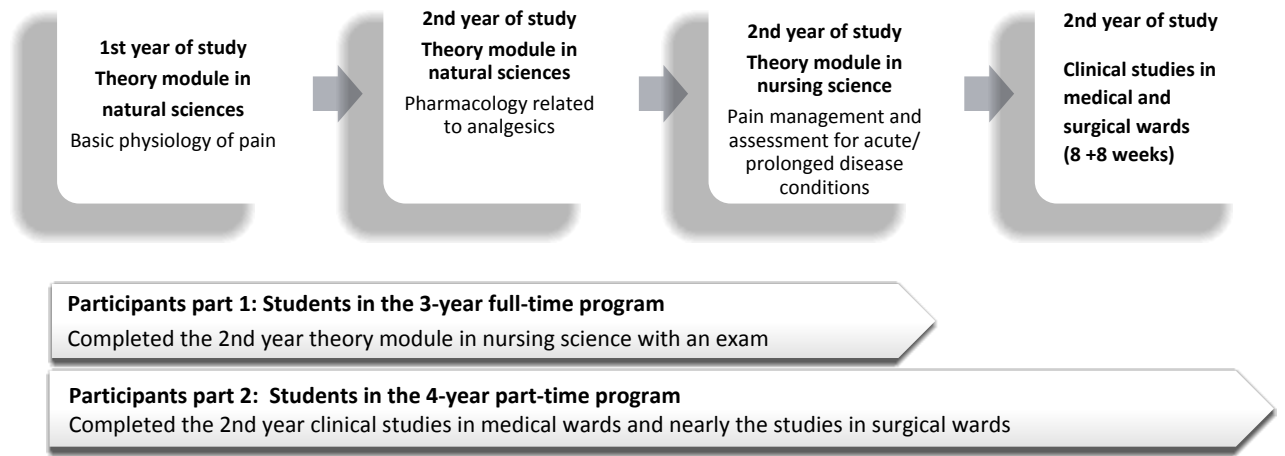


Table 1. Analysis- from main topics to findings**a) Unit of analysis 1. Exam answers**

Main topics in the exam answers	Quotes from the transcript	Category	Findings
<ul style="list-style-type: none"> Characteristics of postoperative pain How often/in what situations assessment is carried out 	<p>"Nurses must assess pain and the effect of analgetics. Effective pain relief is very important not only for the patient's well-being, but also for the mobilisation of the patient"</p>	1. Purpose of pain assessment	Pain affects the patient's well-being, mobilisation and rehabilitation
<ul style="list-style-type: none"> Documentation/ interdisciplinary cooperation Use of assessment tools 	<p>"One-dimensional assessment tools are well suited for assessing post-operative pain.."</p>	2. Use of assessment tools	One-dimensional assessment tools are recommended, but unclear reasoned by knowledge of acute pain.
<ul style="list-style-type: none"> Dialogue with the patient/individual adaptation Pain behaviour/vital signs Other circumstances/ assessments 	<p>"The patient must also describe his own pain (...) Some explain it thoroughly, while others only answer that they are in pain."</p>	2. Dialogue and individual adaptation	Assessment tools should be supplemented with clinical observations and dialogue with the patient

b) Unit of analysis 2. Group interviews

Main topics in the interview guide	Quotes from the transcript	Category	Subtopics/findings
<ul style="list-style-type: none"> What do you associate with pain assessment? 	<p>"It is very important that they get up and that their pain is well managed before mobilisation. Because if they can't be mobilised, they will have a lot of complications." (Group 1)</p>	1. Purpose of pain assessment	Participants experienced the relationship between pain relief and postoperative mobilisation
<ul style="list-style-type: none"> Experiences with patient groups - general/special pain challenges? Routines and methods of pain assessment 	<p>"When you walk in to a patient for the first time, you ask, 'How much pain are you in from 0-10,' and he says '6', you don't know how much pain he usually has because the previous person just asked 'Are you in pain?'" (Group 2)</p>	2. Use of assessment tools	Participants emphasised the use of Numeric Rating Scale , but experienced unclear practice routines
<ul style="list-style-type: none"> Dialogue with the patient/individual adaptation Clinical observations/pain behaviour/vital signs Supervision/follow-up from contact nurse Other circumstances/ assessments 	<p>- "We tell the patient: you have to let me know if you're in pain. You have to pull the cord and we will come and give you painkillers" (Group 2). - "If the patient is in pain, I relay this to the contact nurse." (Group 1).</p>	2. Dialogue and individual adaptation	Participants emphasised the patient's individual pain experience but experienced a lack of supervision in their own dialogue