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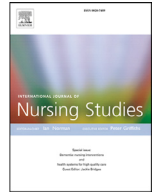

Lost in translation - Silent reporting and electronic patient records in nursing handovers: An ethnographic study

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ABSTRACT

Background: Electronic patient records are increasingly being implemented in hospitals around the world to promote a process of sharing information that is reliable, more efficient and will promote patient safety. Evidence suggests that in practice, adaptations are being made to how such technologies are being used in practice. Few studies have explicitly aimed to explore how electronic patient records influence on nurses' communication of patient information in clinical practice.

Objective: To enhance understanding of the impact of electronic patient records on nurses' cognitive work, by exploring how nurses engage with the electronic patient record during handover and the representation of patient information.

Methods: Ethnographic fieldwork was conducted in a Norwegian hospital cancer ward where computer-mediated handover referred to as 'silent reporting' had been implemented. The fieldwork included five months of participant observation and nine semi-structured interviews with registered nurses. Participating nurses were selected to ensure representation by clinical experience. The analysis of field notes and transcripts was partly performed in NVivo 11, following thematic analysis (Braun and Clarke 2006).

Findings: Four themes emerged: 1) nurses' complex and dynamic workflow necessitated talk in handovers, 2) oral communication allowed nurses to share sensitive information on psychosocial issues, and 3) to solve uncertainties considered unsuited for the record, and 4) talk facilitated professional and moral support in clinical decisions-making, as collective achievements. Talk was thereby found to be essential to nurses' cognitive work and professional knowledge, allowing for the translation and interplay between the embodied, informal knowledge of the individual nurse, and formal knowledge inscribed in record notes.

Conclusions: Silent reporting has implications for nurses' cognitive work and professional knowledge. With the sole reliance on the electronic patient record as handover tools, it is not only information essential to nurses' evolving, dynamic, and contextualised understanding of the patient's situation that is lost in translation, but also the visibility and legitimacy of nursing knowledge. Nurses' continued practices of talk in handovers can be seen as efforts to counteract these effects in ways that also increased the relevance and usefulness of the electronic patient record as a mediator of knowledge.

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What is already known about the topic?

- The implementation of electronic patient records is widespread in hospitals around the world.
- Electronic patient records are expected to ensure adequate and reliable sharing of information in nursing handovers, associated with increased quality, and safer and more efficient provision of healthcare.
- Optimistic expectations of the effects of electronic patient records do not always align with what occurs when these technologies and their users interact in practice.

What this paper adds

- Oral communication is essential to the nurses' cognitive work, by allowing for the translation and interplay between the

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embodied, informal knowledge of the individual nurse, and formal knowledge inscribed in record notes.

- Silent reporting in handovers has implications for the translation processes in ways that affect the nurses' evolving, dynamic and contextualised understanding of patients, and the legitimacy and visibility of nursing knowledge.
- Nurses' continued practices of talk in handovers work to integrate the electronic patient record into their complex and dynamic workflows, increasing its relevance and usefulness as a mediator of knowledge about patients.

1. Introduction

Electronic patient records are increasingly being implemented as handover tools in hospitals worldwide to ensure improved quality, and safer and more efficient provision of healthcare (Meum and Ellingsen, 2011; Boonstra et al., 2014; Håland, 2012). The literature on health information technologies has, however, established that these optimistic expectations do not always align with what occurs when technologies and their users interact in practice (Nicolini, 2006; Timmermans and Epstein, 2010; Bergey et al., 2019). The implementation of technologies such as electronic patient records has been shown to influence the administration of clinical care, relationships between clinicians, and professional autonomy, affecting what health professionals do, but also how they understand work and self (Aarts et al., 2007; Bar-Lev, 2015; Allen, 2009, 2015; Pirnejad et al., 2008; Halford et al., 2010; Campbell and Rankin, 2017). Moreover, electronic record systems are found to impact on clinicians' ability to form and maintain an overview and shared understanding of patients, causing potential loss of information and professional knowledge (Chao, 2016; Staggers et al., 2012, 2011; Varpio, 2015; Weir, 2011).

Despite the extensive research interest on information technologies' impact on professional practice in health care workplaces, few studies have explicitly aimed to explore how their use affects clinicians' cognitive work (Wisner et al., 2019). Building on the frameworks of clinical grasp (Benner, 2009, 2011) and situation awareness (Endsley, 1995), Wisner et al. (2019), define cognitive work as "a higher order, dynamic, and evolving understanding of the patient's status, situated in a particular clinical context, and dependent on the clinician's ability to continually contextualize and synthesize data across information sources" (Wisner et al., 2019: 75). More understanding is according to Wisner et al. (2019) needed on how nurses synthesise and communicate information to achieve and maintain such evolving and dynamic understandings of the clinicial encounter, and on the compatibility of handover tools with how nurses think and work. To that end, this study explores nurses' engagement with the electronic patient record in handovers at a Norwegian cancer ward.

Cancer nursing involves daily monitoring of patients suffering from severe physiological and psychological impediments, due to the disease process and the prolonged nature of the treatment (Corner, 2009). This requires complex interplay between biomedical, contextual and intersubjective knowledge, generated in a continuous process of gathering and sharing information from a heterogeneous and complex number of sources, like clinical observations and consultations, medical charts, and record notes from several different health professionals. At the time of the study, computer-mediated handover referred to as 'silent reporting' had been implemented to ensure the distribution of adequate and reliable information, and enhance efficiency in work processes. This represents a recent trend in Norwegian hospitals involving a formalisation of handovers, replacing oral with written and eventually electronic documentation (Meum and Ellingsen, 2011). In the cancer ward, silent reporting meant that handover involved writing and reading the free text notes, in addition to the nursing care plan and medical chart. Only brief messages should be provided orally. The varied and complex nature of knowledge in cancer care, and the introduction of silent reporting with the electronic patient record as formal handover tool, made this an ideal case for exploring how the use of the electronic record system influence on nurses' cognitive work.

To address this issue the analytical framework proposed by Freeman and Sturdy (2014), that knowledge can take on and exist in different forms or phases as embodied, inscribed and enacted is applied. This schema for understanding knowledge infers that knowledge moves, rendering the questions of how it moves and how knowledge can be prevented from moving within particular policy contexts open for empirical investigation (Freeman and Sturdy, 2014). Not all embodied knowing, defined as "knowledge held by human actors and employed and expressed by them as they go about their activities in the world" (Freeman and Sturdy, 2014: 8), can, for instance, be easily inscribed into disembodied texts or technology. This can be due to the static and fixed nature of written language, stylistic conventions of an institution or the complexity of work, with consequences for the legitimacy and visibility of certain practices and competences (Benner, 2004; Star and Strauss, 1999; Allen, 2015; Smith-Merry, 2014). Furthermore, as embodied and inscribed knowledge is enacted in actions and interactions, it is channelled within a community of knowers making it subject to control and possible sanctions, but also facilitates new knowledge to arise beyond what has been previously inscribed or embodied (Freeman and Sturdy, 2014).

Building on these insights, this article aims to illuminate how nurses integrate the electronic patient record into their complex and dynamic workflows, through continued practices of talk in handovers. Furthermore, it emphasises how talk is essential to the nurses' cognitive work as interactional achievements, allowing for the translation and interplay between the embodied, informal knowledge of the individual nurse, and formal knowledge inscribed in record notes. By this, the article discusses what may be lost in translation with the implementation of silent reporting.

2. Data and methods

The article draws on material from a larger ethnographic study of knowledge in nursing conducted by the author in a Norwegian cancer unit. The hospital studied has about 5000 employees and a catchment area of over 300 000 inhabitants and is thus a large emergency hospital in a Norwegian context (Helse- og omsorgsdepartementet, 2017). The physical structure and work processes in the cancer unit are organised into three work sections with nine single patient rooms in each, giving a total of 27 patient rooms. At the time of the study, about 45 nurses worked in the unit, including two men.

Fieldwork was conducted during five months from January-June 2017, and involved participant observation among the nurses, in addition to informal interviewing (Spradley, 1979). The ten nurses that I paired up with were selected by snowball sampling after an initial introduction by the senior charge nurse at the outset of the study, ensuring a spread in length of experience and involvement with different patient groups. Fieldwork was followed by formal semi-structured interviews with nine of the ten nurses with whom I had already developed some rapport through observations, to allow for a freer flow of information (Spradley, 1979). The tenth nurse was not interviewed due to sickness absence.

As a data collection method, participant observation involves spending substantial time in the field, enabling the researcher to study human interaction and communication from an "insider's point of view" (Wind, 2008: 80; Geertz, 1973). I was at the ward two to three days a week throughout the fieldwork, to secure familiarity with ward activities and continuity in field-relations. I

always made an appointment to pair up with one of the nurses in advance, and mostly attended full, seven hours shifts, partaking in everyday work activities. As nurses are mainly attached to one section with a typical patient profile, I observed all three, spending three weeks in one section at a time before altering, to get accustomed to staff and particular routines.

During observations, I was dressed in white, with a nametag stating that I was a researcher. I presented myself as a scholar studying nurses in all encounters with patients, relatives, and other health professionals. Oral and written information on the study goals was provided, and preliminary findings were discussed with the nurses throughout the study. The nurses, who were used to being tailed by students and trainees, soon equated my research interests to that of an apprentice, eager to learn about their work and competences, a role I embraced. With time, I was entrusted to perform tasks, like fetching food to patients and assisting them with personal care. Thus, at the course of the fieldwork I adopted different roles from complete observer to active participant, negotiating my way into field (Spradley, 1980; Wind, 2008). The role I attained, the length of each fieldwork session and the extended time of the fieldwork worked to diminish the possible effects of my presence on activities going on.

Writing fieldnotes is essential to knowledge production in ethnographic research, and requires being attentive to when, where and how notetaking is accomplished (Emerson et al., 1995). I carried a small notebook and a pen in the pocket of my nurse uniform at all times and usually made brief notes when running along with a nurse from one patient room to the other, in the same fashion as the nurses scribbled down results from measurements or future tasks on their patient lists. These in-field jottings were elaborated into chronologically ordered fieldnotes coming to the end and following each shift when the nurses sat by their computers updating the patients' record notes. Under the evolving of the fieldwork, my notetaking went from nonspecific descriptive observations to grasp the complexity of ward activities, to more focused attention to particular processes and practices (Spradley, 1980).

The complexity of knowledge-sharing practices in handovers eventually caught my attention and the nurses' experiences with silent reporting, and the use of the electronic patient record became key themes in the formal interviews. The semi-structured interview guide was developed to let nurses talk without undue interruptions, containing open-ended, descriptive questions (Spradley, 1979) like: "Can you describe a typical handover situation?", "Can you give examples of how different types of information is communicated in handover?", and "Can you explain how what you say differ from what you write?" The interviews were performed in a hospital conference room outside the ward, lasted about 60 minutes on average and were audio-recorded. Fieldnotes and interview transcripts were translated, with minor grammatical and aesthetic adjustments.

Appropriate IRB approval was obtained from the Norwegian Centre for Research Data (ref. 54770). All ward nurses were informed about my role and none refused to take part in the study. To ensure internal and external confidentiality, names and ages were anonymised. All participating nurses signed non-disclosure agreements and gave informed consent. The nurses worked as gatekeepers to patient encounters, and all accounts of conversations involving patients have been anonymised in the analysis by producing 'typical' patient stories, altering age, sex or diagnosis.

3. Analysis

The analysis began immediately on entering the research setting and the writing of thick, descriptive and reflective field notes (Geertz, 1973), which as described above shared essential similarities with the nurses' effort to produce patient record notes. It involved selecting from the complexity of social interaction and the multiplicity of everyday events those activities and occurrences that appeared relevant to my objective. It meant aiming to make sense of observations by contextualising my descriptions in other writings, re-reading previous fieldnotes, and reviewing previous research on related topics. Additional observations provided new insights into notes already written. The analysis thus involved complex processes of reading and writing (Atkinson, 1992).

Furthermore, my quest for understanding what was going on involved discussing my observations with others, primarily nurses in the field and during interviews, but also fellow researchers, presenting and discussing preliminary analyses and theoretical framing at seminars and conferences. Thus, like patient records my fieldnotes appeared as 'liminal texts' (Jackson, 1990), constantly available for interpretation and reinterpretation, making sense when being written, but also partial and incomplete, implying complex processes of textual construction and interpretation (Atkinson, 1992). In line with the first step of thematic analysis (Braun and Clark, 2006), the initial analytical phases thereby involved immersing and familiarising myself with the data through repeated perusals, searching for interesting and surprising observations against a background of existing theorisations (Tavory and Timmermans, 2014), and noting down ideas about what the data contained.

The list of ideas formed the basis for inductively categorising and coding interesting features down to the most basic segment, organising the data into meaningful groups, like; "Notes need to be objective" "Talk about difficult patients", "Not sure about observations", and "Consulting with fellow nurses". Such categories constructed from thick descriptions (Geertz, 1973) of actual and situated handover situations and informal in-field talks underpinned the interview-guide. The interviews on their hand provided insights into the nurses' comprehension and experiences of types of information and ways of communicating knowledge about patients. Interviews were transcribed verbatim and re-read, searching for additional interesting ideas, which resulted in adding new and revising already existing codes, thereby enriching the observational data (Braun and Clark, 2006).

The analysis of this overall written material, field notes and interview transcripts, was now partly performed in NVivo 11 (QSR International, Brisbane) following the next steps in thematic analysis, i.e. searching for, reviewing and naming themes. This involved sorting and combining the different codes into overarching patterned responses or 'themes' in the data and analysing these themes in relation to each other and the data set as a whole, according to the research question (Braun and Clark, 2006). The four themes that emerged as particularly relevant to the objective of this study will now be presented.

4. Findings

The handover situation took place at the workstation located in each of the ward's three sections, which all had three or four computers and a small conference table in an adjacent inner office and a reception desk and office space facing the corridor. These were busy and sometimes crowded areas, where nurses and other clinicians frequently met to update each other and to fetch medicine and medical equipment, prepare blood samples and medication, and to read or record information in the electronic patient record. This also applied to the 30-minute overlap between incoming and outgoing nurses at the changeover of shifts. The overlap was further constrained following the fieldwork when the ward management reduced the handover time to 15 minutes to make it more efficient and avoid unnecessary talk. During my time at the ward, I witnessed many handover situations, observing and participating in nurses' activities during and across shifts.

The nurses I paired up with were aged 25-50, with 2-25 years' experience and 60-100% positions**.**

In the following, the four themes emerging as particular relevant to the understanding of how nurses engage with the electronic patient record during handover and the representation of patient information, will be presented. First, how nurses' complex and dynamic workflow necessitated talk in handovers. Thereafter, how oral communication allowed nurses to share sensitive information on psychosocial issues and to solve uncertainties considered unsuited for the record. Finally, the role talk played in facilitating professional and moral support in clinical decision-making as collective achievements.

4.1. *"We're supposed to be doing silent reporting, but…"*

The nurses were always eager to start their shift by finding a computer, stating that being updated on the latest developments by reading patients' records before going to check on them was essential for doing a good job. However, the written information found there appeared to be insufficient. The observation that talk was still essential in sharing patient information is evident in the following field note extract, which represents a typical handover situation between two incoming nurses, Eva and Anne, who meet Nora, about to finish her shift.

> I go with Anne and Eva from the lunchroom where they have fetched their patient lists to the section workstation. They rush through the corridor delegating responsibility for each patient according to their previous knowledge of them. At the workstation, they meet Nora. "Hello, how are things going here?" Anne asks. Nora reports that it has not been as chaotic as last week. They go on to discuss the fragile situation of some of last week's patients. "We should have more opportunities to discuss the most severe cases amongst ourselves," Anne sighs. The incoming nurses log in to the computers to start reading, while Nora continues updating the summaries and future care plans.
>
> While the nurses sit at their computers, the conversation drifts into an oral report on particular patients (often referred to by room numbers). Nora says, **"**You should pay extra attention to room 2. We didn't get to take her blood tests and provide her medication until rather late this morning, and she feels a bit neglected and frustrated." "Okay, I'll go and see her as soon as possible then", replies Eva and asks, "Yesterday she seemed a bit feeble, even though her vitals were fine, how is she today?" Nora replies that she looks better and says she feels quite well. The results are satisfactory. Eva looks them up on the computer, making some notes on her paper patient list. "Have you met her husband then?" Nora asks, raising her eyebrows. "I know! A bit of a handful! I guess it's their way to get control though. We have to make sure to keep them both updated" Eva replies.
>
> Going through each patient on the list, and skimming through their records, the nurses then talk about what medication and pain relief different patients have received, when, and the effects. Nora tells Anne that one of her patients has been complaining about frequent and burning urination. "She recognises the symptoms and claims she knows she's got a urinary tract infection, but agreed to take a test. As you'll see, the doctor's already prescribed antibiotics, which should be given if the test proves positive," she explains. Anne goes to see the patient, returns soon after and starts preparing the test. Meanwhile, Eva has been to see the frustrated patient in room 2.
>
> Nora continues to write while sporadically providing Eva and Anne with oral updates. One patient is supposed to eat every two hours. She is a bit stressed about it, so they need to see to that. Another patient has received two blood transfusions and antibiotics. Her temperature is fine and she does not seem feverish. A third patient is to be transferred to the local hospital. Nora says that an ambulance has been requested and that she has called to check its expected arrival. Eva asks whether the patient will get a private room in the pain relief ward where she is going, but Nora does not know. "She really needs it", says Eva. "She's having such a hard time!" "I know!" Nora replies. "I'll call them to check", says Eva. It is 3.30 pm; Nora should have left at 3 but is still sitting at the computer finishing off the reports. Sometimes Nora asks Eva and Anne how to phrase a particular sentence for the report. She turns to me and says, "We're supposed to be doing silent reporting, but…"

Attending numerous handover situations like this throughout the fieldwork, I noticed that the nurses' talk about the patients fluctuated between past observations, their present condition, and future necessary tasks. Furthermore, I was struck by how a variety of topics seemed intertwined in their assessments based on observations and results from tests and measurements that indicated changes in patients' condition, e.g. medication administration, diets, future discharges, patients' mood, and temper, and relatives' involvement and willingness to cooperate. Another feature that stood out was the interplay between reading, writing and talking, sometimes interrupted by going to see a patient, where all of this seemed to intermingle into the one activity of reporting.

Informal conversations and interviews confirmed the observation that much handover talk was about coordinating activities, like the scheduling and synchronising of tasks, and delaying and delegating undertakings related to patients' future care needs. This represented information they needed to share, but was unnecessary and even unwanted for the record, as insights and activities essential for the patient's recovery or survival could otherwise drown in an information overload. As described in the fieldnote excerpt above, however, nurses' oral handovers involved more than communicating organisational tasks to be accomplished. At the core of the nurses' justifications for the continued need to talk was also properties ascribed to the record system, concerning the topics and types of language it required and allowed for, and its' compatibility with their need to sort out ethical dilemmas and uncertainties inherent in clinical diagnostic work.

4.2. *"You have to consider what to write"*

Nurses' daily monitoring of patients is often associated with the detection of indicators of patients' vital signs like temperature, heart rate, respiration or blood pressure. However, during the fieldwork, I did notice that the nurses also noted and discussed other aspects of the patients' condition, e.g. related to their hygiene detected by the cleanliness in the room and the smell of bodily odours, their eating habits, initiative, mobility, cognitive awareness, and cooperativeness, regarded as indicators of their overall wellbeing and recovery potential. Yet it was not easy to document these issues, as stated by a nurse in an interview

> You have to consider what to write in the record, because, you know, the patient can get hold of it and read it. If there's been any unfavourable situation, of course, you write about it, but more nicely, if you know what I mean. I suppose when you talk, you communicate more subjective experiences. When you write, though, you try to be somewhat objective.

Thus, what nurses wrote was influenced by their awareness that the record and the information documented there are available to patients, their relatives, other health professionals, and managers. Sometimes topics contained intimate information that

a patient might have shared with nurses in confidence. Other topics were avoided or rephrased in writing; these represented nurses' subjective opinions, which could be distressing, harmful or insulting to patients and relatives, but still considered important to know and share.

Although nurses discussed such matters orally, the record still played a role in sharing sensitive issues. As the nurses said, they naturally wrote about these but in a nicer way, using terms considered more objective. This can be understood as a token of their acknowledgment that for the record to be meaningful to nurses not present at the handover, it needed to be precise and specific, to avoid any potential confusion or misunderstandings. The brief and objective language thus worked to direct their attention to potential challenging situations and often formed a basis for adding subjective observations and opinions orally. One nurse explained

> You know, we meet many different people, and when we write we try to be more precise and to the point, use a somewhat more academic language. We focus on being as specific as possible. If there are issues concerning their state of mind, or pain or well-being, we do of course write full reports on that. However, based on that report, colleagues tell me "The situation is a bit tense" or "We're struggling with the relatives", things like that… "The patient's a bit difficult… to understand". Some issues aren't always very easy to record… like the mental situation, relatives, cooperation, how we experience the patient. Such things are often communicated orally (…)

Contextualising what the record briefly itemised about the here and now thus prepared the incoming nurse for what to expect, enabling her to meet the situation in the best possible manner for the patient, as clearly seen when the nurse continued

> (….) But then again we're very concerned about not transferring bad experiences to the incoming nurse. Although it's sometimes good to prepare her for what could become an issue, like "That patient's very insecure, if you don't come to the point". You try to lead your colleague into a good first experience with the patient.

As these quotes indicate, the nurses were not only cautious about recording delicate information. Writing a record note also involved phrasing oneself professionally, using a language considered 'objective' and sufficiently detached to be meaningful to other professionals not directly involved in the here-and-now situation.

Thus, the concise language of the electronic patient record and the oral exchange on sensitive patient issues, adding nuances and details considered unsuited for the record, fulfilled different functions in the mediation of the nurses' complex and dynamic workflow. Further, the interconnectedness between these informal and formal sources of information was essential for nurses in their efforts to establish the overall picture of patient's situation at any given time. This seemed to apply also to the solving of uncertainties in assessing patients' conditions and deciding how to act upon them.

4.3. "We're not always sure"

Throughout the fieldwork, I found that oral communication in handovers involved discussing different types of ambiguities. The conversations often involved sharing doubts about how to evaluate their observations of patients, identifying symptoms as indicators of a particular condition. The uncertainties in themselves were considered irrelevant to the patient record, as stated by one nurse

> We do have oral reporting too, although they [management] don't want us to. They don't realise why we need to talk, but it's actually quite important, because there are issues that are... Not everything can be written down. Like opinions that we cannot really explain or be sure about. It may sound peculiar, but we're not always sure what to make of observations, so we say to each other, "You should keep an eye on that" or "I think she's a bit sad, but I'm not sure". "Can you observe that before we decide what to do?" Things like that.

The nurses also communicated that articulating insecurity in writing was difficult, and involved the risk of losing or altering the message. One nurse explained, "There are nuances that disappear if we only use written reports, like vague things that aren't communicated there. Things that are easier to say than to write, like if you have a feeling about something, but you aren't very sure".

Sometimes the uncertainties concerned how to interpret results and measurements, or prescriptions and previous record notes by other clinicians, e.g. questioning why a medication was prescribed when test results suggested otherwise, or what to make of a brief statement in the record in light of the patient's current condition. Thus, outgoing nurses used the handover to inform incoming nurses of mismatches between information found in the record and their own subjective experience and assessments of patients. Uncertainties involved in assessing a patient's condition suited for a written record thus involved combining and make sense of information from various sources

> Some things are written, but need supplementary information. Like "I've tried this, but I think you should pay attention to this and that". "I think he might be a bit confused, but then I might be wrong, so you should perhaps keep an eye on that". You don't want to do the patient wrong and write anything that might not be accurate.

When colleagues were aware of such doubts, they could more easily decide which patients to see first, and which indicators to focus on. One nurse reported providing oral information

> …if there's anything special, like a check-up, or something's happened that's caught my attention. Something abnormal. Say I have a bad feeling about a patient; he hasn't been feverish, and his results were fine, but he's a bit feeble and exhausted, or like a patient's temperature has gone up and down, so his condition could decline very rapidly. Or, that a patient's breathing is a bit abnormal for instance.

Discussing what to make of the multiplicity of information that nurses held about patients, then, not only worked to provide a broader picture than the record alone provided. It also enhanced the value of record notes, rendering the information found there more meaningful.

These findings demonstrate that making sound judgements about changes in patients' condition, and knowing when to decide what to write, is never a straightforward, systematic process, nor in shift handovers. Furthermore, the communication practices, drawing on various sources through reading, writing and talking, were not considered part of the process of reaching a clinical judgement, but constituted the very essence of decision-making and how it is accomplished.

4.4. "We make decisions together"

During a shift, nurses constantly seek support and recognition from colleagues regarding the many assessments they make before, during and after the handover report. The incoming nurse sometimes knew patients from previous shifts and could provide additional information on their condition and future care needs, which could affect what the outgoing nurse finally wrote in her report. The handover was thus more of an ongoing, reciprocal consultation between nurses in their common effort to understand a patient's

situation than a one-way transfer of information between nurses. The temporary conclusions made were noted in the record as a basis for future consultations and assessments, also playing an important role in mutual learning. Describing the handover communication, involving reading notes and talking, one nurse concluded

> …And this is like how we cooperate. You know, some people are more experienced than others, and some have more experience with particular conditions. So then it's often like, I ask someone, "I've got this patient, this has happened, I have observed this. Then look at these test results, what do you think? My thoughts are so and so, do you agree with my assessment?" That's to get my observations confirmed, and then others ask me like that, so I reckon when making patient assessments we seek support from our colleagues.

This quote also raises another essential aspect of decision-making as a collective achievement, namely the need for professional and moral support. Working with chronically and critically ill patients, in an environment where accountability and risk management are emphasised as strategies to meet the needs of knowledgeable patients and prevent publicity on clinical failures, the cancer nurses expressed a need for joint responsibility

> We, colleagues, need to stand side by side, and we make decisions together. I believe it's important that we all more or less agree that 'this is the right decision'. Confronting the patients and relatives, we're like "This isn't only my opinion, but we all agree on this."

Thus, efforts to solve uncertainties and make sense of the pieces of information obtained during a shift involved reading the written documentation containing record notes from nurses and other health professionals, as well as results from measurements and tests, and discussing these with others. It also involved sharing observations and drawing on each other's experience before eventually deciding on what constituted the most essential aspects of patients' here-and-now and the need for future actions, which were noted in the record. Patient narratives were, thus, produced as collective accomplishments, involving a continuous interplay between embodied and inscribed knowledge, through reading, writing and talking. Handovers appeared to be important situations for such performances to take place.

5. Discussion

The main aim of this study was to enhance understanding of the implication of electronic patient records on clinicians' cognitive work by exploring how nurses engage with the record when silent reporting is implemented in shift handovers. The oral handover has been criticised for being speculative, vague, subjective, and irrelevant for patient care, and the need for its replacement with more unambiguous and formal systems has been proposed and increasingly implemented in hospitals around the world (Spooner et al., 2013, 2018; Sexton et al., 2004; O'Connell et al., 2008). This study's findings concur with research suggesting that such one-sided focus on replacement rather than on the interplay between formal and informal handover practices is linked to a lack of recognition of handovers' embeddedness in particular work practices, involving different skills, knowledge, and artefacts, and playing informational, social and educational functions (Kerr, 2002; Meum and Ellingsen, 2011; Benner 2004).

The findings also support the assumption that, due to the close relationship between written and oral accounts in the organisation of medical work, relying exclusively on formal tools like electronic patient records may affect the nurses' cognitive work and create a knowledge gap in clinical practice (Atkinson, 1995; Meum and Ellingsen, 2011; Wisner et al., 2019). The article contributes to this field of study by illuminating how this potential knowledge gap can be understood to depend on the possibility for nurses to incorporate the electronic patient record into their evolving, dynamic and contextualised understanding of the patient's status, enmeshed in complex and dynamic workflows (Wisner et al., 2019). Further, it highlights the role talk plays in facilitating this integration by enabling translation between embodied, informal knowledge, employed and expressed by the individual nurse through work, and formal knowledge inscribed in the electronic patient record (Freeman and Sturdy, 2014; Berg, 1996, 1997).

Oral communication played an essential role in the writing of record notes. When nurses reported needing to "consider what to write" and how to phrase it, they did not refer to a cognitive, individualised simple transfer of personal knowledge to the record text. Instead, providing an accurate and fair textual representation of the clinical encounter with patients, considered sufficiently professional and objective was a collaborative achievement where information from various sources needed to be orally negotiated (Allen, 2015; Bar-Lev, 2015). These negotiations also involved discussing how to make sense of already written notes, containing knowledge inscribed in text. Here, talk played the role of re-embodying knowledge that had been detached from the embodied experience, by adding essential affective, contextual and intersubjective dimensions (Freeman and Sturdy, 2014).

Thus, sharing information considered too sensitive, subjective or uncertain for the record but still considered essential to the provision of care ensured that the personal and embodied knowledge of the individual nurse was enacted in interaction with others, feeding into future patient encounters and later record inscriptions (Freeman and Sturdy, 2014). While being restricted by the rules of the written language and by the ascribed archival and legal purpose of the record within the hospital context (Berg, 1996; Fitzpatrick, 2004), it did however also work to enhance the meaning and relevance of the record notes, in the nurses' common effort to comprehend and attend to patients' urgent needs. The discussions involved in the creation and sense-making of record notes, then, allowed new knowledge to arise in the form of new ideas and insights but also operated as a mechanism of moral support and control. The handover conversations thus laid the ground for regularity, facilitating knowledge production channelled within a community of knowers to which the nurses belonged (Freeman and Sturdy, 2014).

Without disregarding the value of written texts or neglecting the possible fragility of verbal sharing of information, this demonstrates that nurses' cognitive work is enacted within an oral culture, evolving in interactions with multiple others, human and non-human, including resources such as protocols, policies and medical technologies (Bloor, 1976; Berg, 1992; Goodwin, 2014; Rapley, 2008; Mesman, 2008; Atkinson, 1995). Furthermore, handovers appeared to be essential situations for such collective practices of clinical decision-making. As demonstrated by Kerr (2002), however, nursing handovers have multiple functions. The findings in this study demonstrate that the oral consultations among the nurses also involved negotiating how to generate a satisfactory presentation of nursing knowledge, in a technologically mediated hospital context where knowledge is hierarchically ordered and evaluated (Meum and Ellingsen, 2011; Benner, 2004). The article thereby argues that the restrictions imposed on the nurses' handovers practices, involving both management-led limitations on talk through silent reporting, and self-inflicted censorship on what to write, can be understood as related to the legitimacy and visibility of elements of nursing practice and the knowledge needed to support it.

This became evident through the realisation that the value of talk and its interplay with written accounts was recognised and formalised in other clinical encounters on the ward, like the physi-

cians' morning conferences, and the pre-round meeting between nurses and physicians. According to Star and Strauss (1999), no work is intrinsically visible or invisible, but may be viewed as one or the other within particular contexts. The nurses' work on the cancer ward was astonishingly diverse. Unlike the work of physicians, they did not only focus on the physical body, but also on "embodiment, suffering, lifeworld possibilities and constraints, and human responses to and coping with illness" (Benner, 2004: 427). Since almost all the ward nurses were women, these tasks can be characterised as gendered work and thereby functionally invisible, being taken for granted as resting on women's natural talent (Allen, 2015; Star and Strauss, 1999). Furthermore, Benner (2004) has pointed out how social aspects and the sentient human body have been separated from the traditional medical diagnostic process.

Hence, in a hospital context where evidence-based medicine represents the gold standard (Timmermans and Berg, 2003a), and the objective dominates over the subjective, practices directed at the psychosocial and relational become marginalised and invisible (Benner, 2004). Moreover, the associated knowledge is considered subjective and hence speculative, and thereby irrelevant to clinical decision-making and to the record system (Vikkelsø, 2005). The translation practices accomplished by nurses when engaging with the electronic patient record thereby also involved transforming their knowledge to meet professional and institutional standards and stylistic conventions. This implies that when relying solely on formal handover tools it is not only information essential to nurses' dynamic, evolving and contextualised understanding of the patient situation that is lost in translation, but also the visibility and legitimacy of nursing knowledge.

6. Limitations

There are several limitations to this study. First, all data were collected from one hospital ward only, providing insights into a limited range of healthcare practitioners. A significant volume of data from both participant observation and interviews was however accumulated, and data saturation was achieved. Second, within the health sciences concerns are being raised about the possible bias caused by the presence and subjectivity of the researcher (Wind, 2008; Mulhall, 2003). Moreover, being an anthropologist doing a study among nurses provides a potential challenge to the accurateness of the interpretations of what was going on. The length of each session, observing whole shifts**,** and the extended length of the fieldwork as a whole worked to diminish these limitations, as did the apprentice role I was ascribed during fieldwork. Furthermore, discussing my findings with the nurses, both during the fieldwork and in the interviews, and contextualising my interpretations in light of previously written field notes and research on related topics worked to guide my interpretations. The fact that I was not a nurse stood out as an advantage in that it allowed me to ask naive questions and to illuminate aspects of nursing work and competences, taken for granted by the nurses.

7. Implications and conclusions

This article adds to the literature on how electronic patient records influence nurses' cognitive work by emphasising how restrictions on talk work to inscribe a set of ideas about appropriate communication between nurses, affecting their possibility to incorporate the record system into dynamic and complex workflows (Wisner et al., 2019). Furthermore, the study detects how silent reporting becomes a question of legitimacy and visibility (Star and Strauss, 1999, Benner 2004), promoting biomedical, 'objective' and formally inscribed knowledge over orally shared and informal knowing of relational, sensitive and uncertain patient issues. Finally, the necessary interconnectedness between these types and ways of representing knowledge to nurses' clinical decision-making and professional knowledge is potentially lost (Berg, 1996, 1997; Timmermans and Berg, 2003b).

As such, this article supports assertions in the literature that when new technologies are implemented, this may be particularly problematic for already marginalised and invisible practices such as those of nurses (Bergey et al., 2019; Allen, 2015; Bar-Lev, 2015; Benner, 2004). To ensure quality and continuity in care provision, then, managers and policy-makers need to acknowledge and support practices and competencies that can never be classified or formally documented. Furthermore, they need to acknowledge that formal documentation systems are always partial, unable to capture the actual, multifaceted nature of professional work (Bar-Lev, 2015; Benner, 2004; David et al., 2009).

This article has aimed to illustrate how this involves recognising the role talk plays in the translation between the embodied and informal knowledge of the individual nurse and formal knowledge inscribed in record notes. Thus, although silent reporting did not silence the nurses, the lack of formal structures to ensure fruitful interplay between oral and written accounts represents a threat to nurses' cognitive work as a collective achievement and to the usefulness of electronic patient records as a mediator of knowledge about patients. Further, this has unintended consequences for the legitimacy and visibility of nursing knowledge, with real and visible implications for care provision.

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Conflict of Interest

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