



Interprofessional student groups using patient documentation to facilitate interprofessional collaboration in clinical practice – A field study

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ABSTRACT

Background: This article explores and provides insights into how students learn interprofessional collaboration in a clinical placement. This topic is of interest for stakeholders in health services and education and for the research field of interprofessional education.

Objectives: How patient documentation facilitates collaboration in interprofessional student groups is explored.

Design: This study uses qualitative research with an ethnographic design.

Settings: This research studies interprofessional education at a Norwegian university.

Participants: Three student groups that participated in a two-week interprofessional clinical placement in a geriatric rehabilitation ward were studied, which comprised students of medicine, nursing, occupational therapy and physiotherapy.

Methods: Data were generated through observational studies and informal conversations with the students in interprofessional placement and consists of written field notes and transcribed audio-recorded conversations. The analysis drew on concepts from practice theory related to the social practices of learning.

Results: The students creatively and dynamically used a narrative note in the electronic patient record system in the ward to create an overview of care and ensure continuity of care for the patients for whom they were responsible. By using the narrative note in the record, the students aimed to develop a comprehensive understanding of their patients' clinical situations and care needs. When new information was entered in the note, information already written by individual students and student pairs was reviewed by all students, revised and mutually refined. As a result, multidimensional representations of the patients' health statuses and care needs emerged, including how the patients responded to the students' suggested interventions.

Conclusions: Patient documentation can be a tool for stimulating interprofessional collaboration when students are allowed to organize patient care independently. We suggest that students' natural meaning-seeking capability is a hidden resource that can be exploited in interprofessional education.

1. Background

This article explores how students learn interprofessional collaboration in a clinical placement. The review literature on interprofessional education (IPE) shows that students enjoy learning interprofessional collaboration in realistic contexts (Granheim et al., 2017). Students are especially positive when voluntarily participating (Reeves et al., 2016) and when allowed to practice their own profession (van Soeren et al., 2011). The literature also shows that students develop collaborative knowledge, skills and attitudes when training in such

contexts (Fain and Kennell, 2017; Granheim et al., 2017; Kent and Keating, 2015; Reeves et al., 2016). However, this finding mainly rests on students' self-reported experience (Kent et al., 2017; Oosterom et al., 2019; Reeves et al., 2016). Therefore, it is not clear what students actually learn and how they learn (Kent et al., 2017; Oosterom et al., 2019; Reeves et al., 2016). To develop more in-depth knowledge about students' actual learning in interprofessional training in realistic contexts, more observational studies are needed (Kent and Keating, 2015; Reeves et al., 2017). This knowledge is of interest to stakeholders in health education and services and to the research field of

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interprofessional education.

The primary focus of this study is to explore how a narrative note in the electronic patient record system is used by three interprofessional student groups in clinical placement to facilitate their own collaboration. Traditionally, healthcare professionals document their observations, assessments and services in profession-specific documents and in sections of the patient record (Halford et al., 2010). Consequently, information is fragmented, which may compromise the quality of patient care, and the information recorded by some professionals is given a higher status than other professionals (Elias et al., 2015; Halford et al., 2010). With the transition to an interprofessional work organization, the varied information included in the patient record by various professionals is expected to be interconnected (Bardach et al., 2017). How the interconnection of information should be organized to support interprofessional collaboration is still under development (Bardach et al., 2017).

We have not found any studies in the literature of interprofessional education (IPE) about whether interprofessional student groups use the electronic patient record to document and if this supports their collaborative clinical work. Our research question addresses this knowledge gap; we ask what interprofessional student groups are doing when using a narrative note in the electronic patient record to support their collaborative work and what the consequences are for the representation of patients' health statuses and care needs.

Our study builds on an educational intervention in clinical placement that facilitated interprofessional collaboration for volunteer students in the last academic year of Bachelor's degree programmes in nursing, occupational therapy and physiotherapy and in the fifth year of medical school (Norbye, 2016). The pedagogy that underpins the intervention was inspired by the idea from practice-oriented theories that humans are knowledgeable beings that can find meaningful ways to reach goals in life as members of communities of practice, and they thereby develop and change social practices in society (Reckwitz, 2002; Wenger, 1998). The participating students were organized in groups and given the responsibility to provide health services to pre-selected patients.

The data in our study were generated through the observation of and informal conversations with three interprofessional student groups. The data analysis draws on concepts from practice theory in general and more specifically, from Wenger's (1998) sociocultural learning theory.

2. Theoretical approach

From the perspective of practice theory, society is understood as a set of social practices, and individuals are viewed as meaning-seeking beings who continuously learn through interaction in communities of practice (Nicolini et al., 2012; Wenger, 1998). Accordingly, practices emerge through human interaction that is based on shared cultures of cognitive and symbolic knowledge. This knowledge is expressed through routinized behaviour (Nicolini et al., 2012; Reckwitz, 2002). When a practice changes because the participants experience that the existing knowledge and objects no longer realize the goal of the practice, the changes in the participants' actions and interactions may be seen as an expression of learning (Nicolini et al., 2012; Wenger, 1998). This learning is possible for other humans to observe and describe (Wenger, 1998).

In some practices, practitioners' professional boundaries are crossed. By crossing boundaries, practitioners can develop new and more complex knowledge together (Akkerman and Bakker, 2011; Wenger, 1998). However, to collaborate across boundaries, professionals need a boundary object. A boundary object is a material or immaterial artefact that bridges gaps between professionals from different disciplines (Akkerman and Bakker, 2011; Wenger, 1998). Boundary objects might also appear as "epistemic things," which refer to objects that none of the practitioners are familiar with prior to collaboration (Nicolini et al.,

2012). The nature of the object is open, and it appeals to the practitioners' emotions and generates close bonds between them. The object requires practitioners to combine their resources to create affiliation between them (Nicolini et al., 2012). In the very process of pursuing a common goal to develop or change a practice, practitioners must cultivate or adopt various resources that enable them to negotiate opinions and direct their actions and interaction towards the goal (Wenger, 1998). Resources can be activities, relationships and materials, and the sum of the resources is the participants' *shared repertoire* (Wenger, 1998). The narrative note in the electronic patient record may be seen as a boundary object, as it facilitates the students' negotiations of opinions about patient health status and directs their actions and interactions towards what they perceive to be good patient care. Indeed, according to Lave (2019, p. 85), to participate in changing a practice is to participate in mutual learning.

3. Methods

3.1. Context

The students who were recruited for the interprofessional placement were organized into three interprofessional student groups. The composition of the groups was random. Each group participated in a two-week interprofessional clinical placement in a geriatric rehabilitation ward in municipal healthcare from 2014 to 2015. The ward was one of the university's ordinary collaboration partners that usually organized clinical placement for healthcare students from single health professions and had the capacity and willingness to participate in the development of new modes of teaching at the clinic. Each student group was given responsibility for exploring the implementation of a complex, long-term interprofessional collaboration for two patients. The students collaborated with the ward personnel during regular handovers and clinical meetings to ensure continuity and safety in patient care. A tutor was assigned by the head of the ward to supervise the student groups' interprofessional collaboration. Two of the student groups were supervised by the same tutor. This tutor was an occupational therapist who had attended a tutoring course. The third student group was supervised by a physiotherapist who also was the head of the ward at the time. The ward personnel allowed the students to develop their collaboration during the placement.

3.2. Participants

All three student groups consisted of one student from each of the following disciplines: medicine, nursing and occupational therapy. However, one of the groups missed a physiotherapy student due to concurrent skills training in the physiotherapy program. The nursing, physiotherapy and occupational therapy students were in their final year of their BA programmes, and the medical students were in their fifth year.

3.3. Data collection

The data collection followed an ethnographic approach. The first author, who is a nurse and sociologist, conducted observations and informal conversations with the student groups throughout the two-week periods. The author and the students did not have any previous relationships with one another before the study. The data were generated by observing students' interaction during and between group activities and meetings. Field notes were written during the observations. The student group meetings and the author's informal conversations with the student groups were audio-recorded.

3.4. Analytical strategy

The analysis was led by the three questions given by the practical

iterative framework of qualitative data analyses (Srivastava and Hopwood, 2009). Authors one and two coded the data material, and authors three and four participated as discussion partners in the coding process. In the analysis, we repeatedly alternated our attention among our research questions, the data and the theoretical framework. Following the first iterative question of ‘what are the data telling us?’ we asked ‘*what are the students’ doing when meeting together to document?*’ The data material was interpreted sentence by sentence and reconstructed by using initial codes. Thereafter, the initial codes were reconstructed into categories of actions across the student groups. Following the second iterative question, ‘what do we want to know?’ we then interpreted the categories by asking ‘*what is the students’ approach to the documentation act?*’ We reconstructed the categories into main themes of actions and identified typical examples of the themes across the interprofessional groups. We then asked the third iterative question, ‘what is the dialectic relationship between what the data are telling us and what we want to know?’ The students’ main actions when meeting together to document seemed to be *completing multidimensional descriptions of the patients’ functions in the narrative note*.

In considering the first iterative question once again, we investigated and interpreted the condensed multidimensional descriptions by asking ‘*what is the content of the multidimensional descriptions in the narrative note?*’ We then reconstructed the descriptions into categories of content. In relation to the second iterative question, we asked, ‘*what are the students doing to integrate one another’s observations and assessments into multidimensional descriptions?*’ We then reconstructed the categories of the content into three main ways of integrating information. The three ways were a) acknowledging differences in professional perspectives on patient health, b) recognizing profession-specific expert knowledge on patient health and c) combining similar profession-specific knowledge on patient health. Regarding the third iterative question, the students’ documentation seemed to *support interprofessional collaboration*.

4. Findings

Based on the field notes and audio recordings from the students’ initial conversations in each group, we observed that the students from the very beginning of the placement argued that they had to create a written connection between the patient observations and assessments that each of them made to be able to collaborate interprofessionally. The students had noticed that there was a narrative note in the patient record in the ward, which they all had access to and in which they all could document profession-specific information, and they collectively decided to use this note. Furthermore, we observed that the students documented their work by recording observations and assessments both individually and in pairs and completing the final text together as a group during planned meetings. In these meetings, the student already working on the computer was chosen to write in the note on behalf of all students. Often, this was the medical student. However, the students alternated who was writing when profession-specific expert knowledge had to be documented.

In the group meetings, the students completed the final text in the note by discussing the information that was read aloud from the students’ individual documentations and that was shared verbally concerning the patients’ functions. The students both acknowledged the different professional perspectives and recognized profession-specific expert knowledge. The combination of recognized profession-specific knowledge and acknowledgements concerning the patients’ health functioning developed into recognitions and combinations of professional knowledge in the text in the narrative note. Accordingly, the final text reflected a multidimensional description of the patients’ health status that supported collaborative work. We here present examples of how the description evolved through the students’ discussions.

4.1. Acknowledgement of differences in the professional perspectives on patient health

When the students discussed one another’s observations and assessments of the patients’ functions, they discovered that the depth knowledge in some areas was different among the professions. They then began to explore one another’s assessments by asking open-ended questions that encouraged elaboration of one another’s assessment basis. In light of their perspectives, the students realized that some uncertainty was associated with their own professional statements about the patients’ health. In the final text, the differences in profession-specific information were acknowledged and ended with a statement that indicated that something had to be examined more closely. The following example is from a discussion in student group 1 about a patient’s problems with hearing:

“I’ve already written that the patient had good hearing when tested,” says the medical student and explains to the others the examination that was performed. “I find that she occasionally has difficulty hearing, so I have to raise my voice,” says the occupational therapy student. “Does the patient actually not hear, or does she not understand what’s being said?” wonders the physiotherapy student. “It went fine when I asked her if she could hear during the test, but she seemed tired or unable to concentrate at other times when I talked to her,” explains the medical student. “But I haven’t found that she can’t follow conversations she’s interested in. Not even when the television is quite loud,” says the nursing student. “So, I’ll write that the patient appears to have some reduced hearing during activities,” says the medical student. “Yes, and we need to investigate this further,” adds the occupational therapy student. The other students nod or say yes.

(Field notes and audio recording, 2014).

When the medical student summarizes the documented text, he relates the fellow students’ descriptions of the patient’s hearing to his own previously recorded conclusion that the patient’s hearing was good. The new statement indicates some doubt about the patient’s hearing. The recorded doubt about the patient’s hearing is the group’s overall assessment, which resulted in agreement among the students that the patient’s hearing needed to be further assessed.

4.2. Recognizing profession-specific expert knowledge on patient health

The students also discussed areas of the patients’ functioning in which only some of the students had the in-depth knowledge to evaluate. In this context, the students allowed individual students’ profession-specific expert knowledge to be the main source of the new knowledge and the recorded text. The following example is from a discussion in student group 2 about a patient’s paralysis:

“The patient uses the entire body,” says the occupational therapy student. “Not the left side,” says the nursing student. “No, but he’s begun to use the left side,” replies the occupational therapy student. “Yes, but his right arm and foot are at least functioning normally,” notes the nursing student. The medical student enters what the nursing student says. “We need to encourage this patient to use his left arm to manage using the brake on the wheelchair. He can manage that,” says the occupational therapy student. “Can he?” asks the nursing student. “Yes, the brake isn’t rigid, and he can flex his fingers well,” replies the occupational therapy student. “I’m writing about the left arm here now. What are the patient’s problems there? Extending his wrist and fingers?” asks the medical student and writes “left arm” on the form and waits before writing anything about the arm. “Extension of the fingers and wrists and generally extension in the entire arm. And the patient has shoulder abduction when doing different activities and flexes his elbow inwards,” answers the occupational therapy student and demonstrates the

patient's arm movements to the other students.
(Field notes and audio recording, 2015).

Here, the occupational therapy student shared her observations by emphasizing the patient's left arm function. When the students explored their knowledge and assessments in depth, they recognized that some knowledge and assessments could be given more weight than others in the description in the narrative note. The occupational therapy student's profession-specific understanding of the patient's situation and proper intervention became a shared understanding in the student group and was entered into the note.

4.3. Combining similar profession-specific knowledge on patient health

The students also discovered that they had made similar observations and assessments of the patient's health. When there was agreement on the knowledge and assessments, the students elaborated on one another's descriptions. The various elements presented provided more detailed knowledge of the patient and were included in the common description. The following is a discussion in student group 1 about a patient's speech functioning:

The medical student reads, "Under 'Speech and Cognitive and Physical Functioning,' nothing's been written yet." "The patient has difficulty finding words," says the physiotherapy student. "Yes, and that's also reflected in her writing. She can't express words to form a sentence. But things like that go hand in hand," says the occupational therapy student. The medical student starts writing on the form. "Yes, there may well be a connection there," the physiotherapy student answers thoughtfully. Yes," confirms the occupational therapy student. The medical student stops when he has finished writing and says, "I'm just writing down what you say." "What else?" asks the occupational therapy student, looking at the others. "But the patient can easily make herself understood when she communicates," says the physiotherapy student. The medical student immediately starts writing again. "Yes! She really can! She starts the conversations by herself," says the nursing student in an emphatic tone. There is a pause while the medical student finishes writing.

(Field notes and audio recording, 2014).

As a group, the students did not differentiate between the profession-specific knowledge and assessments of each student contributing to the documentation. The text became a coherent description of how the group as a whole assessed the patient's language functioning.

We observed how the students developed multidimensional descriptions that were complementary to the individual assessments by referring to their background information, agreed-upon descriptions in meetings, reports and conversations with the ward staff. The complex descriptions were used not only in documentation but also in their collaborative processes and continued work with the patients.

5. Discussion

In the analysis, we show that the student groups used a narrative note in the patient record to document their clinical work as a group. In doing so, the students aimed to develop a multidimensional representation of their patients' clinical situations and care needs. Based on our findings, we assert that interprofessional student groups are themselves capable of developing suitable ways to collaborate. Teachers and tutors in the clinic should recognize students as meaning-seeking beings and exploit their openness and creativity in the learning process.

The IPE student placement studied was based on a sociocultural perspective of learning that recognizes humans as knowledgeable learners in communities of practice. In this paper, we explored what interprofessional student groups do when using a narrative note in the

existing patient record to support their collaborative work and the consequences for the representation of patients' health statuses and care needs. We described how the students developed multidimensional descriptions of patients' health statuses by using the note. The different students' professional backgrounds became a valuable resource for the interprofessional student groups that enabled them to negotiate opinions about the patients' health and further activity in patient care. The findings confirm previous evidence that students increase their knowledge and skills in IPE (Granheim et al., 2017; Kent and Keating, 2015; Reeves et al., 2016, 2017).

As the students shared their knowledge and assessments and documented them in the narrative note, they discovered that they could provide patient care in new ways. From the perspective of practice theory, people change their mental and physical activities when they find the already used combination of activities to be ineffective for achieving their goals (Nicolini et al., 2012; Reckwitz, 2002; Wenger, 1998). We interpret the students' positive attitudes towards collaboration as their willingness to explore the concept of interprofessional collaboration, as they experienced not only that they had complementary knowledge but also that they learned from one another, about one another and with one another through collaboration, which is the desired reaction to political visions expressed in society and education. Therefore, it seems important that the students could perform activities relevant to their own professions in IPE to make use of their own openness to developing new understandings of their own professions. Previous findings have also shown that students especially enjoy practising their own profession in IPE (van Soeren et al., 2011).

The immediate sharing of profession-specific knowledge and assessments among the students in our study can be understood as a reaction to the students' responsibility for patient care and interprofessional collaboration. All students were willing to explore the patients' health statuses and decide the appropriate healthcare as an interprofessional group. Furthermore, the students expressed that they were dependent on the other students to create a more complete picture of the patient's situation. Therefore, the narrative notes became the students' boundary object, i.e., an object that enabled them to cross boundaries to create more complex knowledge (Akkerman and Bakker, 2011; Wenger, 1998). The boundary object may also function as an epistemic object, i.e., an object that draws people towards it because people want to describe it and that therefore creates bonds between the people involved (Nicolini et al., 2012).

The students transitioned from their traditional documentation activities to interprofessional documentation to determine the patients' health statuses and care needs. Wenger (1998) suggested that people pursuing a common goal over time may develop or adopt resources that help them reach the goal. These resources can be activities, relationships and objects. We interpret the students' development of a common documentation as a new resource that the student groups creatively developed. The common documentation gave the students a new space that allowed them to document their new interrelated, interprofessional knowledge. The traditional documentation practice that involved the use of different documents became insufficient for the interprofessional knowledge they needed to record. Traditionally, professionals document observations and assessments in various documents and sections of the patient record (Halford et al., 2010) without connecting the information. The note chosen by the students in the patients' record became the boundary object in which they could share and discuss the complexity of the patient's health status in a nuanced way. It also structured the students' discussion and negotiations to enable interprofessional collaboration.

Traditional, profession-specific documentation may compromise the quality of patient care, as the information that is documented by different professionals can be incoherent and inconsistent, and more weight can be given to information provided by certain professionals (Elias et al., 2015; Halford et al., 2010). The students in this study argued that the common documentation was a natural consequence of

working interprofessionally. Thus, the narrative note avoided compromising the quality of patient care by directly and systematically connecting the students' knowledge and assessments and by documenting their common conclusions. By sharing knowledge and assessments, acknowledging differences in perspectives, recognizing profession-specific expert knowledge and combining similar perspectives, the students succeeded in developing collaborative multidimensional patient descriptions in patient care.

5.1. Limitations

We recognize that some aspects may have led to students' positive engagement in interprofessional learning and collaboration. The student recruitment and voluntary nature of participation could have contributed to the students' willingness to learn from the educational intervention, as also described in previous research in the field (Reeves et al., 2016). Being part of a research project and being observed could also have limited disagreement among the students. However, when the students were asked about the impact of the presence of the researcher, they stated that they forgot the researcher as soon as the discussions about the patients started. Furthermore, some students stated that the researchers' questions increased their reflections on their own and the groups' actions by simply being asked to elaborate on the reason for their actions. The relation between the researcher and the research subject is a social relation that also implies mutual meaning-making. Therefore, the researcher continued to ask open-ended questions about the students' reasons for their actions to generate data about the students meaning-making and learning. Finally, the students' common documentation received positive feedback from the ward staff. The ward staff's spontaneous positive reactions were not restricted. Nevertheless, the common documentation was initiated and developed by the students themselves and was a response to their responsibility as a group.

6. Conclusions

In this paper, we contributed new insights into how collaborative documentation evolves in interprofessional student groups. Employing ideas and concepts from practice theory, we examined students' positive attitudes towards changes in professional work and their development of a common documentation as a way to collaborate and form pictures of patients' health conditions and treatment. By drawing on the concept of epistemic objects, we observed how the students creatively developed common documentation practices, which enabled complex and nuanced knowledge to be shared with ward personnel. In addition, Wenger's (1998) concept of shared repertoire allowed us to recognize that the students developed resources for patients' records by transforming traditional documentation activities into their own shared activities. We also noted that the interprofessional student groups were able to establish new ways of collaborating to enable interprofessional collaboration for better healthcare. Healthcare students can be a resource to healthcare when they are allowed to explore new practices. Students' natural openness and creativity can be exploited in their learning processes, as their natural meaning-seeking nature is not necessarily constrained by traditional practices in healthcare. The study also shows that documentation processes can become an important and valuable learning arena for interprofessional students in their collaboration.

Data availability

The data that consisted of field notes, transcribed informal conversations and student group meetings are available in the Norwegian language.

Informed consent

Informed consent was obtained from all individual participants included in the study.

CRediT authorship contribution statement

Anita C Gudmundsen: Conceptualization, Investigation, Formal analysis, Writing - Original Draft, **Bente Norbye:** Conceptualization, Funding acquisition, Writing - Review & Editing, **Madeleine Abrandt Dahlgren:** Conceptualization, Writing - Review & Editing, **Aud Obstfelder:** Conceptualization, Writing - Review & Editing.

Role of the funding source

This study was funded by UiT, The Arctic University of Norway. The funding source had no influence in the study design, in the data collection, analysis of the data, in the writing of the report, and in the decision to submit the article for publication.

Ethical approval

The Norwegian Social Science Data (NSD) approved this research project in July 2013 (approval number 34895). Furthermore, the Regional Ethics Committee of Medical Research Ethics approved the project in September 2014 (approval number 2014/1659).

Declaration of competing interest

The authors declare that there is no conflict of interest.

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