

Patient Accessible Electronic Health Records: Impacts on Nursing Documentation Practices at a University Hospital

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Abstract

In a Norwegian health region, patients have online access to their own electronic health record and they can also read the nursing documentation. This paper presents a qualitative study made at a university hospital to investigate how patient accessible electronic health records impact on nursing documentation practices. Semi-structured interviews were made with 12 informants from 5 cardiology departments at one hospital regarding how they used electronic nursing documentation in their daily practice and how they experienced patient accessible nursing documentation. The nurses emphasized that they focused on a clear and well-written nursing documentation, but in some situations, they were hesitant to write sensitive information. The study concluded that the implementation of patients' reading access to the electronic health record had limited impact on the nursing documentation and the daily practice at the departments, but the nursing handover had an even more important function for oral exchange of information.

Keywords:

Electronic Health Records, Nursing Practice, Nursing Informatics

Introduction

Continuity of care and treatment is one of the main concerns of health care services. Electronic health records play an important role in the management, storage and distribution of health care information [1][2]. In Norway, there is an ongoing national strategy for improving the electronic coordination and cooperation in health care with the main purpose to improve the information flow between different actors across organizational borders of health care services [3][4], but also to improve the access to own health care information for citizens. [5]. In terms of patient empowerment, Norway has had a long tradition for access to reading own health care information and traditionally hospitals have provided a copy of the paper-based health record or a printed version of the electronic health record by request. This right to access and read own information is regulated by a national law [6], and the online access for to personal health care information has been highlighted in the goals for innovation of digital health care service from the national health authorities [5][7].

At the end of 2015, a Norwegian health region made a trial with providing online reading access to the electronic health record for 500 citizens. During 2016, the reading access was extended and made available for all inhabitants of the health region. Citizens can securely log into the web-portal

helsenorge.no and read the available information in their own electronic health record and for own children younger than 12 years old. The electronic nursing documentation is also available for reading, even during hospital stays.

In general, nurses represent the largest profession in health care organizations, and they are often referred to be the ones who weave together activities and create order in a complex work environment [8]. They make judgements and carry out care and treatment both independently and by orders from others [9]. Traditionally, nurses have documented nursing care in patient records, mainly in hand-written Kardex-systems. During the decade of 2000-2010 most Western countries implemented electronic nursing documentation. In that transition, the nursing documentation went from being a separate hand-written system to becoming an integrated part of the electronic health record.

Nursing documentation is an important element for the exchange of nursing care information and in the planning of nursing interventions [10], but also in terms of patient safety. The nursing handover, is a medium for communication and the tradition for oral overlapping between shifts is long and strong. The nursing handover involves a complex network of communication impacting on nursing interactions [11]. The communication of nursing care is a complex procedure within the context of high patient turnover and there are often time constraints in the overlapping between shifts. There is a need for clear and accurate communication for delivering high quality care [10].

In this context, the research study *Patient accessible electronic health records- impacts on nursing practices* was carried out at a university hospital in a Norwegian health region, to explore how electronic nursing documentation and nursing handovers were used in daily practice and how the nurse professionals experienced the reading access of the patients two years after the initial trial of it started. Five cardiology departments were chosen for the study, mainly because of the diversity in the patient care as they included an outpatient unit, invasive cardiac investigation unit, a short time investigation unit, an intensive care unit and a 30-bed cardiology ward divided into the three groups arrhythmia, myocardial ischemia and congestive heart failure. The cardiology departments participated in a previous study in 2008-2009, focusing on electronic nursing documentation three years after the implementation of it and the integration with the electronic health record [12][13].

Eight years later, the same departments were included to this study on nurses' experiences with the reading access of the

patients to the electronic nursing documentation. The research questions (RQs) stated for the study were:

RQ1: How is the electronic nursing documentation used in the daily practice of nurses at a university hospital?

RQ2: What impact have patient accessible electronic health records on the documentation practices of nurses at a university hospital?

Following this introduction, the research methodology is described. In the next section the results of the study are presented followed by a discussion of the main findings. Finally, conclusions are drawn.

Materials and Methods

Qualitative research methods [14][15] were used in this study, consisting of observations and interviews conducted during November 2017. Observations were made in one of the cardiology departments at the university hospital to better understand how the electronic nursing documentation was used in the clinical context, with focus on the documentation practices at the work stations and the exchange of nursing information the handovers. Annotations were made during the observations.

Semi-structured interviews were conducted with 12 informants, whereof 11 nurses and one nursing assistant/nursing student in the age from 25 to 63 years old, with a mean of 38 years. There were 3 males and 9 females. The informants were working at five different cardiology departments at the university hospital. The interview guide was divided into three parts. The first part collected demographic and background information. The second part targeted nursing documentation routines in general and the role of it in nursing handovers, also focusing on the usability of the electronic health record system and the ergonomics of the work stations. The third part of the interview guide addressed how the patients' online reading access to the nursing documentation impacted on documentation routines in the electronic health record, the log function showing the full name of the nurse and how complicated situations were handled and documented.

The interviews had an average duration of 34 minutes and were audio recorded. In addition, short annotations were made. The interviews were performed in consultation rooms located within the hospital departments. The content of the collected data was categorized using qualitative content analysis [16]. The Norwegian Centre for Research Data [17] approved this study with project number 56288. All the participants received written and oral information about the study and signed an individual informed consent.

Results

The results are presented categorized into the three sub-themes 1) documentation practice, 2) nursing handover and 3) patient accessible nursing documentation.

Documentation Practice

The nursing documentation was integrated as a part of the electronic health record system of the university hospital. In the work stations mainly desktop was used when documenting in the system, but laptops were also available. Each user had an individual username and password for the log in procedure.

The time consumption of the log in procedure was described as acceptable, even though some of the nurses explained that they logged in and out more than 10 times during a shift. Each user could customize the screen view of the electronic health record system. The nurses that were observed had a view showing the patient overview in the own department, results from blood samples, overview of documents from nurses, physicians and other health care professional groups, and the treatment plan. The treatment plan could for instance contain nursing interventions such as measuring diuresis, wound procedures, intravenous cannula, preoperative care and planning of the discharge to home. It was possible to choose from which profession to show notes in the documents' overview.

When a new nursing document was created 12 standardized key words were default in the text box to guide the documentation work, see Table 1. The key words were editable and the ones not used in the note could be removed.

Table 1– The Keywords for Nursing Documentation

Number	Keywords
01.	Communication/Senses
02.	Knowledge/Development/Mental
03.	Respiration/Circulation
04.	Nutrition/Fluids/Electrolytes
05.	Elimination
06.	Skin/Tissue/Wound
07.	Activity/Functional status
08.	Pain/Sleep/Wellness
09.	duction
10.	Social/Discharge planning
11.	Spiritual/Cultural/Lifestyle
12.	Other/Delegated from doctor

The nurses could use standardized phrases/codes for the documentation, but this was mainly used in the short time unit when documenting care after cardiac invasive investigations. In the bed ward, the nurses preferred to use the 12 key words and in addition write free text. Every created document during a shift needed to be approved with signature, but unsigned documents could be read by other health care professionals. Some nurses explained that they started writing a note early in the shift and finalized it close to the nursing handover. The nursing notes were divided into the categories *day note*, *evening note* and *night note*. There was also a document called *Nursing epicrisis* that was written before the discharge of patients, specially important for patients with services from home nursing or staying at nursing homes.

A patient classification system was used at the hospital with four categories. Each bed department had routine to classify every patient into one of the four categories to measure the workload and this was away to balance the workload between the working groups. Regarding the usability, the nurses expressed that the functions in frequent use worked quite well, but at first view the system could seem messy and some functions were not used at all. The most negative experiences expressed with the system was the high amount of documents stored in the documents' overview. Often, several documents needed to be opened to find earlier important information such as invasive procedures and treatment of specific diagnoses, which caused many clicks and took long time. A search function was earlier implemented during a system update that made it possible to search by terms such as pain, but several of the informants did not know how to use it.

The ergonomics of the work stations was described as *usable*, but with room for improvements such as desks with adjustable height, larger screens and better chairs as simple chairs were often used. Overall, the nurses experienced that there were too few desktops in the work stations, with queue occurring before shifts to document the nursing activities. The nursing documentation was mainly made at the work stations and not inside the patient rooms.

Nursing Handovers

Nursing handovers were observed between the shifts in the cardiology department. All staff, approximately 15 persons, were gathered together in a room and they were provided with a paper sheet with a patient overview printed from the electronic health record and they received a short oral report about all patients, also incoming ones. They were split into three groups by the head nurse. After the short report, each group went into separate rooms for detailed oral report made by the group leader of the leaving shift.

In the group report, a desktop was used to read information from the patient's electronic health record, focusing on diagnoses, physician's notes and blood samples. The nursing note from the leaving shift, and sometimes from the previous one, was usually opened and read out loud for the next shift. In addition, each patient had a short paper-based health record with a hand-written medication list and manual registrations of temperature, pulse and blood pressure, which were viewed and referred to during the report.

The nurses and nursing assistants made hand-written notes on the patient overview sheet, some of them used colored markers to highlight important information.

The nurses stated that they thought that mainly other nurses within the department read the nursing documentation, but they experienced regularly that physicians read the nurses' notes especially for patients with a complex history in the intensive care unit. Also staff at the investigation unit read the nursing documentation before cardiac procedures especially for patients with preoperative interventions. A few nurses mentioned that patients could read the notes.

Patient Accessible Nursing Documentation

Before the reading access of the patients was implemented, the nurses expressed that they received little information regarding the upcoming change. Some had read notices in newspapers and information leaflets within the hospital that were targeted for patients, but not directly to the staff. There were discussions internally within the staff group and, initially, there was skepticism regarding the change and how it would impact on working routines, but two years after the change the nurses expressed that they had become used to the reading access of the patients.

Regarding language formulations in the nursing documentation, the informants explained that they focused on documenting precisely, with good and short language and using descriptions on how they experienced situations. The majority expressed that they were more careful with what was written and how it was formulated in the nursing documentation. In general, they tried to avoid use of latin expressions and abbreviations. When it comes to mental status of patients, they preferably wrote things they observed instead of explicit statements. In some cases, for instance if a patient seemed to be confused but did not have any diagnose related to that, they would in many cases hand over that information orally. Three informants stated that the reading access did not

impact at all on own documentation practice. One expressed very clearly that *the nursing documentation is mainly working- and communication documents between the staff and the departments and important for patient safety, and the reading access of patients is not the focus*. The nurses told that there were regular discussions at the work stations about formulations, and how actual situations could be written down and explained in a good manner.

Only a few nurses had received questions from patients about notes from the electronic health record, but mainly regarding other health care professionals' notes and especially abbreviations, and not regarding the nursing documentation. The departments had received formal complaints from patients about formulations in the nursing documentation, with request on changing or removing text.

The most positive thing expressed by the informants regarding the reading access was that it would strengthen the patient empowerment, and that it could enhance the involvement and knowledge of patients in their own treatment.

The most negative concern expressed, was discomfort with the fact that the full name of the nurses was visible in the log function of each patient's electronic health record. The log function showed the name of the health care professional that had written and signed each note, and which employees that had accessed or read it. For special reasons, such as in emergency situations or for billing purposes, it was possible to write why the record was accessed. However, it was expressed that the log function was very important and it must be traceable who has written or read the information. One of the informants suggested that a sufficient solution could be to show only the employee-id and by request to the system administrator, the full name of the health care professional could be directed.

A few of the informants did not know that the log function showed the full name of the nurse to the patients, and expressed that they were skeptical because it is so easy to find persons on social media or online telephone directories. One nurse experienced to be contacted by a patient on Facebook, but did not know if the patient got the full name from the electronic health record or elsewhere. It was expressed that physicians are probably more familiar with the log and providing their full name, as they have years of experience with sending epicrisis with their full name to patients after hospital stays and consultations in outpatient wards.

Some unintended incidents had occurred after the implementation of the reading access of the patients. The nurses reported that unsigned nursing notes had for a period been accessible and readable for hospitalized patients. This means that the patients, in some cases, could read about things that they had not been informed about yet, such as planning of discharge from the hospital. It was suggested to have a 3-7 days delay of the patient's reading access to the nursing documentation, to avoid this kind of episodes.

Discussion

This paper has presented a qualitative study of the nursing documentation practice at a university hospital and how the nurses experienced the patients' reading access to the nursing documentation two years after the initial implementation. The research questions (RQs) formulated at the beginning of the paper are answered below based on the results from the study.

Regarding RQ1, asking about the electronic nursing documentation in daily practice. The nursing documentation was integrated into the electronic health record system and could be read by other health professions. The nursing documentation was guided by 12 standardized key words, shown by default when creating new nursing notes, but free text was also in frequent use. A treatment plan was a part of the nursing documentation and was used for nursing interventions. In the nursing handovers, a desktop was used to read from the electronic health record and the notes from the nursing documentation were usually opened and read aloud for the upcoming shift, which made individual hand-written notes.

Regarding RQ2, about the impacts of patient accessible electronic health records on the documentation practices of nurses. Most of the nurses stated that they were more careful with the formulations in the nursing documentation, especially regarding mental status, but tried to write in precise and short terms. There was some hesitation regarding showing the full name of the nurses in the log function, and they were afraid of getting contacted on other communication platforms than through the official ones of the department, similar skepticism has been described in other studies [18][19]. But in general, the nurses of the study were positive to the reading access for enhancing the patient empowerment and involvement in own treatment.

Future work would include extension of the group of informants, for instance with physicians and administrators, to gather more experiences with patient accessible electronic health records in hospital settings. In terms of patient empowerment, a group of patients with experience from the online access of their own electronic health record is recommended to include in the study.

This study had limitations, such as that the study was performed at one single hospital. However, the included university hospital was a pilot of implementing patient accessible electronic health records in Norway. The included informants were health care professionals with relevant experience regarding the research topic, and they meaningfully contributed to the study.

Conclusions

This study was made within the project *Patient accessible electronic health records- impacts on nursing practices*. The study concluded that the nurses were aware of that patients could read all the nursing documentation online, also during hospital stays, but it had limited impacts on their daily nursing practice. In general, the nurses focused on well written and clear information in the nursing documentation. After the implementation of the reading access, the oral nursing handover became even more important, as sensitive information such as mental status or temporary confusion of patients was not always included in the nursing documentation, but was instead handed over orally to the next shift.

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