Healthcare personnels' experience with patients' online access to electronic health records

Differences between professions, regions, and somatic and psychiatric healthcare

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Abstract

The aim of this study was to investigate hospital professionals' experience with patients accessing their own electronic health records, some years after implementing the service. Data was collected through an online survey. The results are based on 4477 replies. A quarter of the healthcare personnel (HCP) asked, had noticed that patients were better oriented about their own health after online access to their health record. Around 20 % of the HCP wanted to use the journal in following up patients. Under 15% of the HCP used more time on explaining and calming patients after the implementation. However, one third of the HCP spend more time on - and have changed the way they write journal notes. The results revealed that there are significant differences between the professions, regions and somatic and psychiatric healthcare.

Keywords

Electronic health record, digital access, PAEHR, healthcare personnel.

1 INTRODUCTION

The Norwegian Patients' Right Act states that all patients own their health records and have the right to read them [1]. To date, all hospitals in Northern and Western Norway and some hospitals in South-Eastern Norway provide patients online access to electronic health records (EHR).

Patient accessible electronic health records (PAEHR) are implemented in many countries, with variable policies and systems [2]. PAEHR are reported to increase patient involvement, through supporting patients to better understand their medical issues, feel more prepared for future visits, and to increase adherence to medications [3]. In addition, PAEHR is shown to be convenient and timesaving for patients [4], leading to a more balanced relationship between patients and healthcare personnel (HCP) [5].

However, the feedbacks from HCP on the impact of PAEHR have been diverse, and several concerns have been raised. Studies have showed that HCP become less candid in their documentation and spent more time on writing in the journal after PAEHR [6], and with a consequent increased workload [7]. There have also been concerns that online access to EHR without guidance from HCP may cause unnecessary worry, confusion, or distress among patients due to potential misunderstandings or disturbing information [7].

A Swedish study reported differences in expectations with regard to professions, finding doctors and psychologists in psychiatric care to be more negative towards PAEHR than nurses [8] [6]. Experiences from Norway also indicate additional challenges with the PAEHR for HCP working in psychiatry, with some HCP being sceptic to whether the service is suitable and safe for the sickest and most vulnerable patients or not. Some HCP in psychiatry reported that they omitted information from the EHR, or wrote off-the-record information into a "hidden" journal (also referred to as shadow records or ghost charts)[9].

Based on these findings, we aimed to investigate HCP's experiences with PAEHR in Northern Norway and South-Eastern Norway some years after implementation. In particular, the following aspects were explored: (1) perceived impact on patient empowerment and follow-up, (2) impact on patient-provider communication, (3) changes in documentation practices, including duplicate medical records referred to as off-the-record reporting. In addition, we wanted to investigate whether there were any differences in experiences: (a) between health regions, (b) between HCP in somatic care and psychiatric care, and (c) between different professions.

2 METHODS

2.1 Data collection

We conducted an online survey in two of the four health regions in Norway: Northern Norway and South-Eastern Norway. In Northern Norway, a link to the survey was sent by e-mail to all hospitals in the region, in total 16,643 employees. In South-Eastern Norway, 16,330 employees at the Oslo University Hospital were invited through the salary and schedule system MinGAT. It was not possible to invite only HCP who work with the EHR. Consequently, the first question aimed at identifying and phasing out those who did not.

The questions could be answered on a five-level Likert scale: strongly disagree, disagree, neutral, agree, and strongly agree. Respondents could also refrain from providing an answer by selecting "not relevant" in case a question was not relevant to their work situation. Results were summarized by the proportion of respondents who disagreed with a certain aspect (strongly disagree and disagree) and those who agreed (strongly agree and agree). For each question, the answers "not relevant" were

excluded from the analysis. Four categories of occupations were created: doctor / psychologist/ psychiatrist, nurse, other clinical personnel, and administrative personnel.

This study is based on a selection of six questions included in a larger survey consisting of 14 questions. An additional question about informal ways of making information inaccessible for patients (off-the-record reporting) was added to respondents from Northern Norway, as former studies from this region indicated that this might occur.

The survey was written in Norwegian. Questions and answers used in this article were translated into English.

2.2 Statistical analysis

Categorical variables are reported as counts and percentages. A Pearson's Chi-Square test is used to explore statistically significant differences between groups for all variables. A P-value < 0.05 is considered significant.

3 RESULTS

There were 6,105 respondents to the survey, 1,405 from Northern Norway, and 4,700 from South-Eastern Norway. Of these, 4,823 worked with the EHR. A total of 4,477 respondents (963 from Northern Norway and 3,514 from South-Eastern Norway) from either psychiatric or somatic healthcare were included in the analyses. Employees from other fields were not included in the results. The majority of the respondents (79%) worked within somatic care, while the remaining (21%) worked in psychiatric care (Figure 1).

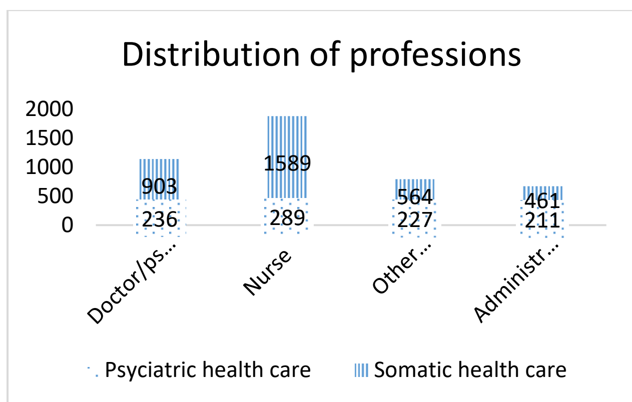

Figure 1 Distribution of professions.

Overall, there was a high number of "neutral" answers in all topics (Table 1, 2 and 3 in Appendix). The group with less neutral answers were doctors.

3.1 Better oriented patients and HCR's wish for using EHR in patient follow-up

About a fourth (24.7%) of the respondents found that patients were better oriented about diagnosis, treatment and follow-up, while a nearly equal proportion (28.3%) did not agree. There were statistically significant differences between regions and professions. Only 12.4 % of doctors found that patients were better oriented about diagnosis, treatment and follow-up. No difference was found between somatic care and psychiatric care. In both groups, around 25% of the respondents noticed that patients were more informed (Table 1 in Appendix).

Only 20.5% of the responding HCP wanted to use PAEHR more actively in following up patients. There were statistically significant differences between regions and professions. HCP from Northern Norway had a more positive attitude towards using the digital access in following up patients with over 28% wanting to do so, compared to only 18% in Southern Norway. Doctors were the least interested (15.8%) in using the service in patients' follow-up. No difference was found between somatic care and psychiatric care (Table 1 in Appendix).

3.2 Patient-provider communication

Only a small percentage of respondents declared that they spent more time on explaining the journal content (13.2%) or reassuring patients (14%) as a result of patients reading their EHR online. The results showed statistically significant differences between regions, health fields and professions for both questions. Doctors, in particular, spent more time on explaining the journal content (20.8%) and reassuring patients (22.8%) than the other professions (Table 2 in Appendix). Over 20% of HCP in psychiatric care reported that they spent more time on explaining the journal content and reassuring patients and relatives, compared to only 11% of HCP in somatic care.

3.3 Changes in documentation practices

Overall, 28.9% of the respondents felt that they spent more time writing in the EHR after patients gained online access. There were statistically significant differences between regions, health fields and professions.

Among HCP in psychiatric care, there was a higher proportion of respondents who used more time on writing in the EHR (38.6%) compared to HCP in somatic care (26.1%). Doctors and other clinical staff were the categories who reported that the implementation had resulted in more time sent on journaling (Table 3 in Appendix).

Almost a third of the respondents (29.8%) agreed that they changed the way they write in the EHR after the implementation of PAEHR. There were statistically significant differences between regions, health fields and professions. More than 40% of HCP in Northern Norway agreed to have changed the way they write in the EHR compared to only 26.7% of HCP in South Eastern Norway. There were more respondents who changed the way they wrote in the EHR among HCP in psychiatric care (39.1%) than in somatic care (27.2%). The highest impact in terms of changes in documentation practices, was measured for doctors (35.9%), while nurses, for instance, modified their way of writing in the EHR to a lesser extent (26.3%) (Table 3 in Appendix).

Results from the question about informal ways of making information inaccessible for patients, only available to HCP from Northern Norway, showed that 29% of HCP in psychiatric care had not report all relevant information (underreported) in the HER the last year. The corresponding number for somatic HCP were 18% (Figure 2). Among HCP in psychiatric care, over 8% of the respondents stated that they had written off-the-record journaling (also called shadow-records) the last year.This means that they had recorded patient information outside the official EHR system.(Figure 2)

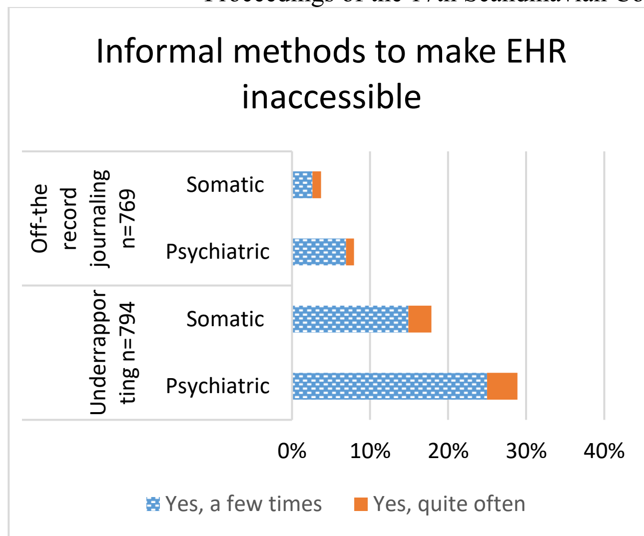

Figure 2 Frequency of HCP stating to have used informal methods to make EHR notes inaccessible.

4 DISCUSSION

Even though our main finding is that the implementation of PAEHR have not severely affected the HCP's work practices, PAEHR have had some impact for HCP in certain areas.

4.1 PAEHR's impact on different health care professionals

Some have explained the level of resistance towards EHR by the culture and nature of the professions. For example are physicians trained to perform with control and confidence in their work situations, and can have a stronger resistance towards PAEHR, as it is a system that provides augmented patient control and transparency. This can challenge the already defined relationship between patient and provider. [10]. Our study shows that doctors are the profession that least wants to use the digital access as a tool in following up patients. Nurses expressed a more positive attitude towards using access to the patient journal as a tool for communication in the future.

The percentage of doctors spending more time on explaining information and reassuring patients after the introduction of PAEHR were at 21-22%, were as the same corresponding numbers among nurses were only 8-9 %. This might be explained be the patients' behaviour pattern. We can imagine that patients who are disturbed, worried or confused about something they read in their EHR online would prefer to approach a doctor for explanations, rather than a nurse. A study from Sweden, however, showed that nurses experienced longer "in-depth discussions" with patients, as the patients came prepared with questions after reading their journal online. [11] A possible explanation for these contrary findings can be distinct organization of the healthcare system and differences in professionals' roles and responsibilities in Sweden compared to Norway. There have been shared opinion in the media were it is claimed that nurses are used in a more prevalence way and are expected to work more independently in the role as a nurse in Sweden compared to Norway [12].

4.2 Spending more time on documentations

A third of all doctors report spending more time writing information in the EHR after patient's digital access. Spending more time on a journal note could make the note more summarized and compressed, and if the extra time is used in described way, the journal could be consisting of more relevant information for other HCP and for the future treatment. This could make the communication among HCP better as the journal note would be more thought-through if the extra time spend would have an impact on quality. However, a previous study have showed that between 40% and 60% of all doctors in psychiatric care are less candid when writing journal notes after PAEHR[8]. A less candid way of writing can be harmful for the transparency and patient security of the health record. The exploration of potential positive and negative consequences in changed journal writing should be investigated further.

Most nurses, together with administrative personnel, did not spend more time on writing in the EHR nor change the way they write. A possible explanation could be that nursing notes are overall more pre-defined and based on schemes to fill in, while doctors' notes include more unstructured information.

4.3 Regional differences

PAEHR seems to have affected the work practices of HCP in South-Eastern Norway less than Northern Norway. Only 18.2% of HCP in South-Eastern Norway wanted to use PAEHR more actively in following up patients, compared to 28.2% in Northern Norway. While 40% of HCP in Northern Norway agreed to have changed the way they write in the EHR, only 26.7% of respondents in South-Eastern Norway agreed to the same. It is not clear what causes these differences. The time since implementation is more or less the same in the two health regions, so this cannot be the explanation. The differences could be caused by distinctive structures in organizational, resources used in implementing the service, training of HCP or internal communication. The exploration of these possible reasons requires further investigation.

4.4 Maturity of implementation

A study conducted in Northern Norway in 2016 showed that 67.5% of HCP *expected* more patients to gain better knowledge of their own health status in the future, thanks to the availability of the PAEHR. 21.4% of these found that patients were already more oriented on their diagnosis then earlier [9]. Our study conducted two years later, shows that 30% of HCP in Northern Norway agreed that patients are more informed about diagnoses, treatment and follow-up. Moreover, the proportion of HCP from Northern Norway who want to use PAEHR actively in patient follow-up increased from 19.6 % in 2016 to 28.2% in 2018. Such results confirm that the implementation of new digital services needs time to mature, and is in line with findings from Sweden where concerns and opinions were more positive after HCP gained more experiences with the PAEHR system [6]

4.5 Psychiatric care and PAEHR

There were significant differences between HCP in somatic and psychiatric care regarding both the impact on patient-provider relationship and changes in documentation practices. A much higher proportion of HCP from psychiatric care spent extra time writing in the EHR and on explaining and calming patients in consultations after PAEHR. HCP from psychiatric care also underreported information in the EHR and used shadow records to a higher extend than HCP in somatic healthcare.

The debate about the risks of giving digital access to patients has in particular been related to psychiatric care. Being exposed to threats or violence is more expected by HCP in this field [8]. The most negative opinion towards PAEHR believes that the patients with the most severe diagnosis in psychiatric health care can be worsen by reading details about their psychiatric health online[9]. Some hospitals in Norway have even closed the digital access for the sickest groups of patients, based on the risk of online information harming their healing process.

Studies show that clinicians change the way they write in the EHR after PAEHR because they feel a strong desire to protect their patients from potential harms, while also feeling vulnerable and exposed themselves [13]. It is also plausible to assume that HCP in psychiatric care omit information from the EHR, if they consider the information potentially damaging for the patient to read alone without guidance. However, under-reporting journal information or writing journal information in shadow records can harm patient security, prevent the provision of the best possible health care, and affect the communication among HCP by creating gaps in information [14] and there may be issues conserving confidentiality and privacy [15]. The law states that all documentation written about a patient should be made accessible, unless there is a risk to endanger the patient's life or serious damage to the patient's health [1]. Studies focusing on under-reporting and shadow recording as a result of PAEHR are lacking, we don't know what kind of information are most likely to be omitted, or the actual consequences of it. We would like to prioritize this question in futures studies.

4.6 Limitations

As participation to this survey was voluntary, the possibility of a higher proportion of respondents with a particularly strong opinion about the service in the data collection is present. If this would be the case, the answers might be biased. The survey was also sent out/made accessible to all employees, regardless of whether they worked with the EHR. Consequently, it is not possible to calculate the response rate. Further, due to the wide distribution of the survey, we could not take into consideration the heterogeneity of the healthcare sector in terms of routines and work situations, and some respondents might have received questions that are not relevant for their work situation.

5 CONCLUSIONS

Our main findings is that the implementation of PAEHR has not severely affected the hospital health professionals' work practices. However, PAEHR have made an impact in some areas. HCP noticed that patients were better oriented about their own health after online access to their health record. Around 20 % of the HCP wanted to use the journal in following up patients. Under 15% of the HCP used more time on explaining and calming patients after the implementation. One third of the HCP spend more time on - and have changed the way they write journal notes. The results revealed that there are significant differences between the professions, regions and somatic and psychiatric healthcare. HCP in psychiatric health care had in general experienced more effects of the PAEHR. An interesting finding that should be further investigated is that 25 % of psychiatric HCP stated to have under reported in the patients journal, and 8% reported to have kept a shadow record.

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7 ACKNOWLEDGEMENT

We would like to thank Helse Sørøst with Kathrine Haumann for the data collection in the Southern-East region.

8 APPENDIX

		Health region		**Health field**		**Profession**			
	Total	**North. Norway**	**South-Eastern Norway**	**Somatic care**	**Psych-iatric care**	**Doctor Psychol./ Psych-iatrist**	**Nurse**	**Other clinical prof.**	**Admin**
I have noticed that patients and/or relatives are better oriented about diagnosis, treatment and follow-up plan then earlier.									
	n=3995	**n=903**	**n=3092**	**n=3118**	**n=837**	**n=1038**	**n=1722**	**n=727**	**n=508**
Agree	24.7%	30.1%	23.2%	25.2%	23.1%	12.4%	29.2%	24.2%	35.4%
Neutral	47.0%	44.3%	47.8%	47.1%	46.6%	40.7%	48.5%	50.9%	49.4%
Disagree	28.3%	25.6%	29.0%	27.7%	30.3%	46.9%	22.3%	24.9%	15.2%
I want to use patient's access to EHR more active in following up patients.									
	n=3466	**n=804**	**n=2662**	**n=2693**	**n=773**	**n=1027**	**n=1464**	**n=656**	**n=319**
Agree	20.5%	28.2%	18.2%	20.3%	21.3%	15.8%	21.0%	24.4%	25.4%
Neutral	44.8%	44.4%	44.9%	44.8%	44.8%	31.5%	49.7%	49.2%	56.1%
Disagree	34,7%	27.4%	(36.9%	34.9%	33.9%	52.7%	29.3%	26.4%	18.5%

Table 1 Patient empowerment and HCP's willingness to use EHR in follow up.

		Health region		**Health field**		**Profession**			
	Total	**North. Norway**	**South-Eastern Norway**	**Somatic care**	**Psych-iatric care**	**Doctor Psychol./ Psych-iatrist**	**Nurse**	**Other clinical prof.**	**Admin**
I spend more time on explaining journal content for patients and/or relatives because they read their health record online.									
	n=3332	**n=829**	**n=2507**	**n=2614**	**n=718**	**n=956**	**n=1431**	**n=607**	**n=338**
Agree	13.2%	19.5%	11.1%	11.3%	20.2%	20.8%	8.3%	10.7%	16.9%
Neutral	34.2%	29.0%	36.0%	34.5%	33.4%	28.9%	36.5%	31.5%	44.7%
Disagree	52.6%	51.5%	52.9%	54.2%	46.4%	50.3%	55.1%	57.8%	38.5%
I spend more time on calming patients and/or relatives because they read their health record online.									
	n=3357	**n=826**	**n=2531**	**n=2636**	**n=721**	**n=957**	**n=1445**	**n=617**	**n=338**
Agree	14.0%	20.5%	11.9%	11.8%	21.9%	22.8%	9.8%	10.4%	13.3%
Neutral	32.8%	27.1%	34.7%	33.2%	31.5%	27.5%	35.1%	30.3%	42.6%
Disagree	53.2%	52.4%	53.5%	55.0%	46.6%	49.7%	55.1%	59.3%	44.1%

Table 2 Patient-provider communication.

		Health region		Health field		Profession			
	Total	**North. Norway**	**South-Eastern Norway**	**Somatic care**	**Psych-iatric care**	**Doctor Psychol./ Psych-iatrist**	**Nurse**	**Other clinical prof.**	**Admin**
I spend more time on journaling now that I know patients and/or relatives can read what I write online.									
	n=3710	**n=842**	**n=2867**	**n=2897**	**n=813**	**n=1048**	**n=1679**	**n=689**	**n=294**
Agree	28.9%	36.5%	26.6%	26.1%	38.6%	32.5%	25.9%	33.1%	22.8%
Neutral	26.5%	24.7%	27.0%	26.9%	24.8%	22.9%	26.0%	26.0%	42.9%
Disagree	44.7%	38.8%	46.4%	46.9%	36.5%	44.6%	48.1%	40.9%	34.4%
I have changed my way of journaling after patients have been given access to their health record online									
	n=3763	**n=842**	**n=2921**	**n=2947**	**n=816**	**n=1062**	**n=1722**	**n=691**	**n=288**
Agree	29.8%	40.3%	26.7%	27.2%	39.1%	35.9%	26.3%	31.7%	23.3%
Neutral	23.6%	22.6%	23.9%	23.8%	23.0%	18.8%	23.0%	25.5%	40.3%
Disagree	46.6%	37.2%	49.4%	49.1%	37.9%	45.3%	50.7%	42.8%	36.5%

Table 3 Changes in documentation practises.