

On Threats and violence for staff and patient accessible electronic health records

Ulrika Åkerstedt, Åsa Cajander, Jonas Moll and Ture Ålander

Accepted Manuscript Version

This is the unedited version of the article as it appeared upon acceptance by the journal. A final edited version of the article in the journal format will be made available soon.

As a service to authors and researchers we publish this version of the accepted manuscript (AM) as soon as possible after acceptance. Copyediting, typesetting, and review of the resulting proof will be undertaken on this manuscript before final publication of the Version of Record (VoR). Please note that during production and pre-press, errors may be discovered which could affect the content.

© 2018 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.

Publisher: Cogent OA

Journal: *Cogent Psychology*

DOI: <http://dx.doi.org/10.1080/23311908.2018.1518967>



On Threats and violence for staff and patient accessible electronic health records

Ulrika Åkerstedt¹, Åsa Cajander¹, Jonas Moll^{1a}, Ture Ålander²

¹Uppsala University, Department of Information Technology, Uppsala, Sweden

²Uppsala University Hospital, Department of Public Health and Caring Sciences, Uppsala, Sweden

^aCorresponding author; email: jonas.moll@it.uu.se

Does patient accessible electronic health records (PAEHR) result in increased risk of threats and violence? This study was conducted one year after launching PAEHR in Uppsala to examine whether staff whose patients had gained access to the patient portal perceived greater risks of threats and violence, and were exposed to more threats and violence, than those whose patients had not yet gained access. A total of 174 (35%) professionals responded to a web survey. 83 were from the emergency department, whose patients had online electronic health record access, and 91 were from the psychiatric department, whose patients had not. 40% of all participating professionals believed that risks of threats and violence increase after launch. The results did not support a correlation with more incidents of threats and violence, and only one respondent reported that patient access had played any significant negative role in relation to an incident.

Keywords: eHealth, Electronic health record system, Risk perception, Threats, Violence

1. Introduction

Perception of risk is a complex phenomenon. What is perceived as a high risk situation by one stakeholder may be seen as a low risk situation by another. Numerous research

studies over the years have delved into the domain of risk perception. In this study, Sandman's (2012) Outrage factor theory was used as a starting point to study perceived risk. The core of the theory is the model formulated as $\text{risk} = \text{hazard} + \text{outrage}$. By hazard Sandman meant the experts' assessment of a situation, often defined as "magnitude (how bad is it when it happens) times probability (how likely it is to happen)" (Sandman 2012, 6). By the term outrage, on the other hand, he was referring to a variety of conditions that may worry other concerned stakeholders. These conditions are often overlooked by the experts. The components, or cause, of this outrage Sandman called outrage factors, such as whether the risk-inducing event is voluntary or coerced, whether it is controlled by oneself or others, whether or not it is morally relevant, or whether or not the sources are to be trusted. The Outrage factor model has been applied by risk managers as well as researchers in a variety of fields ever since it was first published in 1993 (e.g.: Lachlan, Spence and Lin, 2014; Green and Rohan, 2012; Mansfield, 2003).

In this study Sandman's theory was used to shed some light on possible reasons for a controversy concerning the launch of a new electronic healthcare (eHealth) service, namely Patient Accessible Electronic Health Records (PAEHRs) via the Internet. The disputant stakeholders were, on the one side, the initiators of the service and, on the other, some medical professionals. One central issue was the (possibly) increased levels of occupational risks involved, specifically when it came to the risks of threats and violence towards healthcare staff. This study was based upon a broad definition of violence in the workplace, including both physical and non-physical harm. It did not, however, include acts of "bullying" or "obscene behaviour". Estry-Behar et al. (2008) and Camerino et al. (2008) are examples of

researchers that have brought forth this even more extended definition of threats and violence.

Many professionals have expressed their concerns about PAEHR (Huvila, Myreteg and Cajander, 2013). Physicians in particular have voiced their opinions and worries (Grünloh et al., 2018; Grünloh, Cajander and Myreteg, 2016; Ålander and Scandurra, 2015). Further, the physicians' union of the county of Uppland has issued a number of incident reports, concerning a variety of aspects of PAEHR. One of these reports, report nr IMS 2013/3763 to the Swedish Work Environment Authority (SWEA), was specifically important for this study. It concerned the fact that the PAEHR service also allows patients to see a list of staff who have logged into a patient's record (the "log list"). This specific feature has been available to patients since February 2013. The union feared that this feature would increase risk of threats and violence towards health care professionals.

There is little doubt that threats and violence is a noticeable occupational hazard within the healthcare sector in Sweden (Menckel and Viitasara, 2000) as well as in other countries (Maguire et al., 2018; OSHA, 2017). Menckel and Viitasara (2000) described that hospital medical staff are subjected to threats and violence to a greater extent than the average Swedish employee; their nationwide study on threats and violence in Swedish municipality-owned care showed that 51% of the participants had been exposed over the past year. The literature survey on violence against emergency healthcare professionals conducted by Maguire et al. (2018), consisting of 25 studies from a variety of counties, highlighted that violence is a real problem for this group. However, they also acknowledged that there does not seem to be a consensus among studies on how to define violence in this context. According to the Swedish Work Environment Authority (Hallberg,

2011), staff at emergency wards, psychiatric wards, geriatric wards, as well as those in ambulance care, are at highest risk. Internationally, Speroni et al. (2014) have shed some light on this issue. They found that amongst nurses in hospital care, emergency nurses were exposed to a particularly high number of violent incidents. A later study that Rosentahl et al. (2018) conducted at an academic tertiary care hospital, showed that incidents of assault were a lot more common in the emergency department than in the psychiatric department and hence the type of department can play a role regarding incidence rates.

Some professional groups seem to be more at risk of threats and violence than others and nurses seem to be specifically vulnerable. In a study on violence in mental care (in the present study referred to as psychiatric care) Lawoko, Soares, and Nolan (2004) identified that nurses were more exposed to violence than psychiatrists. The study by Rosentahl et al. (2018) also indicated that physicians are subject to assault more often than nurses. Menckel and Viitasara (2002) described that, in municipal care, assistant nurses and direct carers were groups that were the most vulnerable to violence. Ayranci et al. (2006) came to the conclusions that younger, as well as inexperienced, health care workers were more at risk than those who were older and/or had more experience.

When it comes to risks of threats and violence for medical staff in relation to eHealth services for citizens there is yet a rather limited number of studies to be found. This may not seem remarkable due to the novelty of the field. Nevertheless, it is somewhat alarming considering the fact that the launch different kinds of eHealth services is currently high on the political agenda within the European Union at large. In a study conducted by Cimino, Patel, and Kushniruk (2001), in which the researchers, over a period, gave the subjects access to their EMRs via the

Internet, it was found that all of the subjects primarily used the system to review laboratory results. Moreover, the results indicated improved communication between physicians and patients, and there were no "adverse events encountered during the study" (1440). Santana et al. (2011) came to similar conclusions:

Patients' use of the Internet to gain health information is more related to "the will or necessity of being more informed" than to "specific behaviors towards the health professional, such as questioning the doctor during the medical encounter" (14).

Petersson and Erlingsdóttir (2018), who conducted a survey study with psychiatric care staff in Region Skåne just before they launched psychiatric records online, showed, however, that healthcare professionals in psychiatric care indicated fear of increased tension between them and their patients as a consequence of the patients being able to read their psychiatric health records online.

This study will contribute to filling this above-mentioned research gap regarding risks of threats and violence for medical staff in relation to eHealth services for citizens. The overall aim of the study was to examine perceived risks of work-related threats and violence, as well as self-reported incidents of work-related threats and violence, in relation to PAEHRs. This paper hence addresses the following research questions:

- Does PAEHR increase the perceived risk of threats and violence for hospital staff?
- Does PAEHR increase the fear of threats and violence for hospital staff?
- Does the perceived risk and fear vary between different professional groups?
- Does PAEHR result in an increase in self-reported incidents related to threats and violence?

In the questions, "perceived risk" relates to a more general perception of the risk of being subject to threats or violence, while "fear" relates to the worry about actually being exposed, personally. The instrument used to answer these research questions was a web questionnaire distributed to staff at the emergency department and the psychiatric department at UAS. These departments are similar in the respect that they both belong to the group of hospital departments that are the most exposed to threats and violence. They differ in the way that the PAEHR service in question had not yet been launched at the psychiatric department whereas it had been launched at the emergency department. This presented an opportunity to study possible differences between a pre-launch group and a post-launch group, i.e. staff whose patients had gained access to their online EHR, on the one hand, and those whose patients had not yet gained this access, on the other.

2. Method

This paper is based on a master thesis work (Åkerstedt, 2015). Out of the 492 professionals that were asked to participate in the web survey, 277 represented the psychiatric department, including all staff at all in-patient psychiatric wards (PWs), and 215 represented the emergency department, including 118 on-duty staff at the emergency room (ER) and 97 on-call emergency physicians (EPs). The respective study groups included medical staff as well as administrative staff, such as receptionists. It excluded executive staff, such as heads of departments.

The web survey questionnaire was based on one part of the questionnaire "Questions on violence and threats about violence" in the above-mentioned nationwide study by Menckel and Viitasara (2000), originally developed by Judith Arnetz. Two variations of the same basic questionnaire were constructed: One (Q1) for the emergency department and the other (Q2) for the psychiatric department, including 15 and 13 multiple choice questions, respectively. Five of the questions in Q1 and four in

Q2 were background questions on profession, gender, work experience and documentation frequency. Subsequently, there were ten questions in Q1 and nine questions in Q2 concerning either self-reported incidents of threats and violence, perceived risks of threats and violence or attitudes towards PAEHRs. The time-span was the past year (e.g. 'Have you, over the past year, been exposed to threats or violence related to your work?'). Where relevant, the multiple choice question was directly followed by an open question. At the very end of the questionnaire the respondents were given a chance to give their overall comments. Questions that were thought to require access to online EHRs were only included in Q1. Moreover, the PAEHR-related questions to the emergency staff were formulated in a way that was intended to capture thoughts and experiences after the launch of the service, whereas the PAEHR-related questions to the psychiatric staff were to capture thoughts and experiences on the occasion of a future launch of the service.

The psychiatric department was informed about the study at an executive meeting at one of the wards. The head of the department then spread the word to the participating wards via e-mail. The ER staff were informed at a meeting, whereas the EPs were informed via an e-mail from the author of the study. The study was conducted in line with the World Medical Association's "Declaration of Helsinki". All respondents received written information about the purpose of the study, handling of data, voluntariness of participation as well as confidentiality and anonymity in relation to the study. The respondents were also informed about that the results of the research would be made publicly available through e.g. scientific publications.

Statistical analysis of the quantitative data was carried out by using the software Stata 13.1. As between-group differences related to the emergency department and the

psychiatric department were in focus, the test used was the Pearson chi-square test (c2).

The confidence interval was set at 95%, i.e. an alpha level of 0.05.

3. Results

Of the 492 professionals asked to participate in the study, a total of 174 completed the survey. This equals a 35% response rate. 83 (48%) of the respondents represented the emergency department whereof 33 (19%) were EPs and 50 (29%) were staff at the ER - and 91 (52%) were staff at the psychiatric department. At group level, the response rate was slightly higher for emergency staff (39%) whereof ER staff 42% and EPs 34% - than for psychiatry staff (33%). None of the respondents at the ER or the PWs were physicians, which meant that the EPs were the only physicians in the study. The demographic data are summarized in Table 1 below. Two respondents, both of them ER staff, reported that they had started working at the emergency department after the launch of the PAEHRs. All of the other respondents indicated before launch. One person did not specify the number of work years, nor indicated whether the start was before or after launch.

Table 1. Background characteristics. Number and percentage within each of the two study groups the emergency department and the psychiatric department.

Background and characteristics	Emergency dep.	Psychiatric dep.
Professional role		
Physicians	33 (40%)	-
Nurses	30 (36%)	35 (38%)
As. Nurses	19 (23%)	48 (53%)
Others	1 (1%)	8 (9%)
Gender		
Men	21 (35%)	32 (35%)
Women	60 (72%)	58 (64%)
Missing	2 (3%)	1 (1%)
Work years		
0-5 yrs.	11 (13%)	21 (23%)

6-10 yrs.	19 (23%)	12 (13%)
11-15 yrs.	17 (21%)	15 (16%)
>15 yrs.	35 (42%)	43 (47%)
Missing	1 (1%)	-

3.1 Differences Between the Departments

Close to two thirds of all respondents reported that they had been exposed to incidents of work-related threats or violence over the past year. Psychiatric staff indicated exposure to a somewhat higher degree than emergency staff. These differences between the groups were statistically significant, $\chi^2(1, N = 174) = 7.10, p = .008$. Further, about one out of four of all respondents indicated that they believed that their fear of threats and violence increase as patients gain access to their online EHRs. The psychiatric staff were more than twice as prone as the emergency staff to believe that their fear would increase. These differences between the groups were statistically significant, $\chi^2(2, N = 174) = 14.53, p = .002$. Moreover, about two out of five of all respondents indicated that they believed that risks of threats and violence increase as patients gain access to their online EHRs. The psychiatric staff were somewhat more prone than the emergency staff to believe that the risks would increase. These differences between the groups were, however, not statistically significant, $\chi^2(1, N = 174) = 2.17, p = .337$. The specific data regarding these differences between the study groups are presented in Table 2.

Table 2. Overview of responses to the questions regarding: Exposure to threats and violence; increased or decreased fear after launch; increased or decreased perceived risk after launch. Distribution of responses (number and percentage) within each study group.

Question + response options	Emergency dep.	Psychiatric dep.	Statistical test results
Exposure to violence – yes or no			$\chi^2(1)=7.10$ $p=.008$

Yes	42 (51%)	64 (70%)	
No	41 (49%)	27 (30%)	
Increased or decreased fear of threats and violence after launch			c2(2)=14.53 p=.002
Increased	12 (15%)	34 (39%)	
Decreased	0	1 (1%)	
Neither...nor	70 (85%)	53 (60%)	
Increased or decreased perceived risk of threats and violence after launch			c2(1)=2.17 p=.337
Increased	31 (38%)	43 (48%)	
Decreased	0	0	
Neither... nor	51 (62%)	46 (52%)	

Since physicians were only represented in the responses from the emergency department, yet another comparison was made between the two departments, excluding the physicians. The results from this second comparison are found in Table 3. The difference in responses regarding exposure to violence was no longer significant, $c2(1, N = 141) = 0.083, p = .774$. The difference between the answers related to the question of fear of threats and violence after launch was still significant, $c2(2, N = 137) = 11.47, p = .003$. Finally, the difference between answers related to perceived risk of threats and violence after launch increased but was still not significant, $c2(1, N = 139) = 2.17, p = .062$.

Table 3. Overview of responses to the questions regarding: Exposure to threats and violence; increased or decreased fear after launch; increased or decreased perceived risk after launch. Distribution of responses (number and percentage) within each study group, excluding physicians from the emergency department.

Question + response options	Emergency dep.	Psychiatric dep.	Statistical test results
Exposure to violence – yes or no			c2(1)=0.083 p=.774
Yes	34 (68%)	64 (70%)	
No	16 (32%)	27 (30%)	
Increased or decreased fear of threats			c2(2)=11.47

and violence after launch			p=.003
Increased	6 (12%)	34 (39%)	
Decreased	0	1 (1%)	
Neither...nor	43 (88%)	53 (60%)	
Increased or decreased risk of threats and violence after launch			c2(1)=3.49 p=.062
Increased	16 (32%)	43 (48%)	
Decreased	0	0	
Neither... nor	34 (68%)	46 (52%)	

Only one single respondent reported that patient access had played any significant negative role regarding violent or threatening incidents. The ER staff were somewhat more prone than the EPs to indicate that it had played no role. Statistical significance was not tested for these data. The numbers and percentage are, however, shown in Table 4.

Table 4. Overview of responses to the question regarding the role of PAEHRs, in relation to actual threatening or violent incidents. Distribution of responses (number and percentage) from EPs and ER staff respectively (PWs were not given this question).

Response options	EPs	ER
No role	3 (37.5%)	16 (47%)
Positive	-	-
Negative	1 (12.5%)	-
Pos. & neg.	-	1 (3%)
I don't know	4 (50%)	17 (50%)

3.2 Differences Between the Professional Groups

Assistant nurses reported exposure to workplace threats or violence to a somewhat higher degree than nurses did, and to a much higher degree than physicians. These differences between the groups were statistically significant, $c2(3, N = 174) = 38.58, p < .001$. Further, fewer physicians than nurses, assistant nurses and 'other' staff reported increased fear of work-related threats and violence after launch. These differences between the groups were, however, not statistically significant, $c2(6, N = 174) = 6.28, p$

= .711. Moreover, nurses seemed to a lesser degree than the other professional groups believe that the risks of threats and violence increase after launch. These differences between the groups were, however, not statistically significant, $\chi^2(3, N = 174) = 3.66, p = .723$. The specific data regarding these differences between the professionals groups are presented in Table 5.

Table 5. Overview of responses from the different professional groups to the questions regarding: Exposure to threats and violence; frequency of exposure; increased or decreased fear after launch; increased or decreased perceived risk after launch. Distribution of responses (number and percentage) within each professional group.

Question+ response options	Physicians	Nurses	As. nurses	Others	Statistical test results
Exposure to violence – yes or no					$\chi^2(3)=38.58$ $p<.001$
Yes	8 (24%)	44 (68%)	53 (79%)	1 (11%)	
No	25 (76%)	21 (32%)	14 (21%)	8 (89%)	
Frequency of exposure					
1-5 times	2 (29%)	28 (68%)	27 (61%)	0	
>5 times	5 (71%)	13 (32%)	17 (39%)	1(100%)	
Increased or decreased fear of threats and violence after launch					$\chi^2(6)=6.28$ $p=.711$
Increased	6 (18%)	18 (29%)	19 (29%)	3 (33%)	
Decreased	0	1 (2%)	0	0	
Neither...nor	27 (82%)	43 (69%)	47 (71%)	6 (67%)	
Increased or decreased perceived risk of threats and violence after launch					$\chi^2(3)=3.66$ $p=.723$
Increased	15 (47%)	25 (38%)	29 (45%)	5 (56%)	
Decreased	0	0	0	0	
Neither...nor	17 (53%)	40 (62%)	36 (55%)	4 (44%)	

4. Discussion

The purpose of this study was to examine perceived risks of work-related threats and violence as well as self-reported incidents of work-related threats and violence, in relation to PAEHRs. More specifically it aimed to study whether staff whose patients have gained access to the PAEHR perceive risks of threats and violence to a greater extent, and are exposed to threats and violence to a greater extent, than those whose patients have not yet gained this access. The background was the concern regarding increased risks expressed by healthcare professionals, physicians specifically (Grünloh, Cajander and Myreteg, 2016; Ålander and Scandurra, 2015). What was also looked into was the extent to which professional role was an important factor in relation to perception of risk and self-reported incidents.

The results do not support that staff whose patients have gained access to the PAEHR experience a greater risk of work-related threats and violence. Both emergency staff (including physicians), whose patients had, for a year, had access to the PAEHR, and psychiatric staff, whose patients did not have this access, reported to a considerable degree - around forty percent - that they believe that the risks of threats and violence increase as patients gain access to the PAEHR. Regarding self-reported incidents over the past year, on the other hand, there were noteworthy differences when all responses were taken into account. After excluding emergency department physicians the difference decreased considerably, highlighting that physicians from that department report a lot fewer incidents than the other staff. However, this study found little connection between violent or threatening incidents and PAEHRs. In fact, only one single respondent, an emergency physician, reported that patient access had played any significant negative role in relation to violent or threatening incidents. These results were consistent with Cimino, Patel and, Kushniruk's (2001), regarding PAEHRs,

indicating no "adverse events" over the study period. They can also be related to the results by Santana et al. (2011) as well as Greenfield et al. (2010) which both pointed at patients' will to be informed rather than questioning the doctor. It should be noted, however, that in the present study 50% of the respondents did not know if the violence had a relation to PAEHR.

Our results showed important differences between the groups regarding fear - differences that were similar after exclusion of the emergency physicians' answers. Neither this result, however, appeared to be related to more experience of PAEHRs: The psychiatric care professionals indicated to a considerable extent - around forty percent - that they believed that their fear would increase if their patients gained access to the PAEHRs. Amongst the emergency care professionals, a more modest fifteen percent reported that their fear of being exposed to threats and violence had actually increased after their patients gained this access. Many respondents from both departments pointed out the "log list" (the list of individual staff who have logged into a patient's medical record) as a specifically risk-and-fear-inducing feature, indicating that patients may now more easily find and approach the individual caregiver if dissatisfied.

When it came to fear in relation to patient access, profession seemed to play some role: Physicians reported increased fear of work-related threats and violence after launch to a lower degree than other groups. Also regarding exposure to workplace threats or violence over the past year, profession seemed to make a difference. Assistant nurses reported exposure to a somewhat higher degree than nurses did, and to a considerably higher degree than physicians. These results support previous observations by Rosentahl et al. (2018) and Menckel and Viitasara (2002) pointing out assistant nurses and "direct carers" as being specifically exposed to violence, as well as those by Lawoko, Soares, and Nolan (2004) indicating that psychiatric care nurses are more

exposed than psychiatrists. However, in our study, physicians who did report exposure seemed to have been exposed more frequently than the other professional groups. When judging these results it is important to keep in mind, however, that there is a risk that several instances of violence may remain unreported (Maguire et al., 2018). One reason behind a discrepancy between the professional groups regarding exposure to, as well as fear of, violence may be that nurses and assistant nurses often see the patient before he or she is referred to the physician. Some of the anger may have worn off, or been acted out on the nurse or assistant nurse, once the patient finally sees the physician. Another possible reason is the different levels of respect and status enjoyed by the different groups. An aggression-prone patient may restrain him- or herself when he or she meets the high-status physician, but act out the aggression when faced with the lower-status nurse or assistant nurse. A discussion paper on the public image, self-concept and professional identity of nurses, in which 18 studies were looked at (ten Hoeve, Jansen & Roodbol, 2014), pointed out this difference in status between nurses and physicians. It suggested also that this is a gender issue, the nursing profession traditionally being considered a female, and even domestic, vocation. Hoeve, et al. (2014) suggested further that nurses should work harder to communicate their professionalism as one way of strengthening their position within healthcare organisations. It should be added that hospital management should support the nurses and assistant nurses by acknowledging and acting on unfair conditions due to status differences. In any case, further investigation into these issues are needed.

The results of this study, as well as results by Cimino, Patel, and Kushniruk (2001), Santana et al. (2011) and Greenfield et al. (2010), suggest that the concerns of some medical professionals, including representatives of the physicians' union of the county of Uppland, regarding increased risk of threats and violence in connection to

PAEHR, may not be justifiable. That is if we focus on the aspect that patient access does not seem to correlate with a higher number of incidents of threats and violence. Using Sandman's (2012) terms, the hazard (probability of incidents times magnitude of incidents) does not seem alarming. What could be considered alarming, however, is the staff perception of risk regarding PAEHRs. To understand this scenario Sandman's complementary idea of risk as outrage is more applicable. The four outrage factors that were introduced earlier could possibly have bearing on staff risk perception: Whether the risk-inducing event is voluntary or coerced, whether it is controlled by oneself or others, whether or not it is morally relevant, or whether or not the sources are to be trusted. According to Sandman, such outrage factors are likely to be stronger influences for affected stakeholders, than are experts' assessment of the situation. It is then likely that there would have been more positive responses had these factors been more carefully considered by the initiators of the project. Thus, a smaller proportion of respondents from the different staff categories and departments would probably have experienced increased fear or perceived increased risks of threats and violence if the implementation of the PAEHR had involved the healthcare professionals and taken their input and experiences into account to a larger extent.

In the first phase of the PAEHR launch some hospital departments, whose health records may contain specifically sensitive information, or whose patients may be specifically vulnerable, had been excluded. The psychiatric department was one of the excluded departments at this point in time. Considering the results of our study, this exclusion seems justifiable also from a staff safety perspective: Psychiatry staff are exposed to threats and violence to a very high extent and many also believe that the risks of threats and violence, as well as their own fear, would increase if their patients gained access to the PAEHRs. Many of the respondents from the psychiatric ward point

out their patients' lack of insight into their own condition, as well as their lack of impulse control, as explanations for this high risk scenario. However, a number of respondents from that same department see more positive scenarios and argue for example that easier access to the PAEHR will entail an increased feeling of control which, in turn, will result in more secure patients. A few also mention that psychiatric patients are already allowed to see their current medical record acts in judicial proceedings regarding custodial care. A research overview by Stuart (2003) gave that mental illness is not such an important determinant of violence as seems to be the general view. Rather, it was found that people with mental illnesses seemed more likely to be the victims of violence. The greatest determinants of violence, whether the perpetrator were mentally ill or not, were substance abuse and "socio-demographic and socio-economic factors, such as being young, male, and of lower socio-economic status" (123). Moreover, it was found that contextual factors, e.g. poor atmosphere at the ward, were important antecedents of aggressive acts. Thus, it is likely that behind many of the expressions of fear regarding psychiatric patients' access to the PAEHR, there is a notable amount of social stigma.

4.1 Limitations

One weakness of the study was the small sample size as there were 83 participants from the emergency department and 91 from the psychiatric department. Especially physicians and "other" staff were represented to a limited extent. Moreover, physicians were only represented in the emergency department sample. When it comes to these kinds of studies there is also a risk of bias in that respondents may choose to participate for the particular reason that they have been subject to threats and violence, or that they worry more about threats and violence than their colleagues. The low response rate of 35% is also a limiting factor and affects the possibility to generalize the results. As no

drop-outs analysis has been made, we do not know if the drop-outs are evenly distributed between the compared groups. A not even distribution affects the Pearson chi-square test.

5. Conclusion

Results of this study indicate that the perception of risk in relation to PAEHRs, is a reality both for staff whose patients have access to the PAEHR and to staff whose patients do not have this access. In this case the former group were staff at the emergency department at Uppsala University Hospital and the latter were staff at the psychiatric department at the same hospital. Especially physicians in emergency care and psychiatric staff indicated a strong notion of increased risk as patients gain PAEHR access. However, the results of this study do not support that staff whose patients have PAEHR access are more exposed to threats and violence. What seemed to make a difference, however, was the professional role: Nurses, and even more so assistant nurses, reported to a higher extent than physicians that they had been exposed to incidents of threats over the past year. However, the nurses in the study seemed to a lower extent than the other professional groups i.e. assistant nurses, physicians and "other" perceive that risks of threats and violence increase after PAEHR launch. This study does not give a clear answer to the research questions. More studies in this field are desirable. One example is the significant higher response rate for women, compared to men. A comparison between females in ER and PW would therefore be worthwhile.

References

- Ayranci, U., C. Yenilmez, Y. Balci, C. Kaptanoglu. 2006. "Identification of violence in Turkish health care settings." *Journal of Interpersonal Violence* 21 (2): 276-296. doi:10.1177/0886260505282565.
- Camerino, D., M. Estryng-Behar, P. M. Conway, B. van der Heijden, H-M. Hasselhorn. 2008. "Work-related factors and violence among nursing staff in the European

- NEXT study: A longitudinal cohort study.” *International Journal of Nursing Studies* 45 (1): 35-50. doi:10.1016/j.ijnurstu.2007.01.013.
- Cimino, J. J., V. L. Patel, and A. W. Kushniruk. 2001. “What do patients do with access to their medical records?” In *Studies in Health Technology and Informatics*, edited by V. L. Patel, R. Rogers, and R. Haux, 1440-1444. Amsterdam: IOS Press.
- Estryn-Behar, M., B. van der Heijden, D. Camerino, C. Fry, O. Le Nezet, P. M. Conway, and H-M. Hasselhorn. 2008. “Violence risks in nursing results from the European NEXT study.” *Occupational Medicine* 58 (2): 107-114. doi: 10.1093/occmed/kqm142.
- Green, W., and M. Rohan. 2012. “Opposition to aerial 1080 poisoning for control of invasive mammals in New Zealand: risk perceptions and agency responses.” *Journal of the Royal Society of New Zealand* 42 (3): 185-213. doi: 10.1080/03036758.2011.556130.
- Greenfield, D., P. Nugus, J. Travaglia, and J. Braithwaite. 2010. “Auditing an organization’s interprofessional learning and interprofessional practice: the interprofessional praxis audit framework (IPAF).” *Journal of Interprofessional Care* 24 (4): 436-449. doi:10.3109/13561820903163801.
- Grünloh, C., Å. Cajander, and G. Myreteg. 2016. ““The Record is Our Work Tool!” - Physicians Framing of a Patient Portal in Sweden.” *Journal of Medical Internet Research* 18 (6): e167. doi:10.2196/jmir.5705.
- Grünloh, C., G. Myreteg, Å. Cajander, and H. Rexhepi. 2018. ““Why Do They Need to Check Me?” Patient Participation Through eHealth and the Doctor-Patient Relationship: Qualitative Study.” *Journal of Medical Internet Research* 20 (1): e11.
- Hallberg, U. 2011. *Hot och våld inom vård och omsorg, kunskapsöversikt [Threats and violence in healthcare and social care, background]*. Report no. 2011:16. Stockholm: Swedish Work Environment Authority.
- Huvila, I., G. Myreteg, and Å. Cajander. 2013. “Empowerment or anxiety? Research on deployment of online medical e-health services in Sweden.” *Bulletin of the Association for Information Science and Technology* 39 (5): 30-33. doi: 10.1002/bult.2013.1720390507.
- Lachlan, K. A., P. R. Spence, and X. Lin. 2014. “Expressions of risk awareness and concern through Twitter: On the utility of using the medium as an indication of

- audience needs.” *Computers in Human Behavior* 35: 554-559. doi: 10.1016/j.chb.2014.02.029.
- Lawoko, S., J. J. F. Soares, and P. Nolan. 2004. “Violence towards psychiatric staff: a comparison of gender, job, and environmental characteristics in England and Sweden.” *Work & Stress: An International Journal of Work, Health & Organisations* 18 (1): 39-55. doi:10.1080/02678370410001710337.
- Maguire, B.J., P. O’Meara, B.J. O’Neill, and R. Brightwell. 2018. “Violence against emergency medical services personnel: A systematic review of the literature” *American Journal of Industrial Medicine* 61 (2): 167-180.
- Mansfield, D. 2003. “Gauging societal concerns.” *Institutions of Chemical Engineers Symposium Series* 149: 15-29.
- Menckel, E., and E. Viitasara. 2002. ”Threats and violence in Swedish care and welfare magnitude of the problem and impact on municipal personnel.” *Scandinavian Journal of Caring Sciences* 16 (4): 376-385. doi:10.1046/j.1471-6712.2002.00103.x.
- Menckel, E., and E. Viitasara. 2000. *Utsatt för hot och våld i vård och omsorg en undersökning bland kommunalt anställda. [Exposed to threats and violence in healthcare and social care a survey amongst municipal personnel.]* Report, Arbetsmiljöverket, Stockholm, Sweden.
- Occupational Safety and Health Administration. 2017. *Preventing Workplace Violence in Healthcare*. url:www.osha.gov/dsg/hospitals/workplace_violence.html. Accessed August 1 2017.
- Peterson, L., and G. Erlingsdóttir. 2018. “Open Notes in Swedish Psychiatric Care (Part 1): Survey Among Psychiatric Care Professionals.” *Journal of Medical Internet Research* 5 (1): e11.
- Rosenthal, L.J., A. Byerly, A.D. Taylor, and Z. Martinovich. 2018. “Impact and Prevalence of Physical and Verbal Violence Toward Healthcare Workers.” *Psychosomatics: The Journal of Consultation-Liaison Psychiatry*. doi: <https://doi.org/10.1016/j.psych.2018.04.007>.
- Sandman, P.M. 2012. *Responding to community outrage: Strategies for effective risk communication*. AIHA Press.
- Santana, S., B. Lausen, M. Bujnowska-Fedak, C. E. Chronaki, H-U. Prokosch, and R. Wynn. 2011. “Informed citizen and empowered citizen in health: results from a

- European survey.” *BMC Family Practice* 12: article 20. doi: 10.1186/1471-2296-12-20.
- Stuart, H. 2003. “Violence and mental illness: an overview.” *World Psychiatry* 2 (2): 121-124.
- Speroni, K. G., T. Fitch, E. Dawson, L. Dugan, and M. Atherton. 2014. “Incidence of cost of nurse workplace violence perpetrated by hospital patients or patient visitors.” *Journal of Emergency Nursing* 40 (3): 218-228. doi: 10.1016/j.jen.2013.05.014.
- ten Hoeve, Y., G. Jansen, and P. Roodbol. 2014. “The nursing profession: public image, self-concept and professional identity. A discussion paper.” *Journal of Advanced Nursing* 70 (2): 295-309.
- Åkerstedt, U. 2015. A study of risks of threats and violence toward hospital staff in relation to patient access to electronic medical records. Unpublished master’s thesis, Uppsala University, Sweden.
- Ålander, T., and I. Scandurra. 2015. “Experiences of healthcare professionals to the introduction in Sweden of a public eHealth service: Patients online access to their electronic health records.” In *MEDINFO 2015: eHealth-enabled Health*, edited by I. N. Sakar, A. Georgiou, and P. Mazzoncini de Azevedo Marques, 153-157. Amsterdam: IOS Press.

Public interest statement

Perception of risk is a complex phenomenon. Experts may say that a situation is not dangerous based on statistics, but the public may still fear the situation. The famous American risk communicator Peter Sandman has taught us that this fear may be induced by, for example, the fact that we do not feel in control of the situation or do not trust the sources of information. Many health professionals, physicians in particular, have believed that Patient Accessible Electronic Health Records (PAEHR) will increase the risks of threats and violence for medical staff. This article describes that this does not seem to be the case if we look at statistics, that is the the actual number of violent or hostile situations. However, the fears and worries expressed are real, which may be as important to take into consideration when discussing risk in relation to PAEHR and other eHealth services.

The multidisciplinary team behind this paper span the research areas of medicine, work environment research and computer science. They are all members of the DOME consortium which is a national Swedish eHealth consortium focusing on Patient Accessible Electronic Health Records research from different perspectives. DOME was founded in 2012 and includes researchers and projects from six different universities. Two of the authors are also members of the Health Technology and Organisations research group at Uppsala University that focus on health and wellbeing in relation to technology and organisations. Finally, this work was partly supported by Forte through the project “The effects of digitalization on the work environment of nurses” (Disa), grant number 2016-07153.

Accepted Manuscript

Photo of main author, Ulrika Åkerstedt



Accepted Manuscript