

The Role of Healthcare Professionals' Negative Emotions in Encounters with Vaccine-
Hesitant Patients

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Master's Thesis in Psychology

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<p>Abstract:</p> <p>Although vaccines have been found to be safe and beneficial for global public health, some individuals are hesitant towards vaccines. Previous research has shown that healthcare professionals [HCPs] have important roles in ensuring sufficient vaccine coverage, as they are trusted advisers in encounters with vaccine-hesitant patients. Therefore, it is important to investigate factors that affect HCPs' vaccination recommendation behaviour. In this study I investigate the associations between HCPs' negative emotions towards vaccine-hesitant patients and their willingness to recommend vaccines, their vaccine attitudes, and their perception of work competence and duty. To the best of my knowledge, this is one of the first studies that focuses on the role of HCPs' emotions in the vaccination context. In the current study, a sample of 667 HCPs in Finland responded to an electronic survey consisting of questions and statements related to vaccines. The data analysis was conducted utilizing logistic and linear regression. The results showed that HCPs with more negative emotions were more likely to recommend vaccines, to have more positive vaccine attitudes, and to have a stronger perception of work competence and duty. These findings indicate that the emotions that HCPs experience in encounters with vaccine-hesitant patients are associated with how HCPs approach the task of recommending vaccines to these patients. Since the results in this study are correlational, future research should further explore the possible causal relationships between HCPs' emotions towards vaccine-hesitant patients and their vaccine recommendations.</p>	
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Abstrakt:	
<p>Även om vacciner har visat sig vara både säkra och gynnsamma för den globala folkhälsan så är vissa individer tveksamma gentemot vacciner. Tidigare forskning har visat att vårdpersonal har en nyckelroll när det kommer till att säkra vaccintäckningen eftersom de anses vara pålitliga rådgivare i möten med de patienter som är vaccintveksamma. Därav är det viktigt att undersöka faktorer som påverkar vårdpersonals vaccinrekommendationer. I denna studie utforskas associationen mellan vårdpersonals negativa emotioner gentemot vaccintveksamma patienter och deras villighet att rekommendera vacciner i möten med vaccintveksamma patienter, deras egna vaccinationsattityder och deras uppfattning av arbetskompetens och plikt. Enligt min vetskap är det här en av de första studierna där fokus ligger på vårdpersonals emotioner i vaccinationssammanhang. Samplet i denna studie bestod av 667 arbetare inom vården i Finland som svarade på en elektronisk enkät som innehöll frågor och påståenden om vacciner. Logistisk och linjär regression användes för att analysera data. Resultaten visar att ju mer negativa emotioner vårdpersonal upplever gentemot vaccintveksamma patienter, desto mer sannolikt är det att de rekommenderar vaccin i möten med vaccintveksamma patienter. Resultaten indikerar också att ju mer positiva vaccinattityder, samt ju mer upplevd arbetskompetens och plikt känsla vårdpersonal har, desto mer negativa emotioner upplever de gentemot vaccintveksamma patienter. Dessa fynd indikerar att vårdpersonals emotioner i möten med vaccintveksamma patienter har en roll i hur vårdpersonal närmar sig uppgiften att rekommendera vaccin till vaccintveksamma patienter. Eftersom endast korrelationer undersöktes i denna studie så vore det fördelaktigt om framtida studier utforskade eventuella orsakssamband mellan vårdpersonals emotioner gentemot vaccintveksamma patienter och deras vaccinrekommendationer.</p>	
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Introduction

Immunization via vaccines has saved and prolonged a vast number of lives through the years (World Health Organization [WHO], 2024). It is one of the most cost-effective methods for improving global public health (MacDonald & The Strategic Advisory Group of Experts [SAGE] Working Group on Vaccine Hesitancy, 2015). Despite the benefits of vaccinations, many are still unsure about their decision to vaccinate (Abenova et al., 2023; Dayton Eberwein et al., 2023). Reluctance or refusal of vaccines has been recognized as a threat to global public health by the WHO (2019). The phenomenon is called *vaccine hesitancy* and has been defined as “a motivational state of being conflicted about, or opposed to, getting vaccinated” (WHO, 2022).

Vaccine hesitancy is a complex phenomenon, and various individual and contextual variables affect an individual’s decision about vaccination (Dubé et al., 2013; Larson et al., 2011; MacDonald & SAGE Working Group on Vaccine Hesitancy, 2015). Some common psychological variables associated with vaccine hesitancy are named by Betsch et al. (2018) as the five Cs. The first C is lack of confidence, which is explained as not finding health care trustworthy and vaccines safe. The second C is complacency, which is defined as doubting the benefit and necessity of vaccines. The third C is constraints, referring to e.g. lack of willingness to pay or face inconveniences such as travel time to vaccination. The fourth C is calculation, which is explained as research behaviour due to perceiving vaccines as high risk. The fifth C is collective responsibility, which refers to being open to accept vaccines to protect others from potential harm.

Health care professionals [HCPs] have crucial roles in relation to vaccine hesitancy, since they are in a central position to convey information about vaccines to patients (Karlsson et al., 2019; Lin et al., 2021). Previous research has emphasized HCPs’ impact on patients’ decision making about vaccinations (Paterson et al., 2016). Trust in (Cascini et al., 2021) and advice from HCPs (Yeung et al., 2016) have been found to increase vaccine acceptance. Moreover, HCPs’ recommendations of vaccines have been shown to increase patients’ vaccine acceptance, while a lack of an HCP’s recommendation can lead to the patient not accepting the vaccine (Gust et al., 2008; Lau et al., 2013; Napolitano, Alessandro & Angelillo, 2018; Nuwarda et al., 2022). Therefore, it is important that HCPs recommend vaccines in patient encounters.

Since HCPs’ vaccine recommendations have been shown to increase vaccine uptake, previous research has focused on what facilitates or hinders an HCP’s recommendation. A

review by Paterson et al. (2016) found that vaccinated HCPs are more likely to recommend vaccines. In the same review, HCPs' knowledge about vaccinations and positive vaccine attitudes were positively associated with recommendations. Karlsson et al. (2019) studied how HCPs' perceptions of the safety and benefits of vaccines were related to their recommendation behaviour. Their results showed that the safer and more beneficial the HCPs perceived the vaccines to be, the more likely they were to recommend vaccinations to their vaccine-hesitant patients.

While research has shown that the previously mentioned variables are associated with how likely it is that HCPs recommend vaccines to their patients, the potential relationship between HCPs' emotions towards vaccine-hesitant patients and their recommendation behaviour is unexplored. Two studies, not specifically focused on vaccinations, found that when HCPs perceive a patient or situation as difficult, they can experience many negative emotions, and these emotions, in turn, can have a negative impact on their perceived ability to give high-quality care in the present situation (Martin et al., 2015; Michaelsen, 2012). Moreover, in a qualitative study conducted by Loftus, Sahm and Fleming (2021), HCPs reported that providing information about vaccines to patients evoked emotions in the HCPs. Some of the HCPs in the study reported feeling empathy towards patients expressing fear, while others reported feeling frustrated when patients seemed not to listen to their advice. To the best of my knowledge, there is no previous quantitative research on the potential relationship between HCPs' emotions towards vaccine-hesitant patients and HCPs' vaccine recommendations in encounters with such patients. Therefore, the first aim of this study was to explore the relationship between HCPs' emotions and their vaccine recommendations.

As previously mentioned, research on HCPs' emotions when they encounter vaccine-hesitant patients is scarce. There is reason to further investigate negative emotions experienced by HCPs, since information and reassurance about vaccinations provided by HCPs may not always be sufficient to increase patients' vaccine acceptance (Dubé et al., 2013). HCPs' way of communicating and their ability to elicit trust and to have non-judgemental encounters with vaccine-hesitant patients are also crucial in this context (Eller et al., 2019; Gust et al., 2008; Holford et al., 2024; Wilder-Smith & Qureshi, 2019). Negative emotions may interfere with these communication factors. Furthermore, a recent review by Lip et al. (2023) that focused on currently available educational interventions for HCPs encountering vaccine hesitancy, recognized a lack of both interventions for and knowledge about HCPs' self-monitoring and emotional regulation skills.

As already stated, HCPs report that giving information to patients about vaccines is frustrating to some HCPs, when the HCPs' perception is that the patient is not taking their advice (Loftus, Sahn & Fleming, 2021). It is possible that the discrepancy in attitudes towards vaccines plays a role in evoking feelings of frustration and may serve as a barrier to constructive communication between patient and HCP. An interesting question is whether stronger positive attitudes towards vaccines on part of the HCP is associated with increased levels of frustration in the encounter.

Another study found that HCPs feel conflicted about being expected to promote vaccines while simultaneously being good listeners and communicators with patients, even when those hold oppositional views regarding vaccines and may question the HCPs' expertise in the matter (Deml et al., 2020). In addition, HCPs view encounters with vaccine-hesitant patients as having an influence on their sense of professional responsibility and on their reputation. Another study found that some HCPs may dismiss vaccine-hesitant patients, citing reasons such as a lack of common commitment to what the HCP considers to be standard medical care (Flanagan-Klygis, Sharp & Frader, 2005). A possible interpretation of these statements is that ideas related to professional responsibility may influence the emotional load of counselling vaccine-hesitant patients.

With the previously presented indications in mind, the second aim of this study was to investigate possible factors connected to negative emotions perceived by HCPs in encounters with vaccine-hesitant patients. This includes exploring the relationship between HCPs' own vaccine attitudes and HCPs' emotions towards vaccine-hesitant patients, as well as the association between HCPs' perception of their own work competence and duty and their emotions towards vaccine-hesitant patients.

The current study investigated emotions towards vaccine-hesitant patients in a sample of HCPs in Finland. The first hypothesis was that HCPs who experience more negative emotions towards vaccine-hesitant patients in vaccination encounters are more likely to recommend childhood and influenza vaccines to such patients. The second hypothesis was that the more positive HCPs' vaccine attitudes are, the more negative emotions they experience towards vaccine-hesitant patients. The third hypothesis is that stronger perceptions of work competence and duty are associated with more negative emotions towards vaccine-hesitant patients.

Methods

Study context

The data used in this study was collected in Finland. In Finland, there is a national vaccination programme for children and adults, which is voluntary and free of charge, and the vaccination coverage is high (THL, 2024a). The influenza vaccine is included in the national vaccination programme and is offered to those considered belonging to a risk group, e.g. pregnant women and elderly, and to those who are close to or working with risk groups, e.g. hospital workers (THL, 2024b). The childhood vaccinations are performed at various public health care units (THL, 2024c), while the influenza vaccinations are administered at local health centres, occupational health care services or private medical centres (THL, 2024b).

Respondents

The participants in the present study were gathered from the Finnish Public Sector study, which is an ongoing cohort study among hospital employees within the public sector. (Karlsson et al., 2019; Virtanen et al., 2012). The sample used in this study is a smaller part of the sample used in the study by Karlsson et al. (2019).

All hospital workers ($N = 8770$) who had participated in the Finnish Public Sector study the year before (2017) were sent an invitation to an electronic survey. The survey was distributed in two phases due to practical considerations. The first round of surveys was sent out on February 28th, 2018, to hospital workers in the regions Forssa ($n = 916$), Kanta-Häme ($n = 1201$), Pietarsaari ($n = 761$) and Vaasa ($n = 1321$). The second round of surveys was sent to hospital workers in the region Pirkanmaa ($n = 4571$) on March 13th, 2018.

The electronic survey was answered by 4286 respondents, which equals to a response rate of approximately 49%. In the present study, respondents were excluded if they reported that they do not encounter patients regarding vaccinations in their work, e.g., psychologists and administrative personnel. After this exclusion, the sample consisted of 2962 HCPs. Furthermore, only respondents who reported that they encounter patients regarding vaccinations on a weekly basis ($n = 810$) were administered the questions about their emotions. Lastly, 143 respondents with missing values on the variables of interest in the present study were excluded, resulting in a final sample of 667 respondents. The mean age of the sample was 44.13 years ($SD = 11.21$, range = 22–66). The sample consisted of 588 women (88.2%), 76 men (11.4%) and 3 individuals with no gender information.

Ethical Statement

The ethics committee of the Hospital District of Helsinki and Uusimaa has given the project ethical approval. All respondents were given information about the purpose of the study and about the management of collected data. They were also informed that participation in the study was voluntary and that it was possible to withdraw participation at any time. The respondents were asked to confirm their informed consent by checking a box.

Measures

The electronic survey consisting of various vaccine-related questions was used to collect the data. All questions in the survey were created by the research team conducting the data collection (Karlsson et al., 2019). In the present study, the statements and questions concerning the HCPs' emotions towards vaccine-hesitant patients, perceived benefits of vaccines, perceived safety of vaccines, trust in health professionals, perception of work competence and duty, and recommendation behaviour were of interest. See Table 1 for all items used in this study. For more information about the creation process behind the different composites and their corresponding questions, see Karlsson et al. (2019).

Emotions towards vaccine-hesitant patients

Respondents were asked to rate their emotions towards vaccine-hesitant patients. The question was "If a patient is hesitant towards vaccines, it makes me feel..." followed by the emotion in question. The emotions listed for rating were angry, irritated, disappointed, indifferent, respect, content and happy. The possible answers were 1 (not at all), 2 (very little), 3 (somewhat), 4 (a lot) or 5 (very much). In this study, only the negative emotions were of interest (angry, irritated and disappointed).

Recommendation behaviour

Respondents were asked about their general tendency to recommend vaccines in situations where a patient or a parent of a patient is vaccine hesitant. The questions used were "How do you proceed if a parent is unsure about a vaccination decision concerning the childhood vaccines (and the child does not have any medical contraindications)?" and "How do you proceed if a patient is unsure about a vaccination decision concerning an influenza vaccine (and the patient does not have any medical contraindications)?" There were three possible answers: 1) I try to guide the parent/patient towards vaccinating, 2) I try to guide the

patient/parent towards not vaccinating or 3) I do not try to guide the parent/patient in any direction.

Perceived benefits of vaccines

Respondents were presented with various statements about perceived benefits of vaccines. Nine statements were used for this purpose, e.g. “It is better to be immunized through the disease than through the vaccine.” and “A good hygiene will make measles disappear from society – the vaccine is not necessary.”. The possible answers for each statement were 1) Strongly disagree, 2) Partially disagree, 3) Neither agree nor disagree, 4) Partially agree and 5) Strongly agree. Some of the answers were scored in reverse. A variable was created by calculating the mean of these nine statements.

Perceived safety of vaccines

Respondents were presented with various statements aimed at measuring their perceived safety of vaccines. Six statements were used for this purpose, and they were about the safety of vaccines in general, childhood vaccines and influenza vaccine, e.g., “Vaccines can cause autism” and “The risk of side effects outweighs the protective benefits of the influenza vaccines”. The possible answers for each statement were 1) Strongly disagree, 2) Partially disagree, 3) Neither agree nor disagree, 4) Partially agree and 5) Strongly agree. Some of the answers were scored in reverse. A variable was created by calculating the mean of these six statements.

Trust in health professionals

Respondents were presented with various statements about their trust in health professionals. Four statements were used for this purpose, e.g. “When healthcare professionals make medical decisions, they have the patients’ best interest in mind.”. The possible answers for each statement were 1) Strongly disagree, 2) Partially disagree, 3) Neither agree nor disagree, 4) Partially agree and 5) Strongly agree. Some of the answers were scored in reverse. A variable was created by calculating the mean of these four statements.

Perception of work competence and duty

Respondents were presented with two statements about their perception of their own work competence. The statements were “I feel I have enough information about vaccines to

be able to answer my patients' questions." and "I gladly discuss vaccines with my patients.". They also responded to the statement "I see it as my obligation to recommend that the patient gets vaccinated.", which related to their perception of duty. The possible answers for each statement were 1) Strongly disagree, 2) Partially disagree, 3) Neither agree nor disagree, 4) Partially agree and 5) Strongly agree. A variable was created by calculating the mean of these three statements.

Table 1

Composites, Statements, Questions and their labels

Composite	Statement or question	Item label	Composite label
Emotions towards vaccine-hesitant patients	If a patient is hesitant towards vaccines, it makes me feel angry.	Angry	NegEmotion
	If a patient is hesitant towards vaccines, it makes me feel irritated.	Irritated	
	If a patient is hesitant towards vaccines, it makes me feel disappointed.	Disappointed	
Recommendation behaviour, childhood vaccines	How do you proceed if a parent is unsure about a vaccination decision concerning the childhood vaccines (and the child does not have any medical contraindications)?	RecommendChi	-
Recommendation behaviour, influenza vaccines	How do you proceed if a patient is unsure about a vaccination decision concerning an influenza vaccine (and the patient does not have any medical contraindications)?	RecommendInf	-
Perceived benefits of vaccines	Vaccinating healthy children helps to protect others by stopping the spread of disease.	Benefit1	Benefit
	*It is better to be immunized through the disease than through the vaccine.	Benefit2	
	Children need vaccines for diseases that are not common anymore.	Benefit3	

	Childhood vaccines are effective in protecting against diseases.	Benefit4	
	Measles is a very serious disease.	Benefit5	
	*A good hygiene will make measles disappear from society – the vaccine is not necessary.	Benefit6	
	The influenza vaccines are effective in preventing the disease.	Benefit7	
	*It is not worth getting the influenza vaccine, as the influenza symptoms are not serious.	Benefit8	
	*Good hand hygiene and other preventive efforts are enough for avoiding the influenza even without vaccination.	Benefit9	
Perceived safety of vaccines	*Vaccines can cause autism.	Safety1	Safety
	*Vaccines contain dangerous quantities of mercury.	Safety2	
	*The risk of side effects outweighs the protective benefits of the childhood vaccines.	Safety3	
	Childhood vaccines are safe.	Safety4	

	*The risk of side effects outweighs the protective benefits of the influenza vaccines.	Safety5	
	The influenza vaccines are safe.	Safety6	
Trust in health professionals	*I think it is good that patients/parents question the doctors' ability to make correct diagnoses.	Trust1	Trust
	When healthcare professionals make medical decisions, they have the patients' best interest in mind.	Trust2	
	*Doctors are too authoritative towards their patients.	Trust3	
	Parents should leave the decisions that concern their children's health in the healthcare professionals' hands.	Trust4	
Perceived work competence and duty	I feel I have enough information about vaccines to be able to answer my patients' questions.	Information	-
	I see it as my obligation to recommend that the patient gets vaccinated.	Obligation	-
	I gladly discuss vaccines with my patients.	Discussion	-

Note. * = Reversed item

Results

The statistical analyses in this study were performed using IBM SPSS Statistics 28.0 for Windows.

Descriptive statistics

As previously mentioned, the negative emotions angry, irritated and disappointed were of main interest in the current study. The “positive emotions” respect, content and happy were excluded from the analyses due to lack of distribution in answer frequencies. The emotion indifferent was excluded due to not being easily categorized as neither “negative” nor “positive”.

The internal consistency reliability for the statements about perceived negative emotions (angry, irritated and disappointed) towards vaccine-hesitant patients was assessed using Cronbach’s alpha. The assessment showed high internal consistency ($\alpha = 0.8$) between the three statements. Hence, the statements were conjoined into one single composite, NegEmotion. See Table 2 for descriptive statistics of all items used in this study except the items for recommendation behaviour, which can be found in Table 3.

Table 2

Descriptive statistics for all items except recommendation behaviour

Item	Min. – Max.	Mean	SD
Angry	1–5	1.74	0.90
Irritated	1–5	2.46	1.12
Disappointed	1–5	2.55	1.11
NegEmotion	1–5	2.25	0.88
Benefit	2–5	4.29	0.51
Safety	1–5	4.21	0.71
Trust	2–5	3.74	0.65
Information	1–5	3.57	1.12
Obligation	1–5	4.37	0.86
Discussion	1–5	4.02	1.04

Note. The number of respondents for each item was 667.

Table 3
Descriptive statistics of Recommendation behaviour

Item	Answers	Frequency	%
RecommendChi	I try to guide the parent towards letting the child get vaccinated.	570	85.5
	I do not try to guide the parent in any direction.	94	14.1
	I try to guide the parent towards <i>not</i> letting the child get vaccinated.	3	0.4
RecommendInf	I try to guide the patient towards vaccinating.	491	73.6
	I do not try to guide the patient in any direction.	175	26.2
	I try to guide the patient towards <i>not</i> vaccinating.	1	0.1

Note. The number of respondents for each item was 667.

Correlations were analyzed for all items included in the current study except recommendation behaviour due to the variable being categorical. See Table 4 for all correlations.

Table 4

Correlations

Measure	1.	2.	3.	4.	5.	6.	7.	8.
1.Angry								
2.Irritated	.658**							
3.Disappointed	.498**	.573**						
4.Benefit	.151**	.267**	.310**					
5.Safety	.125**	.260**	.282**	.726**				
6.Trust	.157**	.216**	.194**	.454**	.415**			
7.Information	-.028	.002	.051	.334**	.370**	.305**		
8.Obligation	.081*	.193**	.276**	.555**	.558**	.397**	.393**	
9.Discussion	-.017	.011	.138**	.388**	.347**	.235**	.521**	.531**

* $p < .05$, ** $p < .01$

Main analyses

Recommendation Behaviour

I analyzed whether HCPs' perceived negative emotions towards vaccine-hesitant patients (NegEmotion) have any association with whether they proceed to recommend the vaccine to the parent or patient or not (RecommendChi and RecommendedInf). A binary logistic regression analysis was performed since both RecommendChi and RecommendedInf were recoded as dichotomous categorical variables. Recoding from three to two categories was performed since very few of the 667 participants had chosen the answer alternatives "I try to guide the patient/parent towards not vaccinating" for both the childhood vaccine ($n = 3$) and the influenza vaccine ($n = 1$). Therefore, those who had answered that they recommend the patient/parent to not vaccinate were grouped together with those who had chosen "I do not try to guide the parent/patient in any direction".

The results of the logistic regression analysis showed NegEmotion had a significant effect on RecommendChi ($B = 0.830$, $SE = 0.151$, $p < 0.01$) with Cox & Snell $R^2 = .05$ and Nagelkerke $R^2 = .09$. The model was significant ($\chi^2(1) = 35.52$, $p < .01$). Thus, the more perceived negative emotion, the more likely the HCPs are to report that they recommend the childhood vaccine. The odds ratio showed that for every increase of one unit in NegEmotion, the probability of HCPs reporting that they recommend the childhood vaccine more than doubled ($\text{Exp}(B) = 2.294$, 95% CI [1.708, 3.083]).

The results of the logistic regression showed that NegEmotion had a significant effect on RecommendedInf ($B = 0.491$, $SE = 0.108$, $p < .01$) with Cox & Snell $R^2 = .03$ and Nagelkerke $R^2 = .05$. The model was significant ($\chi^2(1) = 22.03$, $p < .01$). Thus, the more perceived negative emotion, the more likely the HCPs are to report that they recommend the influenza vaccine. The odds ratio showed that for every increase of one unit in NegEmotion, the HCPs' probability to report that they recommend the influenza vaccine increased by approximately 63% ($\text{Exp}(B) = 1.633$, 95% CI [1.321, 2.019]).

A binary logistic regression analysis was also performed to assess all variables' effect on RecommendChi, and to control if NegEmotion still had an effect after all variables were entered into the model. The results from the analysis showed NegEmotion still had a significant effect on RecommendChi ($B = 0.496$, $SE = 0.160$, $p < 0.01$). The odds ratio showed that for every increase of one unit in NegEmotion, HCPs' likelihood to recommend the childhood vaccine increased by

approximately 64% (Exp (B) = 1.642, 95% CI [1.199, 2.248]) The analysis also showed significant effects for the variables Safety, Trust, Information and Obligation. The only variable surpassing the effect of NegEmotion was Safety, which showed the largest effect in this model (B = 0.600, SE = 0.245, $p < .05$, Exp (B) = 1.822, 95% CI [1.126, 2.947]). See Table 5 for all variable measures, R^2 and model fit.

Table 5
Binary logistic regression results for RecommendChi, all variables

Variable	β	SE	p	OR	95% CI for OR
NegEmotion	0.496	0.160	< 0.002	1.642	[1.199, 2.248]
Benefit	0.252	0.340	.457	1.287	[0.662, 2.504]
Safety	0.600	0.245	0.015	1.822	[1.126, 2.947]
Trust	0.446	0.219	0.041	1.562	[1.018, 2.398]
Information	-0.286	0.132	0.030	0.752	[0.580, 0.973]
Obligation	0.315	0.162	0.052	1.371	[0.997, 1.884]
Discussion	0.148	0.141	0.294	1.159	[0.880, 1.527]
Constant	-5.197	0.981	< 0.001	0.006	

Cox & Snell $R^2 = .13$, Nagelkerke $R^2 = .23$. Model $\chi^2(7) = 92.86$, $p < .01$.

A binary logistic regression analysis was also performed to assess all variables' effect on RecommendInf, and to control if NegEmotion still had an effect after all variables were entered into the model. The results from the analysis showed NegEmotion no longer had a significant effect on RecommendInf. The analysis did show significant effects for the variables Benefit, Safety and Obligation, with Benefit showing the largest effect in this model (B = 0.793, SE = 0.299, $p < .01$, Exp (B) = 2.211, 95% CI [1.230, 3.973]). See Table 6 for all variable measures, R^2 and model fit.

Table 6
Binary logistic regression for RecommendInf, all variables

Variable	β	SE	<i>P</i>	OR	95% CI for OR
NegEmotion	0.097	0.129	0.453	1.102	[0.855, 1.419]
Benefit	0.793	0.299	0.008	2.211	[1.230, 3.973]
Safety	0.619	0.211	0.003	1.857	[1.228, 2.807]
Trust	0.299	0.187	0.110	1.349	[0.935, 1.947]
Information	-0.032	0.112	0.775	0.968	[0.778, 1.206]
Obligation	0.742	0.161	< 0.001	2.101	[1.534, 2.877]
Discussion	-0.025	0.126	0.845	0.976	[0.762, 1.249]
Constant	-9.078	1.002	< 0.001	0.000	

Cox & Snell $R^2 = .25$, Nagelkerke $R^2 = .36$. Model $\chi^2(7) = 187.96$, $p < .01$.

Vaccine attitudes

A multiple linear regression was conducted to determine whether Benefit, Safety and Trust would be associated with NegEmotion. The analysis indicated that all three variables together explained 10.2% of the variance of NegEmotion, $R^2 = .102$, $F(3, 663) = 25.018$, $p < .01$. A significant effect was found for Benefit and Trust, indicating that HCPs who perceived vaccines as more beneficial and who reported greater trust also reported more negative emotions towards vaccine-hesitant patients. See Table 7 for all variable measures.

Table 7

Regression – Negative Emotion

Variable	b	SE	95% CI for b	B	<i>p</i>
Benefit	0.299	0.096	0.111, 0.487	.172	.002
Safety	0.127	0.068	-0.006, 0.260	.102	.060
Trust	0.142	0.057	0.031, 0.254	.105	.012

 $R^2 = .102$ ***Work competence and duty***

A multiple linear regression was conducted to determine whether Information, Obligation and Discussion would be associated with NegEmotion. The analysis indicated that all three variables together explained 5.9% of the variance of NegEmotion, $R^2 = .059$, $F(3, 663) = 13.911$, $p = < .001$. A significant effect was found for Obligation, indicating that HCPs who reported greater perceived obligation to recommend vaccines in their work also reported more negative emotions towards vaccine-hesitant patients. See Table 8 for all variable measures.

Table 8

Regression – Negative Emotion

Variable	b	SE	95% CI for b	B	<i>p</i>
Information	-0.054	0.035	-0.123, 0.016	-.068	.130
Obligation	0.290	0.046	0.199, 0.381	.282	< .001
Discussion	-0.049	0.041	-0.130, 0.032	-.058	.232

 $R^2 = .059$

Discussion

The primary aim of this study was to investigate the association between HCPs' emotions towards vaccine-hesitant patients and their willingness to recommend vaccines to these patients. Increasing vaccine coverage is a global health priority (MacDonald & SAGE Working Group on Vaccine Hesitancy, 2015; WHO, 2019) and recommendations from HCPs affect patients' decisions about accepting vaccines (Cascini et al., 2021; Gust et al., 2008; Lau et al., 2013; Napolitano, Alessandro & Angelillo, 2018; Nuwarda et al., 2022; Paterson et al., 2016; Yeung et al., 2016). Previous research has studied factors associated with HCPs' recommendation behaviour (Karlsson et al., 2019; Paterson et al., 2016), but the association between HCPs' emotions towards vaccine-hesitant patients and their willingness to recommend vaccines has not yet been investigated. In addition to the previously mentioned association between emotions and recommendation behaviour, the secondary aim of this study was to examine possible associations between HCPs' own vaccine attitudes and their emotions towards vaccine-hesitant patients, and also possible associations between emotions towards vaccine-hesitant patients and HCPs' perceptions of work competence and duty.

Main findings

The results in this study showed that HCPs do report experiencing anger, irritation and disappointment towards vaccine-hesitant patients. These findings are in line with previous studies, where it was indicated that HCPs can experience negative emotions when they perceive a patient or situation as difficult (Martin et al., 2015; Michaelsen, 2012). These studies were not specifically focused on vaccinations. However, the results of the current study suggest that HCPs do perceive encounters with vaccine-hesitant patients as difficult.

Furthermore, a significant association between HCPs' emotions towards vaccine-hesitant patients and their willingness to recommend vaccines was found. The first hypothesis was thus confirmed, as the more negative emotions HCPs had towards vaccine-hesitant patients, the more likely they were to recommend the childhood and influenza vaccines. The results showed that emotions had a unique effect beyond the HCPs' vaccine attitudes and perception of work competence and duty on recommendation of childhood vaccines, but not on influenza vaccines. Previous research does not provide an explanation for this difference.

A significant association was also found between HCPs' own vaccine attitudes and their emotions towards vaccine-hesitant patients. HCPs who perceived vaccines as beneficial and safe, and felt trust in other HCPs, also perceived more negative emotions towards vaccine-hesitant patients. This result confirmed the second hypothesis - the more positive vaccine attitudes the HCPs have, the more negative emotions they experience towards vaccine-hesitant patients. Since HCPs report that informing about vaccines can be frustrating when the HCP perceives that the patient is not taking their advice (Loftus, Sahn & Fleming, 2021), a possible explanation for this finding is that the more positive vaccine attitudes the HCP has, the larger the discrepancy between the attitudes of the HCP and the attitudes of the vaccine-hesitant patient is, which may predispose for frustration since the area of common ground is smaller.

Moreover, HCPs' perceived work competence and duty showed a small association with HCP's emotions towards vaccine-hesitant patients. The results confirm the hypothesis that the more perceived work competence and obligation to recommend vaccines HCPs perceive, the more negative emotions they experience towards vaccine-hesitant patients. However, when observing the items individually, only HCPs' sense of obligation to recommend vaccines showed a significant, and still weak, association with negative emotions towards vaccine-hesitant patients. These results indicate that HCPs' emotions towards vaccine-hesitant patients are mainly explained by other variables.

Overall, HCPs' negative emotions seem to play some role in encounters with vaccine-hesitant patients. These negative emotions could be a hinder for the HCPs' capacity to communicate non-judgementally with vaccine-hesitant patients. Considering the importance of HCPs' ability to show empathy in discussions with patients about vaccinations to increase vaccine acceptance (Eller et al., 2019; Gust et al., 2008; Wilder-Smith & Qureshi, 2019), the results from this study showed that HCPs' emotions towards vaccine-hesitant patients is an important topic for further research.

Limitations

The results were limited to observing correlations. In other words, it is impossible to conclude whether negative emotions cause an increased willingness to recommend vaccines or whether other factors are at play. Furthermore, the data was collected in year 2018, and the COVID-19 pandemic took place a few years after the data collection. During the pandemic,

vaccine hesitancy was a central theme in media, surrounded by controversies. Therefore, it could be of interest to replicate this study to see if the pandemic has altered the relationship between HCPs' negative emotions towards vaccine-hesitant patients and their recommendation behaviour. It is possible that the results would show that HCPs' negative emotions towards vaccine-hesitant patients have become amplified due to the attention the topic of vaccine hesitancy drew during the pandemic.

Another limitation was that the answer frequencies for the question about recommendation behaviour was uneven. In both questions regarding recommendation behaviour, the answer of "I try to guide the patient/parent towards not vaccinating" needed to be incorporated and recoded into the answer "I do not guide in any direction" since so few had chosen that answer alternative. This still led to a dichotomous variable with uneven distribution of answers, especially regarding the question of recommending the childhood vaccine, where only 14.5 % in total had chosen one of the answers in the conjoined variable consisting of "I do not try to guide the parent in any direction and "I try to guide the parent towards not letting the child get vaccinated".

In addition, since the data was collected via a self-report survey, it is possible that the answers were affected by factors such as social desirability bias or memory limits and may not be representative of how the respondents actually behave in encounters with vaccine-hesitant patients. It is also worth mentioning the uneven distribution of gender represented in this study, with men only making up 11.4 % of the sample, which may limit the generalizability of the results. However, in year 2022 in Finland, 85 % of employees in health and social services were women (THL, 2024d), which could mean the data's gender distribution is close to reality.

Future research could address some of these limitations by attempting to replicate the results utilizing an experimental paradigm. For instance, the emotions of HCPs could be manipulated, for example by exposing one group to material about the consequences of vaccine refusal, prior to encounters with vaccine-hesitant patients (or actors impersonating vaccine-hesitant patients, for ethical considerations) to observe whether the manipulation affects their willingness to recommend vaccines.

Conclusions

This study is, to the best of my knowledge, the first quantitative study investigating HCPs' emotions towards vaccine-hesitant patients. The results of this study highlight the role of HCP's negative emotions towards vaccine-hesitant patients in vaccine consultations. The findings indicate that the more negative emotions HCPs have towards vaccine-hesitant patients, the more likely they are to recommend vaccines in encounters with these patients. In addition, the results indicate that HCPs' emotions towards vaccine-hesitant patients are associated with their personal vaccine attitudes and their perceived work competence and sense of duty. The more positive HCPs' attitudes towards vaccines were, the more likely they were to experience negative emotions towards vaccine-hesitant patients. In a similar fashion, the more perceived work competence and sense of duty, the more likely HCPs were to recommend vaccines.

Future research should continue exploring the role of HCPs' emotions towards vaccine-hesitant patients, preferably utilizing an experimental paradigm to allow for conclusions about causality. The ultimate goal should be to contribute to the understanding of HCPs' role in improving vaccination coverage and possibly develop interventions where HCPs can have opportunities to learn how to self-regulate and handle emotions in encounters with vaccine-hesitant patients.

Summary in Swedish – Svensk sammanfattning

Vårdpersonals negativa emotioners roll i möten med vaccintveksamma patienter

Introduktion

Immunisering har räddat och förlängt många liv (World Health Organization [WHO], 2024) och är ett av de mest kostnadseffektiva alternativen för att förbättra den globala folkhälsan (MacDonald & The Strategic Advisory Group of Experts [SAGE] Working Group on Vaccine Hesitancy, 2015). Trots att vacciner har konstaterats vara gynnsamma så är många ändå tveksamma i sina vaccinbeslut (Abenova m.fl., 2023; Dayton Eberwein m.fl., 2023). Detta fenomen kallas vaccintveksamhet och har av WHO (2022) definierats som att man är kluven till eller helt emot att vaccinera sig. Vaccintveksamhet är ett komplext fenomen och det finns flertalet individuella och kontextuella variabler som påverkar en individs beslut om vaccinering (Dubé m.fl., 2013; Larson m.fl., 2011; MacDonald & SAGE Working Group on Vaccine Hesitancy, 2015).

Vårdpersonal har en viktig position i relation till vaccintveksamhet eftersom de har en nyckelroll när det kommer till att informera patienter om vacciner (Karlsson m.fl., 2019; Lin m.fl., 2021). Tidigare forskning har betonat vårdpersonals inverkan på patienters vaccinbeslut (Paterson m.fl., 2016). Tillit (Cascini m.fl., 2021) och råd från vårdpersonal (Yeung m.fl., 2016) har visat sig öka vaccinacceptans. Dessutom har vårdpersonals vaccinrekommendationer visat sig öka patienters vaccinacceptans, medan avsaknad av vårdpersonals vaccinrekommendation kan leda till att patienten inte accepterar vaccinet (Gust m.fl., 2008; Lau m.fl., 2013; Napolitano, Alessandro & Angelillo, 2018; Nuwarda m.fl., 2022). Därav är det viktigt att vårdpersonal rekommenderar vacciner i patientmöten.

Ett ännu outforskat område är den möjliga relationen mellan vårdpersonals emotioner gentemot vaccintveksamma patienter och deras rekommendationsbeteende. Tidigare studier har visat att vårdpersonal kan uppleva negativa emotioner om de upplever en patient eller vårdsituation som utmanande (Martin m.fl., 2015; Michaelsen, 2012). Dessutom uppgav vårdpersonal i en kvalitativ studie att de upplevde frustration då patienter inte verkade lyssna på deras råd om vacciner (Loftus, Sahn and Fleming, 2021). En möjlig tolkning av dessa fynd är att vårdpersonals egna vaccinattityder kan vara relaterade till ökad upplevd frustration i möten med

vaccintveksamma patienter, eftersom de då befinner sig längre ifrån varandras ståndpunkter i frågan. En annan studie har visat att vårdpersonal upplever att möten med vaccintveksamma patienter inverkar på deras upplevelse av yrkesmässigt ansvar och rykte (Deml m.fl., 2020), vilket öppnar för frågeställningen huruvida vårdpersonals upplevelse av arbetskompetens och plikt är relaterat till negativa emotioner gentemot vaccintveksamma patienter.

Enbart rådgivning av vårdpersonal kring vaccinationer är inte alltid tillräckligt för att öka vaccinacceptans (Dubé m.fl., 2013). Vårdpersonals förmåga att skapa tillit och ha icke-dömande möten med vaccintveksamma är också viktiga i det här sammanhanget (Eller m.fl., 2019; Gust m.fl., 2008; Holford m.fl., 2024; Wilder-Smith & Qureshi, 2019). Vårdpersonals negativa emotioner i vaccinkonsultationstillfällen kan eventuellt vara ett hinder för de här förmågorna.

I denna studie undersöktes vårdpersonals emotioner gentemot vaccintveksamma patienter. Den första hypotesen var att ju mer negativa emotioner vårdpersonal upplever gentemot vaccintveksamma patienter desto mer villiga är de att rekommendera vaccin. Den andra hypotesen var att ju positivare vaccinattityder som vårdpersonal har, desto mer negativa emotioner upplever de gentemot vaccintveksamma patienter. Den tredje hypotesen var att ju starkare upplevelse av arbetskompetens och plikt som vårdpersonal upplever desto mer negativa emotioner upplever de gentemot vaccintveksamma personer. Enligt min vetskap har ingen tidigare kvantitativ studie utforskat den möjliga relationen mellan vårdpersonals emotioner gentemot vaccintveksamma patienter och vårdpersonals rekommendationsbeteende.

Metod

Data som användes i den här studien samlades in i Finland. Vaccinationstäckningen i Finland är hög och det finns frivilliga och kostnadsfria nationella vaccinationsprogram för barn och vuxna (THL, 2024a). Deltagarna i studien rekryterades via en pågående kohortstudie bland sjukhusarbetare inom den offentliga sektorn (Karlsson m.fl., 2019; Virtanen m.fl., 2012). Samplet i den här studien är en mindre del av det sampel som användes i studien av Karlsson m.fl. (2019).

En elektronisk enkät som innefattade frågor och påståenden kring influensa och barndomsvacciner skickades ut. Enkäten skapades av de forskare som utförde datainsamlingen (Karlsson m.fl., 2019). Totalt 4286 personer svarade på enkäten. Endast vårdpersonal som

rapporterade att de arbetar med vaccinationer varje vecka inkluderades. Dessutom uteslöts de som inte hade svarat på alla variabler av intresse för denna studie. Det slutliga samplet bestod av 667 deltagare med en ålder som i genomsnitt var 44,13 år (SD = 11,16).

De variabler som var av intresse för denna studie var 1) emotioner gentemot vaccintveksamma patienter, 2) rekommendationsbeteende, 3) uppfattning kring vacciners gynnsamhet, 4) uppfattning av vacciners säkerhet, 5) tillit till vårdpersonal, 6) uppfattning av arbetskompetens och plikt. Emotionsvariabeln bestod av tre frågor där vårdpersonal fick gradera hur arga, frustrerade och besvikna de kände sig gentemot vaccintveksamma patienter. Rekommendationsvariabeln bestod av tre alternativa förfaranden gentemot en vaccintveksam patient där svarsalternativen var att guida patienten mot att vaccinera, guida patienten mot att inte vaccinera eller att inte guida patienten i någon riktning. Resterande variabler skapades genom att räkna ut ett genomsnitt av svarspoängen för de frågor som var relaterade till respektive variabel.

Resultat

Associationen mellan vårdpersonals negativa emotioner gentemot vaccintveksamma patienter och deras villighet att rekommendera vacciner undersöktes genom att använda logistisk regression. Resultaten visade att ju mer negativa emotioner vårdpersonal upplever gentemot vaccintveksamma patienter, desto mer troligt är det att de skulle rekommendera barndomsvaccin i möten med dessa patienter. Resultatet var signifikant ($B = 0.830$, $SE = 0.151$, $p < 0.01$) med Cox & Snell $R^2 = .05$ och Nagelkerke $R^2 = .09$. Även modellen var signifikant ($\chi^2(1) = 35.52$, $p < .01$). Oddskvoten visade att för varje ökad enhet i negativa emotioner så mer än dubblas sannolikheten att vårdpersonal rekommenderar barnvaccin (Exp (B) = 2.294, 95% CI [1.708, 3.083]). Resultaten visade även att ju mer negativa emotioner vårdpersonal upplever gentemot vaccintveksamma patienter, desto mer troligt är det att de skulle rekommendera influensavaccin åt dessa patienter. Resultatet var signifikant ($B = 0.491$, $SE = 0.108$, $p < .01$) med Cox & Snell $R^2 = .03$ och Nagelkerke $R^2 = .05$. Även modellen var signifikant ($\chi^2(1) = 22.03$, $p < .01$). Oddskvoten visade att för varje ökad enhet i negativa emotioner så ökade sannolikheten att vårdpersonal rekommenderar influensavaccin med ca 63% (Exp (B) = 1.633, 95% CI [1.321, 2.019]).

Binär logistisk regression utfördes även för att bedöma om vårdpersonals negativa emotioner fortfarande hade en association med rekommendationsbeteende efter att övriga

variabler i studien inkluderades i analysen. Resultaten visade att de negativa emotionerna fortfarande hade en signifikant association med rekommendation av barnvaccin ($B = 0.496$, $SE = 0.160$, $p < 0.01$). Oddskvoten visade att för varje ökad enhet i negativa emotioner så ökade sannolikheten att vårdpersonal rekommenderar barnvaccin med 64 % ($\text{Exp}(B) = 1.642$, 95% CI [1.199, 2.248]). Negativa emotioner hade i denna analys inte längre någon signifikant association med rekommendation av influensavaccin.

En multipel linjär regression utfördes för att avgöra om variablerna relaterade till vårdpersonals uppfattning om vacciners gynnsamhet och säkerhet, samt om tillit till vårdpersonal, hade någon association med negativa emotioner. Analysen indikerade att alla tre variabler kan förklara 10,2% av variansen i negativa emotioner ($R^2 = .102$, $F(3, 663) = 25.018$, $p = < .001$).

En multipel linjär regression utfördes även för att avgöra om variablerna relaterade till arbetskompetens och plikt var associerade med negativa emotioner gentemot vaccintveksamma patienter. Analysen indikerade att alla tre variabler kan förklara 5,9 % av variansen i negativa emotioner ($R^2 = .059$, $F(3, 663) = 13.911$, $p = < .001$).

Diskussion

Det primära målet med denna studie var att undersöka associationen mellan vårdpersonals emotioner gentemot vaccintveksamma patienter och deras villighet att rekommendera vaccin. Det sekundära målet var att undersöka möjliga associationer mellan vårdpersonals egna vaccinattityder och deras emotioner gentemot vaccintveksamma patienter, samt den möjliga associationen mellan vårdpersonals emotioner gentemot vaccintveksamma patienter och deras uppfattning av arbetskompetens och plikt.

Resultaten i denna studie visade att vårdpersonal rapporterar att de upplever sig arga, irriterade och besvikna gentemot vaccintveksamma patienter. De här fynden är i linje med tidigare forskning som indikerade att vårdpersonal kan uppleva negativa emotioner när de upplever en patient eller situation som utmanande (Martin m.fl., 2015; Michaelsen, 2012). Dessutom fanns en signifikant association mellan vårdpersonals emotioner gentemot vaccintveksamma patienter och deras villighet att rekommendera vacciner. Den första hypotesen blev därför bekräftad eftersom ju mer negativa emotioner som vårdpersonal upplevde gentemot

vaccintveksamma patienter desto mer sannolikt var det att de rekommenderar barn och influensavaccin.

En signifikant association fanns också mellan vårdpersonals vaccinattityder och deras emotioner gentemot vaccintveksamma patienter. Vårdpersonal som upplevde att vacciner är gynnsamma och säkra och som upplevde tillit till vårdpersonal upplevde också mer negativa emotioner gentemot vaccintveksamma patienter. Det här resultatet bekräftade den andra hypotesen som var att ju mer positiva vaccinattityder som vårdpersonal har desto mer negativa emotioner upplever de gentemot vaccintveksamma patienter. Vårdpersonals uppfattning av arbetskompetens och plikt hade även en mindre association med vårdpersonals emotioner gentemot vaccintveksamma patienter. Dessa resultat bekräftar även den tredje hypotesen som var att ju mer arbetskompetens och plikt som vårdpersonal upplever desto mer negativa emotioner har de gentemot vaccintveksamma patienter.

Vårdpersonals negativa emotioner verkar ha en roll i möten med vaccintveksamma patienter. De här negativa emotionerna kan vara ett hinder för vårdpersonals kapacitet att kommunicera på ett icke-dömande sätt med dessa patienter. Med tanke på vikten av vårdpersonals förmåga att visa empati i diskussioner med patienter för att öka vaccinacceptansen (Eller m.fl., 2019; Gust m.fl., 2008; Wilder-Smith & Qureshi, 2019), så påvisar resultaten från denna studie att vårdpersonals emotioner gentemot vaccintveksamma patienter är ett viktigt område för framtida forskning.

Denna studie begränsas av att endast ha utforskat korrelationer till vårdpersonals negativa emotioner. Således är det omöjligt att dra slutsatser om orsakssamband. Studiens datainsamling utfördes även före COVID-19 pandemin då vaccintveksamhet var ett centralt tema. Det kunde vara av intresse att utföra ett liknande studieupplägg efter pandemin för att se om resultaten eventuellt skulle kunna visa att vårdpersonals negativa känslor gentemot vaccintveksamma patienter har ökat.

I framtida forskning kunde man även utforska möjligheten att använda ett experimentellt upplägg för att eventuellt kunna dra slutsatser om orsakssamband kring vårdpersonals negativa emotioner i vaccinkonsultationstillfällen. Det slutliga målet borde vara att bidra till förståelsen av vårdpersonals roll i att öka vaccintäckning och att möjligtvis utveckla interventioner för

vårdpersonal där de kan ha få chansen att lära sig att självreglera och hantera sina emotioner i vaccinkonsultationstillfällen med vaccintveksamma patienter.

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PRESSMEDDELANDE

Vårdpersonals negativa emotioners roll i möten med vaccintveksamma patienter.

Pro-gradu avhandling i psykologi

Fakulteten för humaniora, psykologi och teologi, Åbo Akademi

Resultaten från en pro-gradu avhandling i psykologi vid Åbo Akademi tyder på att ju mer negativa emotioner vårdpersonal har gentemot vaccintveksamma patienter, desto mer ökar sannolikheten att de rekommenderar barndoms- och influensavacciner i möten med dessa patienter. Resultaten indikerar också att det är mer sannolikt att vårdpersonal som själva har positiva vaccinattityder och starkare upplevelser av arbetskompetens och plikt upplever negativa emotioner gentemot vaccintveksamma patienter. Vaccintveksamhet betyder att man är kluven till eller helt emot att vaccinera sig, trots att vaccin enligt Världshälsoorganisationen konstaterats vara säkra och gynnsamma för den globala folkhälsan. Resultaten bygger på tidigare forskning som visat att vårdpersonal kan uppleva vaccinkonsultationer med vaccintveksamma patienter som frustrerande och att mötena är förknippade med upplevelser av yrkesmässigt ansvar och rykte. Studien baserar sig på en datainsamling med enkäter som vårdpersonal i Finland besvarat. Totalt inkluderades svar från 667 personer i studien. Resultaten av denna studie begränsas av att endast korrelationer observerades, vilket gör att det inte går att dra slutsatser om orsakssamband. En annan begränsning är att datainsamlingen gjordes före coronapandemin, som med sin världsomfattande påverkan och synlighet i media kan ha påverkat hur vårdpersonal ser på vaccintveksamhet. Framtida forskning kunde med ett experimentellt upplägg undersöka de samband som konstaterats i denna studie, för att kunna dra slutsatser om orsakssamband. Enligt författarens vetenskap är detta en av de första studierna som undersöker vårdpersonals negativa emotioner gentemot vaccintveksamma patienter.

Avhandlingen utfördes av Sanna Johansson under handledning av Anna Soveri, Linda Karlsson och Otto Mäki.

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