

The use of electronic communication for patient-professional interaction – nursing staff's point of view

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Abstract

Patient care in hospital wards is decreasing dramatically; more and more often, it takes place at home and in outpatient clinics. New ways to communicate are thus needed between patients and professionals. The use of electronic devices is one possible solution to facilitate the communication and support modern care.

The purpose of the study was to describe nursing staff's skills and experiences on the use of electronic communication for interaction with patients. The study also looks at factors promoting and hindering the use of electronic communication. The study used a descriptive design including both qualitative and quantitative components. The data were collected among nursing staff (N=567, n=123) working in outpatient clinics in spring 2012 with an electronic questionnaire.

Computer and electronic communication skills among nursing staff were at a moderately good level. They had most experience in the use of email and text messages. Electronic devices were used at all stages of the nursing process. Three main categories were formed to describe promoting and hindering factors for the use of electronic communication: user-related factors; technology- and organization-related factors; and nursing- and communication-related factors. According to the participants, electronic devices are necessary and useful tools in interacting with patients. Patients' personal characteristics and information security problems were perceived as the most significant hindering factors.

The use of technology benefited both the nursing staff and patients in communication. The nurses' experiences on the use of electronic communication were not very extensive as emails and text messages were the most commonly used methods.

Keywords: electronic communication, information technology, nursing

Tiivistelmä

Potilashoito sairaalan vuodeosastoilla on merkittävästi vähentynyt ja entistä useammin hoito toteutuu kotona tai avohoitoklinikoilla. Tämä muutos edellyttää uusia tapoja potilaiden ja ammattilaisten väliseen kommunikaatioon. Sähköisten sovellusten käyttö on yksi mahdollinen ratkaisu, jonka avulla voidaan helpottaa yhteydenpitoa ja tukea nykyaikaista hoitoa.

Tutkimuksen tarkoituksena oli kuvata hoitohenkilökunnan taitoja ja kokemuksia sähköisen kommunikaation käytöstä vuorovaikutuksessa potilaiden kanssa. Tutkimuksessa on tarkasteltu myös tekijöitä, jotka edistävät tai haittaavat sähköisen kommunikaation käyttöä. Tutkimuksessa on käytetty kuvailevaa asetelmaa, joka on sisältänyt sekä laadullista että määrällistä tarkastelua. Aineisto on kerätty avohoito- ja polikliinisilla vastaanotoilla toimivan hoitohenkilökunnan (N=567, n=123) keskuudessa keväällä 2012 käyttäen sähköistä kyselyä.

Hoitohenkilökunnan tietokoneen käytön ja sähköisen kommunikaation taidot olivat kohtalaisen hyvällä tasolla. Henkilökunnalla oli eniten kokemusta sähköpostin ja tekstiviestien käytöstä. Sähköisiä välineitä oli käytetty hoitotyön prosessin kaikissa vaiheissa. Kuvattaessa sähköistä kommunikaatiota edistäviä ja haittaavia tekijöitä muodostettiin kolme pääkategoriaa: käyttäjiin liittyvät tekijät; teknologiaan ja organisaatioon liittyvät tekijät; sekä hoitotyöhön ja kommunikaatioon liittyvät tekijät. Tutkimukseen osallistuneiden mukaan sähköiset välineet ovat tarpeellisia ja käyttökelpoisia vuorovaikutuksessa potilaiden kanssa. Potilaiden henkilökohtaiset ominaisuudet ja tietoturvallisuuteen liittyvät ongelmat koettiin kaikkein merkittävimiksi käyttöä haittaaviksi tekijöiksi.

Teknologian käyttö kommunikaatiossa hyödytti sekä hoitohenkilökuntaa että potilaita. Hoitohenkilökunnan kokemus sähköisen kommunikaation hyödyntämisestä ei ollut kovin laajaa ottaen huomioon, että eniten käytetyt menetelmät olivat sähköposti ja tekstiviestit.

Avainsanat: sähköinen kommunikaatio, tietoteknologia, hoitotyö

Introduction

According to the European Commission, the accessibility of services in European health systems should be increased [1]. The European Commission emphasizes the importance of empowering citizens and patients to manage their own health and diseases. Close cooperation between health care staff and patients is needed for this to come true [2].

Today, nurses use a variety of applications on mobile phones, laptop computers, and handheld tablets, as well as videoconferencing systems when they communicate with other professionals and patients [3,4,5,6]. With increasing computer and Internet use more people have possibilities to communicate with professionals [7]. It has been found that electronic communication between healthcare staff and patient or

caregiver can improve empowerment [8,9], enhance patient-centred care [10], and facilitate patient education [11]. In addition, the use of electronic communication may produce cost and time savings [8,12].

Hospital-based health care is decreasing dramatically. More and more often, the care takes place at home and in outpatient clinics [13,14]. New ways to communicate are thus needed between patients and professionals [9]. In addition, modern healthcare systems are adopting a more patient-centred approach to care [15]. Patient-centred care requires new attributes of healthcare professionals, organizations and nursing culture. Shared decision-making, sufficient received knowledge and patient-professional collaboration is emphasized [16,17]. In order for patients to be able to participate in the decision-making more strongly than before, they need information on which to base their decisions.

When non-institutional care is emphasized, the patient will not necessarily be encountered face to face throughout the nursing process; for this reason, nursing staff must be able to utilize modern communication systems [18].

The use of electronic devices for interaction with patients unavoidably leads to changes in nursing staff's work [19]. These changes require new skills and attitudes [20], and nurses need to be more flexible [21] and open to new working methods [20]. Integration of electronic devices into patient care is not always easy [22]. There are many factors that may complicate the implementation. Nurses may feel that videophones should not replace actual visits to patients' homes for homecare [23]. Staff members may also have insufficient knowledge of computers and difficulties in handling computer solutions [24]. While the benefits of electronic communication were recognized by both patients and staff, concerns about confidentiality and security were also expressed [25,26].

Staff education for the use of the new system and nurses' perceptions of the usefulness of the solutions may be a key component in the successful implementation of electronic devices [23,27,28,29,30]. According to a study by Gund et al., a majority of healthcare professionals have positive attitudes towards current and future electronic communication tools. Consequently, nursing staff's attitudes would not seem to be an obstacle to the use of electronic devices for interaction with patients [31].

It is not only nurses who need new skills and positive attitudes when electronic devices are adopted into use. The use of devices requires that patients also have the ability to use applications [21,23]. Patients might be afraid of the technology or become too dependent on the system [32]. This could impede treatment [23]. However, it has been found that information technology has positive effects on treatment and patient-professional interaction [21,33]. Accessibility and quality of care can improve when electronic devices are used in a correct and timely manner [34].

The purpose of the present study was to describe nursing staff's skills and experiences on the use of electronic communication for interaction with patients. The study focused on nursing staff working in outpatient clinics. In this study, nursing staff refers to nurses, community nurses and other nursing professionals who work relatively independently. Today, nursing professionals and physicians agree that nursing staff should take on a larger role in managing patients' care [35,36]. For this reason it is important to examine electronic communication from the point of view of the nursing staff.

The study also looks at factors promoting and hindering the use of electronic communication in nursing. In the study, patient-professional interaction means all the contacts between a patient and nursing staff which take place with electronic devices. The study is part of a wider project where the aim is to illustrate nursing staff's experiences of the use of electronic services according to earlier studies and with the help of empirical data [37,38].

Materials and methods

Design

The study used a descriptive design to investigate nursing staff's skills and experiences on electronic communication for interaction between patients and professionals. It included both qualitative and quantitative components.

Sample and participants

The target group (N=567) comprised the nursing staff of one health care district on the west coast of Finland. The staff worked in outpatient clinics within either special or primary health care. One hundred and twenty-three persons took part in the study.

Data collection

The data were collected in spring 2012 with an electronic questionnaire developed for the study. The content of the questionnaire based on earlier empirical studies [29,39] and an unpublished literature review. The questionnaire was tested among seven nurses working in primary health care and it was finalized according to the nurses' evaluation and comments.

The questionnaire contains both structured and open-ended questions. Nursing staff's general computer and electronic communication skills were asked using two structured questions with the scales very good, quite good, neither poor nor good, quite poor, very poor. In addition, nurses' experience in the use of electronic devices in their work with patients was asked using two structured questions with the alternatives daily, weekly, monthly, less often than once a month, not at all. The questions were clarified using examples. The factors promoting and hindering the use of electronic communication between patient and professional were asked with open-ended questions, e.g.: For what kind of purposes did you use electronic communication with clients or patients? What kind of benefits did you experience when using electronic communication with clients or patients? The acquisition of electronic communication skills among nursing staff was asked using a structured question with nine alternatives.

The background factors include age, gender, job position, work place and length of work experience.

Ethical considerations

Permits for the sampling were obtained according to the practices of the participating organizations. Nursing staff's participation was voluntary and anonymous. The questionnaire was accompanied by an introductory email including information about the purpose of the study, assurance of anonymity and confidentiality. The data were treated confidentially [40,41]. According to Finnish ethical protocol no statement of ethical commission was needed because the data collection did not focus on patients [42,43]. After publication of the re-

sults, the data collected will be kept for ten years in the archive of the organization where the responsible researcher (MK) works.

Data analysis

Descriptive statistics (frequencies, percentages, means) were used to analyse the quantitative data using the statistical software package IBM SPSS for Windows (version 20). The purpose was not to find out connections between descriptive data and the background factors, and thus we used only descriptive methods.

Deductive content analysis was used for the qualitative data [44,45] where the purposes of the use of electronic communication in patient-professional interaction were examined. The framework of the deductive analysis was based on the nursing process [46]. The theoretical categories used were assessment/diagnosis, planning, intervention/implementation and evaluation. The first author (AN) read the participants' answers several times to obtain an overall picture. Separate words, phrases or sentences describing nursing staff's use of electronic communication in the nursing process were coded into four categories. The contents of the categories were reviewed by another researcher (MK), and a consensus was created from the findings.

The promoting and hindering factors related to the use of electronic communication and interaction with patients were observed using inductive content analysis. First, the primary observations were coded by the researcher (AN) into the original data. Then, similar concepts were grouped together and made into categories. The analysis was evaluated by other authors and the decision of the categorization and contents of each category was accepted by all three researchers.

Results

Background factors

Altogether 123 members of the nursing staff participated in the study; response rate was 22%. Most of the participants (99%) were females. Twenty-three per

cent of the participants worked in specialized health care and 77% in primary care. Thirty-four per cent of the respondents were nurses, 46% were community nurses, 7% charge nurses, and 7% were practical nurses. Others (5%) included physiotherapists and occupational therapists. (Table 1.)

Nursing staff's computer and electronic communication skills

Nursing staff were asked to classify their general computer and electronic communication skills into five

major categories: very poor, quite poor, neither poor nor good, quite good and very good. Findings indicated that 53% of the respondents estimated their computer skills as quite good. Approximately one-third (36%) considered their skills as neither poor nor good. Only 10% thought that their skills were very good. (Table 2.)

Approximately half of the nurses (48%) considered their electronic communication skills to be quite good, while 43% felt their skills to be neither poor nor good. Five per cent of the respondents considered their electronic communication skills to be quite poor, while 3% thought they were extremely good. (Table 2.)

Table 1. Background factors.

	n	%
Age (n=123)		
Under 30 years	8	7
30-39 years	21	17
40-49 years	30	24
50- years	64	52
Gender (n=121)		
Female	120	99
Male	1	1
Job position (n=123)		
Nurse	43	35
Community nurse	56	46
Charge nurse	9	7
Practical nurse	8	7
Other	7	6
Work place (n=122)		
Special health care	28	23
Primary health care	94	77
Work experience (n=120)		
Under 5 years	8	7
5-10 years	17	14
11-20 years	28	23
21-29 years	27	23
30- years	40	33

Table 2. Nursing staff's skills to use electronic devices.

	Very good n (%)	Quite good n (%)	Neither poor not good n (%)	Quite poor n (%)	Very poor n (%)
Computer skills	12 (10)	65 (53)	44 (36)	2 (1)	0
Electronic communication skills	4 (3)	59 (48)	53 (43)	6 (5)	1 (1)

The questionnaire also measured how nursing staff acquired their electronic communications skills. The nursing staff chose two most important items from a list of nine items. Electronic communication skills were most commonly acquired in connection with carrying out assignments; this was selected 78 times. The next three most important ways were: supplementary training arranged by the employer (f=39), practice in own free time (f=37) and guidance by a colleague (f=34). (Figure 1.)

The use of electronic devices

All of the respondents (n=118) used computers daily at work. The majority of the participants used email and nearly one-thirds of them used mobile phones daily. The use of computers, emails and mobile phones is shown in more detail in Table 3. (Table 3.)

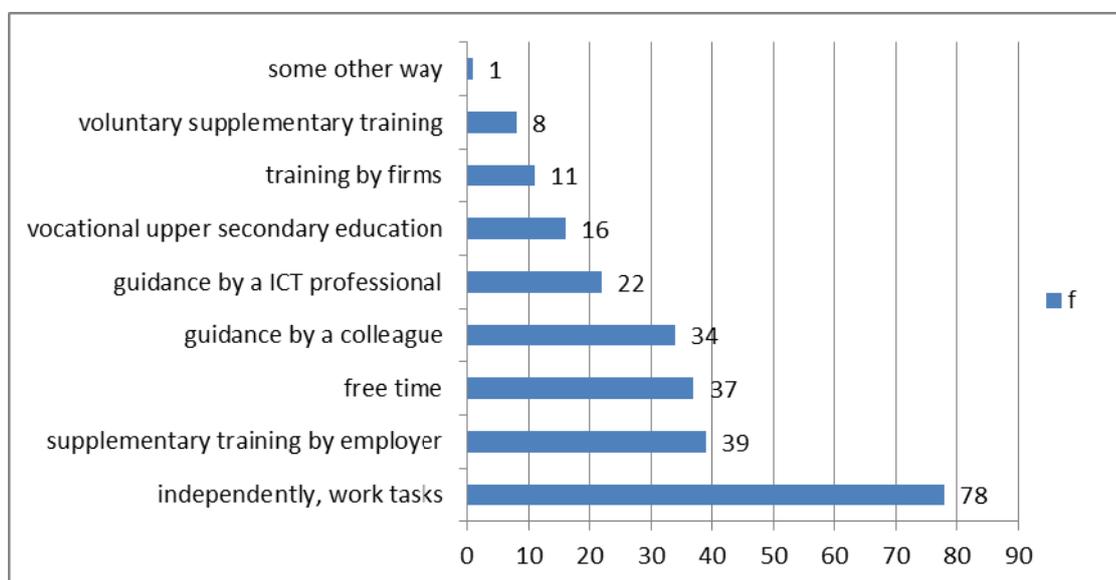


Figure 1. Acquiring of the electronic communication skills among nursing staff.

Table 3. Use of computers, emails and mobile phones in work.

	Daily n (%)	Weekly n (%)	Monthly n (%)	Less often than once a month n (%)	Not at all n (%)
Use of computer (n=118)	118 (100)	-	-	-	-
Use of email (n=123)	112 (91)	10 (8)	-	-	1 (1)
Use of mobile phone (n=123)	82 (67)	13 (11)	7 (6)	5 (4)	16 (13)

Nursing staff chose all the electronic devices and methods they used when communicating with patients from a list of different methods. The methods were 1) sending and receiving text messages by a mobile phone, 2) email, 3) an Internet program for sending and receiving messages, 4) an Internet program that enables interactive communication with delay (asynchronous), 5) an Internet program that enables synchronous communication, 6) communication via video link, 7) electronic forms, 8) other methods, and 9) none of the above.

Email (68%) was the most commonly used method of electronic communication with the patients. The second most common method was text messaging by mobile phone (65%). Nursing staff used also e-forms (16%) and Internet software transmitted text messages (4%).

(Table 4.) Fourteen per cent of the respondents did not use any of the methods listed.

The use of electronic communication in the nursing process

Electronic communication was used at all stages of the nursing process (Table 5.). At the stage of assessment and diagnosis, nursing staff used electronic devices for determining the patient's health condition or needs. The patients' service process was started and staff acted on the problems and responded to patients. Appointments were arranged, saved, transferred and reserved. In addition, reminders of meetings and appointments were sent to the patients.

Table 4. Nursing staff's (n=123) use of electronic devices for interaction with patients.

Electronic Method / Device	User n (%)	Not User n (%)
Email	84 (68)	39 (32)
Mobile phone text messages	80 (65)	43 (35)
Electronic form	20 (16)	103 (84)
Other	13 (11)	110 (89)
Internet message	5 (4)	118 (96)
Video conferencing	1(1)	122 (99)
Question-answer program	1 (1)	122 (99)
Internet, synchronous communication	0 (0)	123 (100)

Table 5. The use of electronic communication in the nursing process.

Stage of the process	Purpose of the use
Assessment and diagnosis	Determining the patients' health status
	Determining the patients' needs
	Arranging appointments
	Reminding appointments
Planning	Informing of test results
	Informing of services
	Responding to patients' questions
	Managing the patients' care
Intervention and implementation	Counselling and informing the patient
	Discussing worrying matters
	Giving instructions
	Delivering interventions
Evaluation	Acquiring technical aids
	Guiding the patient
	Giving feedback
	Evaluating the success of the treatment

“The patient can contact me via e-mail and give an update on their current situation.”

“For informing, making and confirming appointments, working out problems, providing the patient with written material.”

“I deliver messages related to the patient's care and booking appointments by SMS.”

At the planning stage, nursing staff informed patients of test results and healthcare services. They responded to patients' questions, provided information to them and commented on their responses. The health professionals planned and managed patients' care based on the information received.

“For planning patients' care, control phone calls...”

“I deliver test results, such as the results of Pap tests, by SMS, this is always specifically agreed on.”

At the intervention and implementation stage nursing staff used electronic devices for counselling and informing patients. They discussed worrying matters with patients and gave care instructions. They delivered different interventions such as Internet-based weight-control groups. Additionally, electronic communication was used for acquiring technical mobility aids and care equipment, and informing patients about them.

“In matters regarding technical aids, we mainly communicate with them electronically, through the technical aids management system and e-mail, and by phone.”

“The patients order equipment for treating diabetes both by SMS and by e-mail.”

At the evaluation stage, nursing staff used electronic devices for communication, guidance and for giving feedback. They could evaluate the success of the treatment based on the information that patients gave using electronic devices.

“I use it for guiding treatment and for evaluating its effects.”

Factors promoting and hindering the use of electronic communication

Three main categories were formed to describe promoting and hindering factors. These categories were 1) user-related factors, 2) technology- and organization-related factors, and 3) nursing- and communication-related factors (Table 6.). The factors which describe the categories were repeated in the informants' descriptions. The use of the categories was also confirmed by previous studies [21,47].

According to nursing staff, electronic devices were necessary, important and useful tools in communicating with patients. The use of devices benefitted both the nursing staff and the patients in the communication. However, participants identified some factors which hinder the use of electronic devices in daily practice.

User-related promoting factors

The most central promoting factor related to users was users' time. The participants described that time management was important from both nursing staff's and patients' point of view. The use of electronic devices was not dependent on time, and scheduling of unhurried contacts of the nursing staff was facilitated. The accessibility of nursing staff and patients was improved, accelerated and facilitated. Patients were not dependent on phone consultation times and they were able to take care of matters at the times most convenient to them. Nursing staff could also answer patients' questions when they had the time.

“Writing or receiving e-mail is not tied to the clock. Likewise, you can take care of matters by e-mail when it's convenient for you.”

“You can take care of the matter at a time that suits you, and the patient/client is not tied to the phone at a specific time waiting for the call.”

Technology- and organization-related promoting factors

The use of electronic applications gave more possibilities and alternatives to settle affairs within the organization. The use of electronic communication was quick, flexible and easy, and saved working time. Having a record of communications was considered useful. Electronic communication reduced the need for patients to visit outpatient clinics. It was possible to estimate the patient's state of health by using technology and to give them counselling, or to plan follow-up treatment.

"Visits to the outpatient clinic are reduced when things can also be taken care of over the phone."

"Sometimes an appointment is not needed, and things such as assessment of the situation, guidance, advice, plans on continuation etc. can be done electronically."

Nursing- and communication-related promoting factors

The use of electronic communication was an efficient method for nursing staff and patients to keep in touch. Patients were able to get in touch with nursing staff faster, enabling quicker responding to patients' needs. It was possible to send high-quality and impartial counselling material to patients by computer. Patient guidelines sent in advance helped nurses in the planning of patient counselling. Electronic communication gave nursing staff an opportunity to be better prepared so that they could address patients' problems.

The information that was obtained via electronic devices was real-time and rapidly available. Dissemination of information, informing and further handling of matters was accelerated. Electronic interaction increased the flexibility and speed of the nursing operations. The management of assignments was facilitated and reception work involved less disturbances. Patients' access to health care services was faster. It was assumed that for young people, the contact threshold was lower than before.

Interaction between nursing staff and patients via electronic devices was easy, quick, clear and flexible. The use of electronic devices increased the understandability of the communication. Furthermore, the possibility of re-checking the contents of messages was considered positive. Interaction via electronic devices was easier for the patients suffering from communication difficulties.

"Patients unable to communicate through speech can keep in touch through e-mail and SMS."

"When you write the thing down clearly, the patient understands it better than when it's delivered quickly over the phone, you can also re-check an SMS afterwards."

User-related hindering factors

The participants did not mention any hindering factors related to nursing staff as users of technology. They considered the personal characteristics of patients such as age, health state and inability to cooperation as hindering factors. Forgetfulness and mental problems were obstacles which could make the use electronic devices difficult. Timidity or seriousness of the patients' health problems were points which nursing staff should take into account when they use electronic applications in patients' care. According to nursing staff, the age of the patients could have some impact on their ability to communicate using electronic devices.

"The clients are mostly elderly people. Very few manage even an SMS sent with a mobile phone."

"There are things you can't discuss by e-mail regarding serious problems, e.g. you have to meet clients with mental health issues face to face."

Technology- and organization-related hindering factors

According to the participants, electronic devices are not suitable for transmission of confidential information, such as personal identity numbers or sensitive personal

health data. Identification of the patient was also a problem in communication. The present privacy protection and information security practices of the organizations were technology- and organization-related hindering factors. There were no protected email connections in use or any clear permissions or instructions for using electronic applications in the organizations. Nursing staff felt the support provided by the management of the organizations to be inadequate when new methods were implemented in practice. The respondents also pointed out technical problems related to computers and electronic connections. They also mentioned that applications are too expensive.

“You can’t show personal information, names or personal identity numbers.”

“If the electronic system was completely safe and I had official permission, I’d be happy to use e-mail in matters related to patients.”

“There’s too much that you have to type by hand just because the programs are expensive, if they actually exist.”

Nursing- and communication-related hindering factors

Nursing staff emphasized that electronic communication cannot entirely replace personal contacts and interaction. Electronic communication was not suitable for defining patients’ needs or problems or assessment of health problems or symptoms, for giving feedback, or for transmitting care information and test results.

The immediate practice at appointments was considered to be of such nature that it cannot be carried out with the help of electronic devices in some clinics, such as Technical Aids Centre. The hindering factor with appointments was the delay that takes place in the communication. Personal interaction is essential, for example, when the suitability of devices and technical aids for the patients is evaluated. Nursing staff, particularly public health nurses in school environments, emphasized that electronic applications are not suitable for use with schoolchildren’s health problems.

Patient counselling was partly considered as a function of nursing for which electronic devices cannot be used. Patient counselling contains sectors that require a personal contact. This ensures that the patient understands the content of the counselling, and more individual counselling may be provided if necessary. Nursing staff had to observe nonverbal communication such as facial expressions, gestures, behaviour and physical condition.

“I think the patient should always be met face to face, because it’s our task to observe their behaviour, physical condition, how they are dressed, and so on.”

“The actual work with clients requires meeting people in person, in order to ensure that the information reaches the patient and is understood correctly.”

Table 6. Factors promoting and hindering the use of electronic communication.

Category	Promoting factors	Hindering factors
User-related factors	Time management Time independent Accessibility	Patients' age Patients' health status Patients' forgetfulness Patients' mental problems Patients' difficulties to use
Technology- and organization-related factors	Quick applications Easy to use Flexibility Reducing patients' visits	Information security problems Privacy protection problems No clear permissions No clear instructions Inadequate support Technical problems Expensive applications
Nursing- and communication-related factors	Makes counselling possible Quick responding Sending patient guidelines Real-time information exchange Speeding nursing process Flexibility Re-checking possible	Cannot replace personal contacts Not for immediate needs Not possible to assess nonverbal communication Not possible to assess patients' understanding

Discussion

Computer skills and skills to use electronic communication were at a moderate good level among nursing staff. Thus we can suppose that the use of electronic devices is possible in patient care as a support. Nursing staff have mainly learned to use computers independently at their work, through supplementary training at work, or during their own free time. Even though information technology is very topical in today's workplace, it does, however, seem that nursing education does not focus on technology training [5]. It has earlier been found that education in the use of new technology is a key component in the successful implementation of technology applications [27,28]. In the future, health care education organizations have to make sure that the nursing education curricula focus more on promoting electronic communication skills than at present. It is clear that basic computer skills are not enough for nurses when they use electronic devices for multiform communication [21].

According to our findings, computers were in use in daily practice by the nursing staff. It seems that electronic communication is usable at every stage of the nursing process. The subject had not really been studied earlier from this point of view, and thus we have produced new knowledge of the use of electronic communication among nursing staff. At the stage of assessment and diagnosis, staff used it mostly for informing, making and confirming appointments and providing supporting material for patients. At the planning stage, informing patients and answering their questions was also emphasized. These are key components at these stages of the nursing process [46], and we can thus say that the patients were able to get care based on their needs even though they did not meet the nurse face-to-face. However, the nurses thought that in some situations it is important to see the patients in person. They considered it important to have a possibility to evaluate patients' nonverbal communication. Patient education, guidance and giving feedback were the main functions at the intervention and implementation stage and the evaluation stage. The findings are in line with earlier studies, although according

to their results the use of electronic communication focused more on the nursing interventions [24,32]. Today, the nursing staff make independent decisions on patients' care [16]. Thus they need well-functioning and usable solutions to support their decision-making.

We can say that today, the use of electronic devices is an integral part of the work of the nursing staff. Email was widely used and mobile phones were also used by a large proportion of the nursing staff. These are the most common tools for electronic communication and it is natural that public health services offer them for their workers' use. The use of email and text messages makes the interaction flexible, quick and time-independent. The nurses regarded these points as the biggest advantages of the electronic communication. Earlier studies have shown that from the patients' point of view it is also significant that patients can save time and travel expenses when they are able to communicate with the nursing staff using electronic devices [48,49].

There were also hindering factors associated with use of electronic devices. Challenges related to patients' personal characteristics as well as data security problems were regarded as perhaps the most significant hindering factors [50]. However, new safe methods for electronic communication have been developed, such as secure email [51] and secure platforms and portals such as Hyvis.fi [52] and Minunterveyteni.fi [53], which are used in many Finnish healthcare organizations today. With these applications, citizens can independently seek information and communicate with professionals. This development has occurred recently, and it is possible that these services were not available for use among our study population in the year 2012.

At the moment, the older generation which uses a lot of health care services is perhaps not very accustomed to use electronic devices. It has been found that patients with chronic illnesses who have experience of the use of eHealth are on the whole positive, whereas patients without this experience have no clear ideas about the advantages [54]. The potential future healthcare customers are active users of social media [55]. Young adults expect health care services also to be available

via electronic devices. For them, social media are a natural way to communicate and health care organizations must thus come up with new forms of services.

The introduction of new applications requires systematic education of staff, drawing up clear instructions and rules for use and informing citizens about the services. The best way to ensure that the applications bring about real benefits is to make sure that they are functional. In addition, staff should be given a possibility to work with information technology without the stress associated with lack of skills or solutions with poor functionality.

The present study had some limitations. About a fifth of the target group participated in the survey. However, the study population included participants with varying experiences and knowledge of the use of electronic communication for interaction with patients. The study was performed in one hospital district area in Finland. It was known that the use of electronic devices for communication was not very common in this area. For this reason, it is possible that nursing professionals were not interested in participating in our study. Some of the members of the nursing staff did not have much experience of the use of electronic devices, which is why they found it difficult to consider their benefits or hindering factors.

It was not possible to evaluate the reliability of the questionnaire using statistical methods because a large number of qualitative questions were used in the study. However, the questions that were based on earlier studies and the instrument were tested among small group of nurses before the data collection. We consider the qualitative material to be rich, and the number of the participants who answered the qualitative questions was relatively high.

The participants used similar expressions and most of the issues were repeated over and over in the data. Three researchers participated in the data analysis, which increases reliability. Original expressions from the data have been presented in the results, so that it will be possible for the reader to perceive how the conclusions have been drawn. The generalizability of the

results is limited, as this is not a goal of qualitative research [45]. In spite of this, we can suppose that our findings are useful when electronic devices are implemented in nursing practice.

Conclusion

Computer and electronic communication skills among nursing staff were at a moderately good level, and we can thus conclude that the skills are not a barrier to using electronic devices in daily nursing. The use of technology benefitted both the nursing staff and patients in communication. However, nurses identified some factors which may hinder the use of electronic devices in practice. The challenges related to patients' personal characteristics and information security problems were experienced as the most significant hindering factors. In the future, nurses' knowledge of the benefits of the applications for the patients and nurses' work should be increased. In addition, organizations have to ensure data security so that staff can use electronic communication without any concern. The opinion of the nurses was that older patients were not very interested in using electronic communication. They also expected better instructions and training in the use of electronic communication by health care organizations.

In the future, it is important to study the use of electronic communication among citizens and healthcare clients. In addition, it might be interesting to find out what nurses think about electronic communication today when new methods are commonly used than in the year 2012. There is especially a need for multidisciplinary research projects on this subject.

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Conflicts of Interests

The authors declare no conflict of interest.

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