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**Clinical Leaders' Self-Perceived eHealth Competences in the Implementation of new eHealth services**

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Abstract

The training and competence of healthcare professionals are key factors in adopting new eHealth services. The scope of eHealth is broadening from information systems to eHealth services such as patient portals supporting self-management, which create a need for new competencies. In this study, we evaluated clinical leaders’ eHealth competencies and training needs in two public healthcare organizations in Finland. The target organizations’ goal was to increase the number of patients’ eHealth services and clinical leaders were seen as critical in this change. Data were collected through an online survey of 98 clinical leaders working in two healthcare organizations. The results imply that managing change and planning implementation are challenging to clinical leaders. They need more information about eHealth services, their possibilities, and benefits in order to support their subordinates and patients. The clinical leaders seem to be in a critical role in supporting healthcare professionals and avoiding resistance to change.

Keywords:
eHealth, Competence, Implementation

Introduction

The training and competence of healthcare professionals have been identified as key factors in adopting Health Information Technologies [1]. Healthcare professionals are end-users operating applications and services, and thus, they need varying competencies for applying the technologies in their work or otherwise the benefits of new technology are not realized.

Previous research has focused especially on students’ and nurses’ ICT skills and informatics competence [2,3]. The Technology Informatics Guiding Educational Reform (TIGER) [4] identifies three categories of competencies in nursing informatics: basic computer competencies, information literacy, and information management.

While the level of healthcare professionals’ basic computer skills is improving, the scope of eHealth is broadening from information systems to eHealth services. By eHealth services, we mean online services such as patient portals that support patients with self-managing their health. Increasingly, eHealth services are used to invite patients to take a more active role in the maintenance of their health [5]. For example, patients may have access to personal health information, educational materials, appointment scheduling, and patient-provider communication tools. Consequently, new eHealth competencies of healthcare professionals have been identified [6]. For example, professionals are in a critical role in motivating and guiding patients to use eHealth services and they need to be able to communicate with patients via a computer.

In addition to training, a champion or a superuser who is an enthusiastic visionary willing to initiate and drive services forward is good in motivating and supporting staff [7,8]. On the other hand, common barriers to successful adoption of eHealth are negative effects on health professionals’ workload, workflow, and roles [9]. Thus, it is not only about individual healthcare professionals’ eHealth competencies to use eHealth services that are important, but professionals need to be also motivated and supported in adopting new eHealth services. In addition, work organizations and teams need to plan and adopt new workflows, roles, responsibilities, and care processes.

Leaders have a major role in motivating and supporting healthcare professionals and providing favorable conditions for them when new eHealth services are implemented to their organization. Indeed, there is plenty of existing evidence that effective leadership and change management contribute to the successful implementation of eHealth [10–14]. For example, according to Ingebrigtsen et al. [15] leaders should communicate a clear vision and goals for new eHealth services, provide leadership support, arrange training to healthcare professionals, identify and appoint champions, address work process change, and follow up the implementation.

The leadership activities are important as healthcare professionals and their attitudes are critical in preventing resistance and ensuring the active use of new innovations [16–18]. The good implementation practices that are related to successful implementation of eHealth services are well identified [11,17,19–22]. However, these good practices do not seem to be well known or used in healthcare organizations [23,24].

It should not be considered self-evident that leaders know how to support healthcare professionals. Even if they had good traditional leadership skills, the number of new technologies and eHealth services is constantly increasing and changing the care work. Especially patient empowerment and self-management related to the new eHealth services are changing the traditional expert role of healthcare professionals and creating tension as the control needs to be shared with patients [25,26]. Furthermore, as the new services are also used by patients, they should be informed, motivated and supported.
Patient work needs to be also redesigned in a way that new eHealth services support traditional health care and services efficiently.

In this study, we examine the current state of eHealth competencies of clinical leaders in two public healthcare organizations in Finland. Ingebrigtsen et al. [15] define clinical leaders as leaders responsible for leadership within an organization that delivers care. Clinical leaders include division and department directors, and personnel in designated leader positions in frontline units (e.g., wards, outpatient clinics, primary care practices, etc.) [15].

The identification of deficits in eHealth competencies helps in developing training and support for clinical leaders. We consider eHealth competencies broadly including use, implementation and the organizational change related to the new eHealth services. Thus, we are interested in what kind of challenges clinical leader experience in new eHealth services and their perceptions of the quality of implementation practices used in their units.

The strategy of the target health organizations is to use eHealth services widely, and organizations have already provided a set of self-management services to patients. The organizations’ goal is to increase the number of eHealth services provided to patients so that patients initiate their care through eHealth services. In the organizations, clinical leaders’ role was perceived as important in supporting healthcare professionals, and the identification of training and support needs was considered essential.

Methods

An online questionnaire was developed to assess the eHealth competencies of both healthcare professionals, including nurses, social workers, and physicians, and their supervisors and leaders. The leaders had their own version of the questionnaire and in this paper, we focus on their responses. The survey contained questions about demographics, self-perceived eHealth competencies, training, and support needs, challenges related to eHealth services, and the use of the recommended implementation practices.

Self-perceived eHealth competencies were assessed as in previous studies [6,27] using multiple-choice questions with competence statements with a five-point Likert scale. The scale ranged from 1 (fully disagree) to 4 (fully agree) and included a fifth option, 5 (I don’t know), that was removed from the analysis. Seven statements were selected to broadly represent different eHealth competence areas identified in the literature and found important for leaders (see Table 1).

Also, the use of the recommended implementation practices was assessed using the multiple-choice questions as in our previous study [23,24] and with the same five-point Likert scale. In addition, respondents were asked open-ended questions with regard to training and support needs and challenges related to eHealth services. The quantitative data were analyzed using descriptive statistics and the responses to the open questions were content-analyzed.

The survey study was carried out between June and August 2017 in the South Savo and between October and November in 2017 in the East Savo Social and Health Care Authority. Both authorities are public healthcare organizations in Finland. The healthcare organizations already had eHealth services in use and the goal was to use the services widely.

The survey study was introduced in the intranet news page of the organization and an invitation was sent to participants by their work email. The invitation letter included a description of the target group and the purpose of the survey. Although participation was anonymous, respondents could submit their email address at the end of the survey to participate in a draw of movie tickets and two wireless computer mice.

Results

A total of 98 clinical leaders filled in the questionnaire; the response rates were 24% and 20% of the total healthcare personnel in the studied organizations. The mean age of the respondents was 50.1 years (SD = 8.5), 86.5% of them were females and they had worked for an average of 7.7 years (SD=7.2) in similar tasks. Most of the respondents were nurse leaders (32%). In addition, respondents included social worker leaders (25%), physician and dentist leaders (11%), other leaders (13%), and managers (19%).

Table 1 shows the self-perceived level of competencies. The healthcare organizations had recently offered training on the security and privacy protection and this competence was evaluated to be the strongest one, 98.8% of the respondents agreed or fully agreed that they are able to work based on the principles. Most of the respondents were also confident that they can use eHealth applications and services and do traditional leading tasks such as leading a change and supporting their subordinates’ competence. The respondents had the least confidence in communicating about the new eHealth services to patients, developing services in a customer-centered way and planning an implementation of a new eHealth service.

Table 1– Percentage of clinical leaders agreeing with the competence statements. Scale from 1 (Fully disagree) to 4 (Fully agree).

<table>
<thead>
<tr>
<th>Competence statement</th>
<th>M</th>
<th>S.D.</th>
<th>Respondents agree (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I can work based on the principles of information security and privacy protection.</td>
<td>3.7</td>
<td>.63</td>
<td>98.9</td>
</tr>
<tr>
<td>I can use eHealth applications and services.</td>
<td>3.3</td>
<td>.73</td>
<td>92.9</td>
</tr>
<tr>
<td>I can support the competence of my subordinates</td>
<td>3.0</td>
<td>.77</td>
<td>89.5</td>
</tr>
<tr>
<td>I can lead the change when new services are implemented</td>
<td>2.9</td>
<td>.70</td>
<td>84.2</td>
</tr>
<tr>
<td>I can communicate about the eHealth services to patients</td>
<td>3.0</td>
<td>.73</td>
<td>81.5</td>
</tr>
<tr>
<td>I can develop services in a customer-centered way</td>
<td>2.8</td>
<td>.78</td>
<td>80.0</td>
</tr>
<tr>
<td>I can plan the implementation of a new eHealth service</td>
<td>2.4</td>
<td>.88</td>
<td>52.2</td>
</tr>
</tbody>
</table>

Of the respondents, 42 took the opportunity to answer the open-ended question about their training and support needs. Most frequently, the respondents wanted more information about eHealth services, their possibilities and benefits (10 mentions). In addition, they wished to learn technical skills (4 mentions) and receive information about the contact and responsible
The respondents also realized that they need skills to guide colleagues and customers (2 mentions). The need to learn the customer-centered development work (3 mentions) and implementation skills (2 mentions) were also mentioned.

74 respondents described the challenges of eHealth services. Most commonly, they were concerned about the competence of the healthcare professionals (12 mentions) and how to train, engage and commit the healthcare professionals to use new eHealth services (31 mentions).

Many pointed out challenges related to patients (18), how to guide them and how all different patient groups, especially elderly people, are able to use the services. The shortage of resources, concerning both time and equipment were perceived as challenging (16 mentions) as well as the usability, interoperability, and functioning of the services (14 mentions). The respondents were also unsure how to plan and renew the operations and services (8 mentions) and afraid of the negative attitudes of the professionals and their resistance to change (6 mentions).

Table 2– Percentage of clinical leaders agreeing with the statements of good implementation practices. Scale from 1 (Fully disagree) to 4 (Fully agree).

<table>
<thead>
<tr>
<th>Competence statement</th>
<th>M</th>
<th>S.D.</th>
<th>Respondents agree (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New services are planned to be part of the work process</td>
<td>2.9</td>
<td>.89</td>
<td>69.2</td>
</tr>
<tr>
<td>The personnel will be informed enough about the new eHealth services</td>
<td>2.7</td>
<td>.87</td>
<td>67.3</td>
</tr>
<tr>
<td>The benefits of new eHealth services are told to the personnel</td>
<td>2.7</td>
<td>.91</td>
<td>62.1</td>
</tr>
<tr>
<td>My unit has a person who is responsible for the implementation of the eHealth services</td>
<td>2.7</td>
<td>1.1</td>
<td>62.0</td>
</tr>
<tr>
<td>There is enough training for using new eHealth services</td>
<td>2.7</td>
<td>.93</td>
<td>62.0</td>
</tr>
<tr>
<td>In our unit, we set goals for the implementation of new eHealth services</td>
<td>2.7</td>
<td>.86</td>
<td>58.7</td>
</tr>
<tr>
<td>Our unit has a person who encourages others to use eHealth services</td>
<td>2.7</td>
<td>1.0</td>
<td>58.3</td>
</tr>
<tr>
<td>The impact of the new eHealth services to our work is evaluated</td>
<td>2.6</td>
<td>.99</td>
<td>55.7</td>
</tr>
<tr>
<td>The personnel has the possibility to participate in the planning of new services</td>
<td>2.6</td>
<td>.97</td>
<td>54.9</td>
</tr>
<tr>
<td>We set measures for monitoring the implementation of new services in our unit</td>
<td>2.4</td>
<td>.86</td>
<td>46.9</td>
</tr>
<tr>
<td>The personnel is given allocated work time for adopting services</td>
<td>2.3</td>
<td>1.1</td>
<td>40.3</td>
</tr>
</tbody>
</table>

Table 2 presents the respondents’ evaluations of how good implementation practices were used in their unit. The results resonate with the fact that almost half of the respondents experienced that they do not know how to plan the implementation of a new eHealth service. One-third of the respondents did not believe that the personnel is not informed enough about the new eHealth services or the benefits of the services. Even fewer respondents agreed that there is a person who is responsible for the implementation or would encourage others to use eHealth services. Almost half of the respondents did not agree that the personnel has the possibility to participate in the planning of new services. Less than half of the respondents agreed that the implementation of new services is monitored using measures or the personnel is given allocated work time for adopting services as recommended.

Discussion

The results of the clinical leaders’ eHealth competence survey in two healthcare organizations show that clinical leaders are in a pressure of many demands and changing environment. They need to support healthcare professionals in the change, organize workflows, make sure that patients are informed and guided, and that the quality of new eHealth services is good enough. They also perceived that the shortage of resources, regarding both time and devices, is challenging.

Many clinical leaders did not feel confident in their tasks indicating that they need more support and training. Especially, they requested more information about eHealth services, their possibilities, and benefits. They can’t support their subordinates and patients without knowing about the new eHealth services by themselves.

Majority of the clinical leaders evaluated that they were able to use the new eHealth services, but one-fifth of them felt less confident in new tasks such as communicating about the new eHealth services to patients and developing services in a customer-centered way. Almost half of the leaders perceived that they are not able to plan the implementation of a new eHealth service. It is probable that leaders have not received training of these activities during their basic education and the organizations do not yet have traditions and practices for handling these tasks.

Consistent with the identified lack of implementation skills, the survey results imply that good implementation practices were not systematically used in the organizations. All leaders did not even know who is responsible for the implementation of the eHealth services in their organizations. The benefits of the new services and the goals of the implementation were not clear to all either.

The results suggest that clinical leaders should be better informed about the new eHealth services and their implementations. Many clinical leaders did not know whether the new implementations are well planned and good implementation practices are used. Still, the successful implementation does not only depend on the strategic level of management, but also the operational and frontline levels should participate [15,28].

All leadership levels have an important role in informing, motivating and engaging healthcare professionals. The responses to the open question about the challenges related to eHealth services reveal that the leaders are especially concerned about how to do these tasks for avoiding health professionals’ resistance to change.
The results imply that managing change and planning implementations are particularly challenging to clinical leaders. We recommend healthcare organizations to improve the training of clinical leaders on these tasks. In addition, the identified training needs should be considered in the design of continuing education and degree programs.

Informing and engaging numerous health professionals is a challenging task and clinical leaders are in a critical role in this work. Trained clinical champions have been found to be successful in motivating and supporting healthcare professionals [8,11,15] and one potential strategy to healthcare organizations is to train frontline leaders to act as champions in their work units.

The limitation of the study is a small number of respondents in only two healthcare organizations in one country. Thus, the results are not well generalizable, but they are more preliminary in nature. The findings give insights about the potential competence needs and pain points of eHealth leaders. Future studies are needed to test the results in wider settings. However, the studied health organizations can be considered for forerunners as they already have used new kinds of eHealth services supporting self-management and they had the willingness to train and support both leaders and professionals.

Conclusions

In this study, we identified clinical leaders’ eHealth competencies focusing on new eHealth services supporting patients self-care and self-management. The results provide insights into the clinical leaders’ training and support needs. The new training needs are especially related to managing change, planning implementations of new eHealth services. The clinical leaders are in a critical role in supporting healthcare professionals in order to avoid the resistance to change and ensure that the adoption of new eHealth services is successful.

Acknowledgements

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