Health Professionals' Experiences of the Benefits and Challenges of Online Symptom Checkers

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Abstract. Online symptom checkers and assessment services are used by patients seeking guidance on health problems. In this study, the goal was to identify health professionals' experiences of the benefits and challenges of new symptom checkers providing triage advice. Data was collected through an online survey of 61 health professionals who were target users of the online symptom checkers implemented in six public health organizations and one private occupational health clinic. Most of the health professionals supported the use of online symptom checkers and found services useful to patients because they provided patients quick contact with health professionals and referral to care or self-management instructions regardless of time and place. Health professionals were less confident that most of the patients were capable and willing to use the symptom checkers. Health professionals were satisfied with symptom checkers providing them with more useful information before meeting patients. By contrast, symptom checkers were seen as disrupting clinical work and time-consuming. The results imply that the clinical work processes should be redesigned to guide patients in an efficient manner, avoid work overlap, and provide work motivation for professionals.

Keywords. Online symptom checkers, triage advice, health professionals

1. Introduction

Online symptom checkers and assessment services are used by patients seeking guidance on health problems [1]. Using computerized algorithms, symptom checkers ask patients questions about their symptoms, provide them with a potential diagnosis, suggest self-care, and direct them to the appropriate care setting [2]. The goal is often to supplement or replace resource-intensive telephone triage lines. The online symptom checkers also have the potential to support self-care and decrease the number of unnecessary visits.

Based on Chambers' et al. [1] recent literature review, the evidence of the diagnostic accuracy and impacts of online symptom checkers remains weak. Triage advice provided by symptom checker algorithms tended to be more risk-averse than that given by health professionals. Thus, symptom checkers may encourage patients to seek care in cases where self-care would be more justified [2]. In addition, younger and more highly-educated people are more likely to use online symptom checkers, whereas older and less

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educated patients are more likely to prefer telephone or face-to-face contact [1]. Thus, health professionals through their endorsement play an important role in supporting patients and increasing their trust in technical solutions [3]. If only younger and more highly educated patients use online symptom checkers, the cost-effectiveness goals of these services may not be reached, and health equity issues may arise.

In Finland, a joint project of 14 of the largest cities and hospital districts have been developing a patient portal called Omaolo. The three main services include an online symptom checker called Oirearvio, a patient self-assessment and well-being coaching, and a health care plan. In spring 2017, health professionals' pre-implementation expectations relating to the patient portal were studied through an online survey [4]. Most of the 2,943 respondents (74%) expected benefits for patients; however, many expressed concerns that patients were unwilling or unable to use the new service. As symptom checkers are a new kind of health technology and the personnel appear to have concerns, it is important to follow-up on their implementation. Follow-up activities were also found to be generally important to support personnel during change, avoid resistance, and remove barriers [5].

In 2018, healthcare organizations started to use online symptom checkers, which were the first finalized functionality of the patient portal. The symptom checkers do not provide diagnosis, but they are used to direct the patient to obtain appropriate care or provide self-care instructions. The symptom checkers were designed for specific conditions: low back pain, urinary tract infection, and upper respiratory tract infection. The goal of this survey study was to identify health professionals' first experiences of using symptom checkers. Findings provide a better understanding of the role of symptom checkers in clinical work and the views of health professionals' relating to the benefits and challenges of the system.

2. Methods

An online questionnaire was developed to identify the experiences of health professionals, including nurses, physiotherapists, and physicians. The questionnaire was a new version of the previous expectation questionnaire including both multiple-choice and open-ended questions [4]. Health professionals were asked to evaluate their current experiences (instead of expectations as in the previous questionnaire), and the wording was changed from future to present tense.

The questionnaire included existing validated survey items for measuring professionals' support for the symptom checkers [6], their usability [7], and their influence on professional autonomy [8]. In addition, the participants were asked to rate whether the symptom checkers had brought the planned benefits to their work and patients and whether good implementation practices were used in their organization. The scales ranged from 1 (fully disagree) to 5 (fully agree) and included a sixth option, 6 (I do not know), which was removed from the analysis. Two open-ended questions were related to the benefits and challenges of the symptom checkers. In the background questions, participants were also asked how often they had used the symptom checkers. The quantitative data were with using descriptive statistics, and the responses to open-ended questions were content-analyzed.

The data was gathered from December 2018 to March 2019. The survey invitation with the link to the questionnaire was sent to health professionals identified by the local project managers as potential users of the symptom checkers. The respondents

represented six public health organizations and one private occupational health clinic that was located in the largest cities of Finland. The seven organizations were selected for the study as they were the first ones to adopt the symptom checkers. Although participation was anonymous, respondents could submit their email address at the end of the survey to participate in a draw for 10 movie tickets.

3. Results

A total of 61 health professionals answered the questionnaire; the response rate was 15.2% in six of the organizations (unfortunately, we were unable to identify a response rate for one organization). The mean age of the respondents was 43.8 years (SD = 10.4), and 87% were female. Most of the respondents (77%) were nurses, 15% were physiotherapists, and 7% physicians. The use of the symptom checkers was not yet very established: Most of the respondents (41%) had used them one to two times per month, 39% weekly or daily. Furthermore, 18% had only tried, and one respondent (1.6%) had not used them at all. A few of the respondents also commented that the symptom checkers were not yet widely used among patients.

Most of the health professionals (88.5%) agreed that they supported the use of online health checkers. The majority of them also agreed that the symptom checkers resulted in planned patient benefits (Table 1). In particular, respondents believed that the symptom checkers improved the availability of the services. However, the respondents were clearly less confident that most of the patients were capable and willing to use the symptom checkers.

Table 1. Percentage of health professionals agreeing with the statements related to the patient benefits of the symptom checkers.

Patient benefit	Professionals agree (%)
The symptom checker improves the availability of the services.	79
By using the symptom checker, patients have the same criteria to receive care.	68
The symptom checker supports individual care.	62
I believe that over half of the patients are capable of using the symptom checker.	50
I believe that over half of patients are willing to use the symptom checker.	42

Table 2. Percentage of health professionals agreeing with the statements related to the benefits of the symptom checkers for their work.

Benefit for professionals' work	Professionals agree (%)
Using the symptom checker provides me with more useful information before meeting a patient.	67
The symptom checker leaves more time for meeting with patients.	45
The symptom checker reduces the amount of routine work in my tasks.	38
The symptom checker reduces my work.	33
The symptom checker decreases my control over the patient process.	16
The symptom checker decreases my control over professional decisions.	12

Most health professionals also agreed that the symptom checkers were useful for their work because it provided more useful information about patients before meeting them (Table 2). However, less than half of them believed that the symptom checkers

would be efficient in their work. A minority also believed that symptom checkers decreased their control over the patient portal and professional decisions.

In open-question responses, the most often mentioned benefits included the following: a) patients will be guided to the right professional (a nurse, physiotherapist or doctor), b) patients get quick help and standardized self-management instructions, c) there will be less unnecessary visits, fewer phone calls, and less queuing. The most often mentioned challenges were related to the changes that the new symptom checkers brought to work, responsibilities, and common work processes. The symptom checkers were seen as added work, as they created one more channel to handle, and some respondents mentioned that patients started to unnecessarily use several contact methods. Many were also concerned that not all patients were able to use computers or the symptom checkers and believed that the care instructions should be made easier so patients could understand. For example, one respondent mentioned that the symptom checkers required more work than a phone call because patients did not know how to use them. Furthermore, the symptom checkers were seen as needing development, as they did not notify nurses when a patient made contact, and they also required extra work as nurses needed to transfer patient health information to a separate system.

4. Conclusions

The majority of the health professionals had a positive view of the new online symptom checkers. Most of them accepted the use of online symptom checkers, and they found that the services were useful to patients because they provided patients with a method of quick contact with health professionals and referral to care or self-management instructions, regardless of time and place. Health professionals valued the fact that the symptom checkers provided them with more patient information before meeting patients. Some of the professionals also saw opportunities to save resources as patients were immediately guided to see the right professional and, in some cases, patients could manage the health issues by themselves.

On the other hand, the symptom checkers clearly challenged existing work practices and the roles of health professionals. Health professionals believed that symptom checkers created extra work for them, considering that the services offered patients a new channel to contact health professionals. Some of the health professionals believed that the symptom checkers were a threat to their professional autonomy as they reduced their control over the patient process and professional decision making. Previously, this perceived threat was found to have a significant negative influence on health professionals' acceptance of new technology [4,8]. Furthermore, in our studied organizations, a minority of the health professionals resisted the new symptom checkers. Thus, there is a risk that teams would not work optimally and some professionals would not recommend the symptom checkers to patients.

The results imply that the implementation of symptom checkers, new work processes, and division of work require special attention in health organizations. Health professionals need support and training for this novel situation, and work processes should be redesigned to guide patients efficiently, avoid work overlap, and ensure work motivation among health professionals. The technical solutions should support health professionals' work in a holistic manner, so that they are not separated from other systems used and that incoming messages notify the responsible person.

Successful implementation of symptom checkers also requires patients to be engaged and motivated to use them. The variety of patients and their skills makes this challenging. Respondents indicated that patients lacked skills to use computers and symptom checkers. Although the content of the symptom checkers was built on scientific evidence, it is possible that they could lead to wrong conclusions if patients misinterpret the questions used. Furthermore, one respondent commented that the symptom checkers appeared to create concerns and lack of support among patients. Thus, it is important that symptom checkers are easy to understand and use. In addition, patients' experiences should be studied to identify their support needs and barriers of use.

The sample size of this survey study was relatively small as the online symptom checkers were used less than one year in a few organizations. This study focused on health professionals' subjective experiences in the early phase of the adoption process. As health professionals and patients will gain more experience in using the online symptom checkers, usage may become more routinized and smoother. However, providing a better understanding of the health professionals' views of symptom checkers, and their benefits and challenges will help developers in designing technical solutions and health organizations in supporting the adoption of the new services.

Acknowledgements

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