

# Nurses' Use and Ways of Understanding Web-Based National Guidelines for Child Healthcare

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The national *Rikshandboken* for child healthcare is both a Web-based guideline containing knowledge and methodological guidance and a national child healthcare program in the process of being implemented in Sweden. The aim of this study was to examine child healthcare nurses' use and ways of understanding the national Web-based *Rikshandboken*. A mixed-methods study with sequential explanatory design in two phases was used; a Web survey with descriptive statistics was followed with telephone interviews with phenomenographic analysis. The study showed variations in use and contributed deeper knowledge of child healthcare nurses' ways of understanding the unit *Rikshandboken* whose varied parts interact with each other. To be reliable, useful, and relevant for nurses in their specific contexts, *Rikshandboken* must be kept updated and involve the end users in the development process. With access to technical devices and optimal use of the possibilities of information and communication technology, *Rikshandboken* can be a resource for continuing learning, a tool in everyday work, and a possible determinant to equality in child healthcare. The study contributes valuable knowledge for the design of Web-based national guidelines for healthcare, making them useful and relevant for the end users.

**KEY WORDS:** Child healthcare nurses, Information and communication technology, Mixed methods, National guidelines, Phenomenography

Information and communication technology (ICT) has the potential to improve access to national guidelines,<sup>1</sup> even if the effectiveness is not entirely clear.<sup>2</sup> The Web is a form of ICT often used for guidelines in healthcare. The Web-based national guideline for personnel in child healthcare

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(CHC) in Sweden is *Rikshandboken* (RHB) ([www.rikshandboken-bhv.se](http://www.rikshandboken-bhv.se)). This unit integrates knowledge support, methodological guidelines, and a national CHC program. The CHC program is in the process of being implemented in county councils and regions. The implementation of Web-based guidelines could be a challenge and is affected by various factors related to the ICT solution itself, the context in which it should be used, and the user's individual characteristics.<sup>2-6</sup> Thus, for a successful implementation, a bottom-up approach with end user involvement is crucial to make Web-based guidelines relevant for those it is intended to serve.<sup>3-6</sup> Accordingly, follow-up studies of CHC personnel's use and ways of understanding RHB are essential in the development and implementation process of Web-based guidelines in healthcare.

## IMPLEMENTATION OF WEB-BASED GUIDELINES

Swedish CHC nurses need to stay abreast of new knowledge, be able to work in accordance with current guidelines, and have access to timely information.<sup>7,8</sup> The goal of clinical practice guidelines is to reduce variability and to decrease the gap between research and current practice by translating research and expert opinions and recommendations in everyday work for professionals.<sup>9,10</sup> Traditional printed guidelines are resource intensive and become quickly outdated, while Web-based guidelines have the potential for improved accessibility and credibility if they are continuously reviewed, updated, and widely disseminated.<sup>1,2,11</sup>

Implementation of ICT and guidelines in healthcare is influenced by various factors.<sup>3-6,12</sup> From an organizational perspective, key components for successful adoption in healthcare include management engagement and support, structural and electronic resources, and a supportive culture and environment with implementation facilitators.<sup>3-5</sup> From an end user's perspective, content, format, usability, and easy access are crucial factors in the acceptance and use of ICT.<sup>4,5</sup> According to the Technology Acceptance Model (TAM), the motivation of users is explained by perceived usefulness, perceived ease of use, and attitudes toward use.<sup>6,12,13</sup> The Web-based guidelines must match professional consensus and needs and be seen as relevant by all.<sup>3-6</sup> Attitudes and perceptions could be both a barrier and facilitator for the use of ICT and guidelines.<sup>3-6</sup> Review studies show that the end user's involvement in development and a strong bottom-up approach

reduce the discrepancies between the functionality of the system and ease of use.<sup>3,4,6</sup> However, Web-based guidelines are often not implemented effectively<sup>2,3</sup>; an essential prerequisite for designing Web-based guidelines for healthcare is to examine and follow the needs and abilities of potential users as well as the context of use.<sup>2,4</sup>

## CHILD HEALTHCARE

In Sweden, CHC is an important health promotion setting as it provides universal and targeted interventions. The coverage is close to 100% for children 0 to 5 years of age. Child healthcare aims to contribute to the children's physical, mental, and social well-being by promoting health and development; preventing illness; identifying problems early; and initiating actions to counteract such problems.<sup>14</sup> Child healthcare includes health examinations, health guidance, vaccinations, and parental support at CHC centers and via house calls. The work at the CHC centers is led by CHC nurses, who are specialists in either primary healthcare or pediatric care. Each county council/region runs a main CHC unit (MCHCU) with at least a chief medical officer and a CHC coordinator.<sup>14</sup> Their responsibility is to facilitate the implementation of the Web-based RHB, including the national CHC program, improve the local CHC through education and support, monitor children's health, conduct evaluations, and develop methods for CHC.<sup>14,15</sup> Child healthcare should be built equally on current guidelines, best available evidence, proven experience, patient preferences, and evidence-based practice.<sup>14</sup> Lack of equality and equity in Swedish CHC<sup>16,17</sup> led to a new national CHC program, published on RHB in 2015.<sup>15</sup>

## THE WEB-BASED RIKSHANDBOKEN

*Rikshandboken*<sup>18</sup> was established in 2005 as a national common password-protected knowledge and methodological support for personnel in CHC, encompassing the previous Swedish national CHC program. Since 2012, RHB is mobile compatible and open access. It is produced by Inera AB, owned by the Swedish Association of Local Authorities and Regions in charge of coordinating and developing digital services for citizens, professionals, and decision makers. The editors at RHB are supported by an editorial board consisting of representatives from the MCHCUs.

A study of CHC nurses' usage of RHB, conducted in 2013,<sup>19</sup> showed that RHB was widely used, but regional differences and nurses' experiences in their profession affected its use. Since 2015, the new national CHC program has been a part of the updated RHB, and contains knowledge and methodological guidance adapted to the CHC program, intended to foster an equal and equitable CHC and evidence-based practice.

*Rikshandboken* is expected to reduce the need to develop local guidance and routines and entails effective use of

resources.<sup>18</sup> The homepage [www.rikshandboken-bhv.se](http://www.rikshandboken-bhv.se) is designed to provide an overview of the content on RHB. Users can click on tabs leading to Web pages with knowledge and methodological guidance for working at CHC, with the program and meetings with children and parents; there are also links to news in CHC and on RHB, to research and projects, and to a CHC newsletter. *Rikshandboken* also contains links to regional documents and Web sites in different county councils/regions.

The new CHC program on RHB is in the process of implementation in all county councils and regions, but the adoption is affected by local circumstances.<sup>15</sup> According to Strudwick,<sup>12</sup> studying nurses' use of healthcare technology using TAM, the benefit with technology for healthcare can be attained only if the nurses accept and intend to fully use them. According to Rogers,<sup>5</sup> the diffusion of innovation is influenced by the structure of a social system, and CHC nurses could be in different stages of the adoption process of a Web-based RHB. Their varied experiences, perceptions, and needs are valuable to study in order to deepen the knowledge about how Web-based guidelines can best be a useful support. Therefore, the aim of this study was to examine CHC nurses' use and ways of understanding RHB.

## METHODS

### Study Design

A mixed-methods study with a sequential explanatory design in two phases was conducted following four procedural steps.<sup>20</sup> A Web survey<sup>21</sup> was conducted in the first quantitative phase to get an overall picture of CHC nurses' use and experiences of RHB, and it was analyzed with descriptive statistics. In phase 2, based on the results in phase 1, a qualitative interview guide was constructed for telephone interviews, which were analyzed using a phenomenographic approach.<sup>22</sup> The qualitative results were used to explain the quantitative results in more depth for the purpose of complementarity.<sup>20</sup>

### Phase 1: The Web Survey

As a first step, an information letter with an invitation to participate and a link to a Web survey was sent to 95 CHC nurses (Figure 1) representing 20 of 21 county councils/regions in Sweden. They participated in an earlier study of RHB<sup>19</sup> and provided consent to be invited for a new study. Seventy of the CHC nurses were still working in CHC, and 46 of them, from 15 county councils/regions, responded to the Web survey after three reminders. A Web questionnaire,<sup>21</sup> created in the online survey tool Textalk Web Survey (Textalk AB, Mölndal, Sweden), was used. The questionnaire contained 16 questions with structured response options, including single, multiple-choice, and scale questions.<sup>21</sup> It consisted of five parts: sociodemographic and clinical characteristics of CHC nurses, their use of and access to RHB, their experience of

support and usability, and development areas to improve RHB. Several questions were taken from or based on a Web site usability measurement instrument,<sup>23</sup> which strengthened the construct validity. The pilot test identified weaknesses and provided critical reflections, which required minor changes in the questionnaire to strengthen the validity. Each questionnaire was coded with an identification number. The Web survey was conducted during 4 months in 2017. It was analyzed in Textalk Web Survey and Microsoft Excel (Microsoft, Redmond, WA) using descriptive statistics with proportion analysis and crosstabs.<sup>24</sup>

**Phase 2: The Telephone Interviews**

Semistructured interview with open-ended questions, a common data collection method in sequential explanatory design and in phenomenographic research,<sup>20,22</sup> was chosen to gain insight into CHC nurses' varied ways of understanding RHB. In the Web survey, the respondents gave their contact details and permission to be invited to a follow-up telephone interview; 16 CHC nurses accepted and gave consent to participate. They represented different county councils/regions and had different background variables and could thereby contribute to a rich and varied picture of experiences and understandings of RHB. Unfortunately, one of the interviews could not be used due to a technical error during recording. In the second step, the Web survey results were used to create a semistructured interview guide<sup>25</sup> including open-ended questions about the CHC nurses' perceptions of the use of RHB in their everyday work, RHB as a Web-based guide, requests for support, opportunities to influence RHB, and suggestions for improvement. A pilot test of the interview guide and the technological equipment led to minor changes. In the third step, the telephone interviews were conducted for a duration of 16 to 40 minutes with a median duration of 26 minutes. They were conducted 2 months after the Web survey, audio-taped, and then transcribed verbatim.

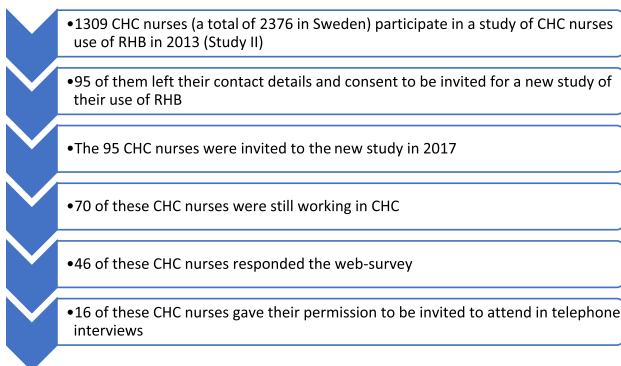


FIGURE 1. The sampling procedure.

Phenomenographic analysis<sup>22</sup> was chosen in phase 2 as the focus was to describe variations in how CHC nurses perceive and understand RHB. Phenomenography is based on the assumption that a phenomenon can be understood by a group of people in a limited number of ways, and each way of understanding expresses the relation between the subject and the phenomenon.<sup>22</sup> The analysis was carried out according to the procedure of Larsson and Knutsson-Holmström.<sup>26</sup> Each interview transcript was read and re-read to gain an overall impression of the data. Preliminary descriptions of each respondent's way of perceiving and understanding RHB were marked and summarized. Thereafter, the preliminary descriptions from all respondents were compiled, reread, and compared for similarities and differences. Similar statements were grouped into preliminary descriptive categories after a comparison to establish the borders between them. To strengthen credibility and transparency, an overview of the phenomenographic analysis with regard to categories, statements, and participating CHC nurses is presented, as well as direct quotes from the interviews (Table 1). Finally, five descriptive categories emerged that constituted an outcome space.<sup>26</sup> Figure 2 depicts the categories and the internal relationships between them. All authors had access to the data and were involved in the analysis process to reduce the risk of subjectivity. Findings in every step of the analysis were discussed and reflected upon by two of the authors to find consensus.

**Ethical Considerations**

An ethical self-evaluation was made, and an advisory statement was obtained from the Ethical Review Committee of the Southeast for the two different phases in the study (Dnr. EPK 442–2017, Dnr. EPK 451–2017). Basic ethical requirements for individual protection, confidentiality, information requirements, consent requirements, and use requirements were considered.<sup>27</sup> Before both phases in the study, the participants received a letter with information about the study, confirming confidentiality and voluntary participation, which could be terminated at any time. Informed consent was obtained for each phase of the study separately. Before the interview began, the information was repeated, and the participant was asked for consent.

**RESULTS**

**Phase 1: The Web Survey**

The questionnaire was answered by 46 CHC nurses, from 16 of 21 county councils/regions, a response rate of 66%. Only one of the respondents was male; thus, no gender comparison could be made. A majority, 72%, of the respondents were 31 to 60 years of age, and their experiences as a CHC nurse ranged from fewer than 5 years to more than 20 years. Fifty-seven percent of the respondents stated that the national

**Table 1.** Overview of Phenomenographic Analysis With Regard to Categories, Statements, and Participants (n = 15)

Categories of Descriptions and Perceptions	No. of Statements	Participants' ID Numbers
<b>A tool that must be useful and relevant</b>		
• Content that meets user needs	11	1,3,6,10, 13–15
• Obtain the users views	10	1–2,5,7–8,10,13–15
• Develop and use of the possibilities with ICT	38	2–3,5–15
<b>A resource that must be reliable</b>		
• Feel confident	9	1, 4, 6, 9, 11,13, 15
• Keep updated with current recommendations	16	1, 3, 8–11, 14–15
<b>A resource for learning</b>		
• Own learning	34	2,4–5,7–8,10–15
• Supporting others learning	32	1–2,4,6,9,11,13
• Learning together	8	3,6–14
<b>A tool in everyday work</b>		
• Practice of use	28	2,4–5,7–8,10–15
• Changes of use	9	1–2,4,6,9,11,13
• Time aspects	15	3,6–14
<b>Contributing determinant to an equal CHC</b>		
• National equivalence	15	1,3,7–11,13–15
• Regional differences	9	3,5,8–9,14–15

CHC program was completely implemented in their county council/region; 39% reported that it was partially implemented, and 4% did not know. *Rikshandboken* was used via computer by all the participants in varying frequencies—from several times per week to several times per day (65%), several times a month to once a week (26%), and once a month or less (9%). *Rikshandboken* was used via smartphone once a month or less by 26% of participants. Seventy-four percent had no access to smartphones via their employer, and 22% used their own private smartphone at work. There was no significant difference in usage frequency or use of technical devices between age groups or years of experience.

The results showed that most of the respondents were satisfied with RHB's usability, content, and design (Table 2). Almost all, 43 respondents (93%), felt that they could trust the content. Fewer participants, 31 (67%), considered that RHB contained needed information, and 11 (24%) considered the structure difficult to overlook. The questions about development and improvements (Table 3) showed that the participants considered that RHB needs to develop information about new research relevant to CHC and different support for learning (Table 3). Searchability and interactivity were also factors considered in need of development to improve RHB. Nearly half of the participants stated that they need access to RHB via smartphones at work as well as time allocated at work to use RHB.

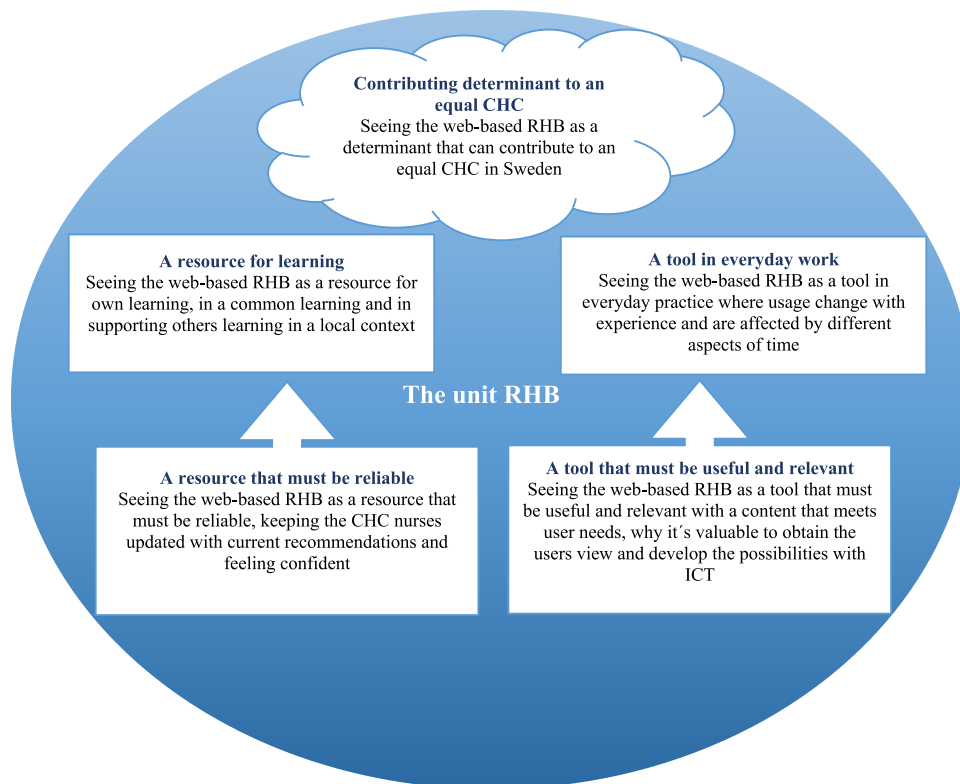
### Phase 2: The Telephone Interviews

In the phenomenographic analysis, five different ways of understanding RHB were identified among participants: as

a tool that must be useful and relevant, a resource that must be reliable, a learning resource, a tool in everyday work, and a contributing determinant to an equal CHC (Figure 2). The participants' variations of understanding RHB are presented in the outcome space in how they are related to each other: prerequisites needed for using RHB, how it is used in learning and in everyday work in a local context, and as a contributing determinant in a national context. All descriptive categories interact with each other, and together they give variations of understanding RHB as a unit.

### A Tool That Must Be Useful and Relevant

Content that meets user needs, to obtain the users' views and to develop and use the possibilities with ICT, was seen as important for a useful and relevant tool. Participants with this way of understanding responded that the content must cover the complexity in CHC from situations in everyday work as well as in rarer situations. They also responded that RHB should be regularly evaluated and developed in dialogs with the CHC nurses, so it would be relevant and useful for them. This is proposed to be done through surveys, reference groups, mail, Web meetings, and via the county councils' MCHCUs. The understanding forming this category was that RHB as a Web-based solution creates opportunities that could not be possible if the guidelines were printed. Some criticisms emerged asserting that the Web site structure was similar to a traditional book, with long sections of text, which could make it difficult to find information. Better use of the possibilities with ICT in the design was suggested to improve RHB. Even if the technique could pose



**FIGURE 2.** The outcome space: ways of understanding RHB among CHC nurses.

challenges, participants with these ways of understanding perceived that ICT is necessary to accept and learn. A prerequisite for using RHB was that the structure and search function make it easy to find timely information. Direct links from the medical journals to relevant information were suggested to make RHB more accessible and useful. Lack of access to technical devices, such as smartphones and tablets at work, affected usage, and RHB was mainly used via computer at the CHC center and to a lesser extent during house calls. “Dialog is important... Our work is changing... There should be time allocated for those who work with RHB to

meet us and discuss thoughts and ideas... We are working at the CHC center and meet current issues.”<sup>1</sup>

**A Resource That Must Be Reliable**

To be confident and to be kept up to date with current recommendations were important prerequisites for using RHB described in this category. Instead, as before, asking colleagues or random search on Google, RHB was seen as a resource that could offer information based on evidence and proven experience. It was expressed that the content must comply with the authorities and follow changes in the national

**Table 2.** Participant Satisfaction With Usability, Content, and Design of RHB

Satisfaction with Usability, Content, and Design	Agree Completely or Largely (n = 46), % (n)
RHB almost always contains the information that is needed	67 (31)
Technical assistance is needed to use RHB	11 (5)
RHB is likeable	83 (38)
There are things that are not consistent in RHB	13 (6)
RHB is designed so the content is easy to access	65 (30)
It is difficult to find requested information on RHB	26 (12)
Trust that the information on RHB is correct	93 (43)
The structure is difficult to overlook	24 (11)
The information is pedagogical and easy to interpret	78 (36)
RHB should be more interactive (such as movies, animations, pop-ups, audio, music)	44 (20)
Overall, satisfied with RHB	70 (32)



**Table 3. Factors Considered Necessary to Be Developed to Improve RHB**

Factors at RHB	Considered Have Needs or Large Needs of Development (n = 46), % (n)
Web site search function	63 (29)
Web site interactivity (such as movies, animations, pop-ups, audio, music)	50 (23)
Information about new research relevant to CHC	59 (27)
E-learning	57 (26)
Pedagogical materials	70 (32)

CHC program. If something in the content was found wrong or was not updated, confidence was lost, and information was searched for from other Web sites instead. To be assured that the information is updated with new references and dates was perceived as important for credibility. “Articles, new knowledge... That the content is updated. It is necessary. That you can feel that you can trust it. That you dare trust it.”<sup>8</sup>

### A Resource for Learning

Different kinds of learning were the focus in this category of understandings: the participant's own learning, learning together, and supporting others' learning. This category proved to be the strongest with the most number of statements. *Rikshandboken* was understood as a resource, together with the MCHCUs, for new knowledge, to confirm old knowledge, and to get methodological support. Access to methodological guidance related to a specific health visit in the national CHC program, in-depth knowledge on specific topics, and information about new research was expected by respondents with this way of understanding. *Rikshandboken* was used, read, and discussed together with colleagues in common learning, in the learning of students and new colleagues, and to show managers the complexity of CHC. It was also used as a second opinion to reflect on together with families. Making RHB more interactive with photos, audio recordings, videos, webinars, and discussion forums for learning was suggested to improve this category of understanding. “In many CHC centers, you are not allowed to participate in so much education. And I think if there were webinars and e-learning on RHB... introduction courses and information about conferences... I mean, everything is recorded and available at YouTube today. You should access this via RHB. It would be the future for RHB.”<sup>15</sup>

### A Tool in Everyday Work

The focus in this category was the ways of understanding RHB as a tool in everyday work: the practice of use, different aspects of time, and changes of use. *Rikshandboken* was used in

practice before a meeting with a family at the CHC center or a house call, during and after the health visits, in telephone consulting and in parent groups. Different aspects of time were shown to affect the use of RHB in everyday work, regarding lack of time to use it as well as the management's and nurse's responsibility to allocate time. *Rikshandboken* was seen as a “time saver” as it is Web based and not printed, and the importance of finding requested information quickly when it is needed was highlighted. Participants with this way of understanding described how the use of RHB was changing with increasing time in the profession. For novices, RHB was used frequently in everyday work, whereas with more experienced nurses, it was used less frequently on unusual issues and to read about updates and new research. Respondents with this way of understanding considered that content must meet the needs of both novices and experienced CHC nurses. “I used it more when I was novice than I do today. When I was new, I used it before almost every health visit... Now I don't use it at the same way, but I still use it frequently. Now I know what I shall do; I have it in my head. Now I use it when I want to check special issues, to read about changes or to show anyone else.”<sup>2</sup>

### A Contributing Determinant to an Equality of Care

Focus in this category was the ways of understanding RHB as a contributing determinant to a national equivalence of care and to reduce regional differences in CHC. The fact that the national CHC program, knowledge, and methodological guidance are embedded in RHB was seen as important to reach equality in CHC in Sweden. Information aimed at CHC personnel on many different Web sites, as authorities' and county councils/regions' own Web sites, was considered confusing especially if contradictory to the content on RHB. The links from RHB to county councils/regions Web sites were perceived by participants in this category as contributing valuable local information and material but resulting in unequal CHC. It was suggested that the regional documents be as few as possible and that their content should be considered national if they were relevant in all county councils/regions. “Sometimes we have different routines in our county councils, and it is important that there not are too many. They can't take over, so all have own routines, even though we have RHB. Then there may be times when it is needed, but the aim must be coherence for the country.”<sup>7</sup>

### Integration of Phases 1 and 2

In the fourth step in the explanatory design procedure,<sup>16</sup> the results from the Web survey and the telephone interviews were summarized regarding the ways the qualitative findings with variations of understanding help explain and complete the quantitative result. In the Web survey, 67% of the

participants agreed completely or largely with the assertion that RHB always contains the information they need. The interviews confirmed that RHB must be useful and relevant for CHC nurses in their work, with the content they need; thus, they must be involved in development and improvement of RHB. Even if two-thirds of the respondents in the Web survey agreed completely or largely with the assertion that RHB is designed so the content is easy to access, participants varied in their ways of understanding RHB and revealed a dissatisfaction with structure and design, suggesting better use of the possibilities with ICT to improve RHB.

Almost all participants in the Web survey said they trusted the information on RHB. The collective way of understanding RHB as a resource that must be reliable confirmed these statements and the importance of being able to rely on RHB being updated with current recommendations and based on evidence and proven experiences. More than half of the respondents in the Web survey considered that information about new research needed to be developed on RHB and requested a more interactive RHB for learning. The telephone interviews revealed an understanding of learning as a significant part of CHC nurses' work and their expectations of RHB as a resource for continuing learning.

The Web survey showed that RHB was used to a different extent by participants according to their county councils/regions, but there were no differences between the age groups or range of experience groups. Participants also desired that time be allocated for using RHB at work. In the interviews, the collective way of understanding RHB as a tool in everyday work revealed that the way participants use RHB changed with increased experience. Participants with this way of understanding perceived that they shared responsibility with the manager to allocate time to use RHB. *Rikshandboken* as a "time saver" was also revealed in the interviews because it is Web-based and not printed. The Web survey showed that there are still regional differences in Swedish CHC, but the collective way of understanding RHB as a determinant to an equal CHC revealed an intention to reduce these.

## DISCUSSION

The aim of this mixed-methods study was to examine CHC nurses' use and ways of understanding RHB. The results of phase 1 showed an overall picture of the CHC nurses' use of RHB, while phase 2 revealed variations of ways of understanding RHB in more depth. The outcome space showed a complex view of use and ways of understanding RHB and how the different categories interact with each other. Learning and development appear in relation to all categories. There is a need to be aware of this interaction; thus, it implies that it is not possible to make differences and development in only one of the categories without affecting the others.

Changing the content and structure of and access to RHB is not enough. The prerequisites in the local context for CHC nurses to use it must exist, and only then can RHB be a contributing determinant to an equal CHC. This is an extremely important knowledge to be aware of considering broad implementation of national guidelines to local healthcare contexts and could be seen as an external variable in the TAM affecting the perceived usefulness and perceived ease of use of RHB.<sup>6,13</sup> What is the meaning of developing national programs, guidelines, and policies for healthcare if its content does not reach the individual citizen in the local context? The result showed that the national CHC program is still not implemented in all county councils/regions, and the use of RHB varied. This was also found in earlier studies of Swedish CHC and RHB<sup>15,16,19</sup> and contradicts the intention to offer an equal CHC contributing to equality in child health.<sup>14</sup>

An overall category of understanding was RHB as a contributing determinant to an equal CHC and national equivalence. The interviews revealed varied ways of understanding the value of the county councils/regions' Web sites and regional differences. They can contribute to local information but may also lead to unequal CHC. Tell et al<sup>15</sup> found the ambivalence of CHC coordinators regarding parts in the new CHC program and to discontinuing use of their local guidelines in favor of RHB. As the MCHCUs have shown to be the most commonly used source of knowledge and methodological guidance for CHC nurses' work<sup>19</sup> and are important facilitators in the implementation of RHB,<sup>15</sup> these are dilemmas that people need to struggle with in county councils/regions. According to Wallby,<sup>17</sup> varied interventions are needed to get an equitable CHC, but they must not be at the expense of universal efforts. He also stresses the importance of clear national guidelines to ensure universal, selective, and indicated interventions in CHC.<sup>17</sup> As the Web-based guidelines aim to reduce variability in practice,<sup>9,10</sup> this knowledge is valuable to consider in the development of RHB, how to match professional consensus and needs, and how RHB can contribute best to both an equal and equitable CHC.<sup>14,17</sup> The importance of strong anchorage, facilitating factors, and intermediate actors when implementing Web-based guidelines is supported by earlier studies<sup>3,4,15</sup> and Rogers'<sup>5</sup> Diffusion of Innovation Theory. Engagement and support from the management, a supportive culture and environment, and electronic and structural resources are fundamental.<sup>3,4,12</sup>

It was emphasized that the content in RHB must cover the complexity in CHC, and therefore participants requested dialog and participation in the development of RHB, a prerequisite for making the Web-based guidelines useful and relevant for them. These findings especially emerged in the category describing RHB as a tool that must be useful and relevant and are supported by an integrative review by

Strudwick,<sup>12</sup> which implies that if a nurse finds a technology easy to use and believes that it is useful, the nurse is more likely to accept and intend to use it. According to the TAM,<sup>13</sup> a system to be used must not only be easy to use but also perceived as useful. These are key variables that can influence user attitudes.<sup>28</sup> The result is also consistent with a previous study<sup>3</sup> describing that nurses must have an active role in development and implementation process of Web-based guidelines for successful adoption. The importance of involvement of the end users is supported by Diffusion of Innovation<sup>5</sup> and TAM.<sup>12,13</sup> Therefore, in further development of RHB, it is essential to pay attention to how CHC nurses can best be involved in the process of improving the Web-based guidelines.

The CHC nurses almost always used RHB via a desktop at the CHC center. *Rikshandboken* was more seldom used via other technical devices, such as smartphones and tablets, and RHB was used to a lesser extent during house calls. The result differs from studies showing that the most common way to access the Internet in Sweden in 2017 was via smartphone,<sup>29</sup> and the use of smartphones in healthcare has generally increased.<sup>30</sup> Access to RHB via smartphone can enable CHC nurses to use their guidelines even if a desktop is not available, for example, in parent groups and during house calls. A possible consequence of having no smartphone at work is that CHC nurses cannot reach needed methodological and knowledge support and fully do their work as ICT tools are necessary in providing accessible and safe healthcare.<sup>11,31</sup> Technical devices used and managed in optimal ways improve nurses' working conditions and save time.<sup>11</sup> The use of RHB was stated to save time for CHC nurses, but lack of time allocated as a supportive factor for using RHB also emerged. Access to electronic resources, a supportive environment, management engagement, and support are key components for successful implementation of Web-based guidelines.<sup>3,5</sup> Even if national decisions and policies, such as the Swedish National Strategy for eHealth,<sup>32</sup> state the need for healthcare personnel to have access to well-functioning electronic decision support, changes must be made in the local context to make differences for the CHC nurses in their everyday work. According to Strudwick,<sup>12</sup> facilitating conditions supporting the use of health technology include support during the implementation, available equipment, adequate technical support, and end user involvement. In which degrees the nurses believe that the use of technology is supported by technical and organizational resources are external variables in the TAM,<sup>6</sup> affecting the variation in perceived usefulness and perceived ease of use.

Participants' collective understanding of RHB as a resource for learning complies with earlier studies of CHC nurses' use of RHB<sup>15,19</sup> where access to research, pedagogical materials, instructional videos, discussion forums, and e-learning were suggested as improvements of RHB. According to the

Swedish Society of Nursing,<sup>7</sup> CHC nurses should be able to educate individual and groups of parents, students, and colleagues. Therefore, it is necessary to create local conditions for nurses to conduct such education. Information and communication technology can be utilized for teaching and learning in different ways, creating opportunities for flexible, efficient learning in healthcare, and offer a time- and cost-effective alternative method of education.<sup>32-34</sup> Information and communication technology has been shown to support nurses' continued learning and professional development.<sup>11</sup> The CHC nurses' needs and requests for learning and the role of RHB to improve the use of existing knowledge and to facilitate more effective acquisition of new knowledge need to be reflected in further development of RHB.

This study was conducted as a mixed-methods study. According to Creswell and Plano-Clark,<sup>20</sup> a combination of two methods can provide a better understanding than a singular method can, strengthening each study and minimizing the weaknesses. A limitation of the study is that the questionnaire was answered by 46 CHC nurses, too small a sample for drawing conclusions from statistical analyses or generalizing the result. The nurses were all those who had given their consent to be invited, which could be seen as a weakness since it was not a randomized sample. Fifteen telephone interviews were conducted in this study. According to Larsson and Knutsson-Holmström,<sup>26</sup> 20 participants are sufficient to identify different perceptions of phenomena. Thus, a strength is that the participants represented all healthcare regions, have used RHB since at least 2013, and worked during the implementation of the new national CHC program, which provided a broad perspective. The interviews were rich and gave a varied picture of experiences with RHB. The use of purposive sampling is common in explanatory studies to show the range of different perspectives in a group of people.<sup>20</sup> It is not claimed that the findings can be applied to CHC nurses in general but the variation in ways to understand RHB in a group of CHC nurses. As CHC nurses in Sweden have heterogeneous education and the same working context, it might increase the transferability of findings to similar contexts. The primary author has 12 years' experience as a CHC coordinator including involvement in the editorial board at RHB, which could be both a strength and a challenge in the research process. To ensure trustworthiness, every step in the study was discussed and reviewed by the three other authors.

## CONCLUSIONS

The study, with both a Web survey and telephone interviews, contributes a deeper knowledge of CHC nurses' use and ways of understanding RHB whose varied parts interact with each other. To be reliable, useful, and relevant for nurses in their



specific contexts, RHB must be continuously updated and involve the end users in the development process. Access to technical devices and optimal use of the possibilities with ICT, the national Web-based RHB can be a resource for continuing learning, a tool in everyday work and an essential contributing determinant to an equal CHC. The study contributes valuable knowledge regarding designing Web-based guidelines for healthcare, making it useful and relevant for those it is intended to serve. Further studies regarding how the varied categories of RHB could be developed to improve and strengthen RHB and contribute to an equal and equitable CHC and evidence-based practice are suggested.

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