

# Nutrition Care Process Implementation: Experiences in Various Dietetics Environments in Sweden

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## ARTICLE INFORMATION

### Article history:

Submitted 11 August 2016

Accepted 31 January 2017

### Keywords:

Nutrition Care Process

Terminology

Nutrition informatics

Implementation

Integrated Promoting Action on Research

Implementation in Health Services framework (i-PARIHS)

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<http://dx.doi.org/10.1016/j.jand.2017.02.001>

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## ABSTRACT

**Background** The Nutrition Care Process (NCP) and Nutrition Care Process Terminology (NCPT) are currently being implemented by nutrition and dietetics practitioners all over the world. Several advantages have been related to this implementation, such as consistency and clarity of dietetics-related health care records and the possibility to collect and research patient outcomes. However, little is known about dietitians' experiences of the implementation process.

**Objective** The aim of this qualitative study was to explore Swedish dietitians' experiences of the NCP implementation process in different dietetics environments.

**Method** Thirty-seven Swedish dietitians from 13 different dietetics workplaces participated in seven focus group discussions that were audiotaped and carefully transcribed. A thematic secondary analysis was performed, after which all the discussions were re-read, following the implementation narrative from each workplace. In the analysis, The Promoting Action on Research Implementation in Health Services implementation model was used as a framework.

**Results** Main categories identified in the thematic analysis were leadership and implementation strategy, the group and colleagues, the electronic health record, and evaluation. Three typical cases are described to illustrate the diversity of these aspects in dietetics settings: Case A represents a small hospital with an inclusive leadership style and discussion-friendly culture where dietitians had embraced the NCP/NCPT implementation. Case B represents a larger hospital with a more hierarchical structure where dietitians were more ambivalent toward NCP/NCPT implementation. Case C represents the only dietitian working at a small multiprofessional primary care center who received no dietetics-related support from management or colleagues. She had not started NCP/NCPT implementation.

**Conclusions** The diversity of dietetics settings and their different prerequisites should be considered in the development of NCP/NCPT implementation strategies. Tailored implementation strategies should be considered in relation to context, such as increased dietetics support and facilitation where management does not lead or support the implementation process.

J Acad Nutr Diet. 2017; ■:■-■.

OVER THE PAST DECADE, NUTRITION AND DIETETICS practitioners all over the world have implemented the Nutrition Care Process (NCP) and its associated terminology (Nutrition Care Process Terminology [NCPT], formerly International Dietetic and Nutrition Terminology). The NCP was developed by the Academy of Nutrition and Dietetics as a framework for logical thinking and decision making in dietetics. It contains the following four main steps: Nutrition Assessment, Nutrition Diagnosis, Nutrition Intervention and Nutrition Monitoring, and Evaluation.<sup>1</sup> The NCPT was developed to support dietetics communication, clinical documentation, and research, and provides standardized terms for each of the four NCP steps.<sup>2</sup> For the second step, Nutrition Diagnosis, this standardized diagnostic term is to

be connected to a specified etiology and measurable signs and symptom, forming a problem-etiology-symptoms (PES) statement.

The NCP steps and their connections and mutual relationships provide a critical link between research and practice, facilitating the systematic collection and measurement of dietetics care outcomes.<sup>3</sup> These can be used both in research and in the monitoring and evaluation of dietetics care quality. Studies have shown advantages in using the NCP/NCPT, such as facilitating the provision of a consistent structure for nutrition care, promoting critical thinking and a decision process, enabling clearer and more consistent and informative dietetics-related notes, and the increased recognition and acknowledgement of the

dietitians' competence by other health care professionals.<sup>4-6</sup> However, studies also show that the high expectations that dietitians have of the NCP/NCPT implementation are in reality only met to a certain degree, and that some dietitians experience difficulties balancing the standardized process and terminology with a more flexible, patient-centered approach.<sup>5,6</sup>

In recent years, international interest regarding the implementation of NCP/NCPT has increased among nutrition and dietetics practitioners.<sup>7-10</sup> Today, the NCPT/NCPT is being implemented in several parts of the world, and various editions of the terminology have been translated into different languages.<sup>11</sup> The first translation into Swedish was published in 2011, when the Swedish NCP/NCPT implementation was started.<sup>12</sup> The NCP/NCPT is now included in the curriculum of all dietetics programs at Swedish universities, and is also increasingly used in clinical documentation and as a framework for the development of dietetics-related clinical guidelines in different care settings. NCP/NCPT use is also recommended by the Swedish Association of Clinical Dietitians (DRF).<sup>10</sup> Almost all Swedish dietitians write their clinical documentation in electronic health care records (EHRs) that contain preset key words or headlines, which in some care settings, but not all, are based on the NCP steps and NCPT. The Swedish implementation is not governed by the DRF, but is rather the responsibility of the managers of each individual setting where dietitians work.

In an Australian survey, open-ended questions showed that dietitians (n=16) considered that time resources, regular tutorials, and supportive management were key elements for successful NCP/NCPT implementation.<sup>13</sup> In the same study, dietitians in two focus groups found that peer groups, leadership teams, structured deadlines, and the submission of PES statements with subsequent support were valuable for the implementation. The main barrier identified was lack of time resources.<sup>13</sup> In other studies it has been argued that the use of EHRs facilitates the NCP/NCPT implementation when compared with the use of paper records.<sup>14</sup>

Implementation of the NCP is a comprehensive process that is currently ongoing in several countries around the world. So far, only a few surveys together with some minor implementation reports from different hospitals have addressed dietitians' perspectives regarding this fundamental conversion. Very little is known about dietitians' own experiences of the implementation process, such as which factors support or hinder the process. In the exploration of processes and contexts of phenomenon, qualitative approaches can contribute with new perspectives and provide valuable insights.<sup>15</sup> These can in turn be used to generate hypotheses for new studies. No study using a fully qualitative approach has so far explored dietitians' experiences of implementation. The aim of this study was to use a qualitative approach to explore Swedish dietitians' experiences of the NCP implementation process in different dietetics environments. In this article, the concept "dietetics settings" refers to different clinical settings where dietitians work. "Dietetics environment" refers to the environmental or contextual aspects of these settings. "Manager" or "management" will be used to refer to both managers of specific dietetics departments, but also to general managers

of interprofessional departments or other settings where dietitians work.

## METHODS

### Focus Group Discussions

This study consists of a secondary analysis of focus group discussions addressing the Swedish NCP/NCPT implementation. The original aim with the focus group study was to explore dietitians' experiences with the use of NCP/NCPT in relation to patients, the documentation, and the professional role.<sup>6</sup> However, to a large extent, the focus group discussions included dietitians' experiences with the implementation process and the factors that the participants perceived as barriers and facilitators in this process. The researchers decided to include these perspectives in a secondary analysis of the material.

In 2015, an updated version of NCP, and an electronic updated version of NCPT were launched. Because the focus groups were performed in 2014, the discussions refer to the earlier version of the NCP/NCPT, which was released in 2008.

To capture a broad range of views, focus groups were chosen as the research method. Seven semistructured focus group discussions were held, where 37 dietitians from 13 different settings discussed their experiences of the implementation.<sup>16</sup> Three to eight dietitians participated in each focus group. [Table 1](#) provides further details.

Inclusion criteria for the focus groups were dietitians with a minimum of 1 year's working experience and at least a basic knowledge of the NCP/NCPT. These criteria were met with the exception of a few dietitians: one with less working experience and a few with less NCP/NCPT knowledge. However, because these dietitians made valuable contributions to the discussions concerning, for example, their reasons for not implementing the NCP/NCPT, they were included.

One of the focus groups was held at a university close to the participants' workplace; the other six were held at various hospitals where many of the dietitians worked. The discussions all lasted for 60 to 90 minutes and were moderated by the first author (E.L.), who has extensive experience of leading group discussions. They were all audiotaped and carefully transcribed verbatim by the first author. An external observer was also present at all sessions, taking field notes to facilitate the transcription and interpretation of the discussions.<sup>16,17</sup> Before each focus group session, participants were asked to complete a short questionnaire asking for background information.

The selection of participants was purposive, including dietitians from several different parts of Sweden and of different ages, to include a variety of experiences concerning education, health care settings, EHR use, and NCP/NCPT implementation. The participants were recruited by e-mail messages sent to dietitians at the largest hospitals in different parts of Sweden and to members of the national dietetic association. The e-mail messages included information about the study and a request to participate in the focus groups. When dietitians from different parts of Sweden responded to the call, e-mail messages were sent directly to hospitals and primary care centers in these specific areas in Sweden to encourage more dietitians to join the planned focus groups. This second step of the recruitment process was done to ensure a sufficient number of participants, with a broad spectrum of experiences in each focus group.

**Table 1.** Overview of the 37 participants in a focus group study exploring Swedish dietitians' experiences of the Nutrition Care Process (NCP) and Nutrition Care Process Terminology (NCPT) implementation process in various dietetics environments

Focus group	No. of dietitians	Mean age	Have taken initial NCP/NCPT orientation course	Self-reported NCP implementation level
1	3	37	2 Yes 1 No	2 Use parts <sup>a</sup> 1 Use all/most parts
2	5	39	4 Yes 1 No	2 Use parts 3 Use all/most parts
3	8	41	4 Yes 4 No	1 Not started 7 Use parts
4	5	36	3 Yes 2 No	3 Use parts 2 Use all/most parts
5	5	42	5 Yes	1 Not started 1 Use parts 3 Use all/most parts
6	6	47	5 Yes 1 No	4 Not started 1 Just started 1 Use all/most parts
7	5	41	4 Yes 1 No	1 Just started 3 Use parts 1 Use all/most parts

<sup>a</sup>Generally, most Swedish dietitians start their NCP/NCPT implementation with the Nutrition Diagnosis step. Using parts of the NCP may, therefore, often mean only having implemented the Nutrition Diagnosis.

A semistructured interview guide was developed to facilitate the discussion with topics focusing on the NCP/NCPT.<sup>16,17</sup> This interview guide is published elsewhere.<sup>6</sup> Some visual material was used to stimulate the focus group discussions: a picture of a dietitian–patient meeting, the NCP model, and a copy of the NCPT Nutrition Diagnostic Terms manual. Although the visual material and the interview guide were developed to focus on the original aim, large parts of all focus group discussions concerned the dietitians' experiences with the implementation process. The moderator allowed these deviations from the interview guide, recognizing that a flexible approach is a strength of qualitative methods such as focus group discussions because this allows for the exploration of unknown and unexpected phenomena.<sup>15,18</sup>

Two pilot focus groups were held: one with three participants and one with five participants. Because these arrangements were successful, no changes were made and the two pilot groups were also included in the overall study and analysis.

### Ethical Considerations

This study was deemed exempt by the Regional Ethical Review Board of Medical Sciences in Uppsala, according to Swedish law. In connection to this, an advisory statement was

received, acknowledging that the Ethical Board did not see any ethical obstacles regarding the study (Reference no. 2014/065).

### Analytic Framework

The Integrated Promoting Action on Research Implementation in Health Services framework (i-PARIHS) was used in the analysis and interpretation of this study. This framework was developed to enable the identification of factors essential for the implementation of evidence-based health care.<sup>19–21</sup> In i-PARIHS, successful implementation of evidence into practice is a function of the interplay between four core elements: innovation, recipients, context, and facilitation. In this study, due to the content of the analyzed focus group discussions, we decided to focus mainly on the context element at a local level, which will now be further described.

Context is defined as the environment or setting in which the proposed change is to be implemented. At a local level, the context concerns aspects such as leadership, culture, past experiences, mechanism for embedding change, evaluation and feedback processes, and learning environment. A culture facilitating implementation of change considers individuals, groups, and organizational systems. According to i-PARIHS, such cultures are characterized by a decentralized decision process. A facilitating leadership includes the ability to transform cultures into creative environments, conducive to the integration of evidence into practice. Such leaders inspire health care professionals to develop a shared vision in a stimulating, challenging, and enabling way that results in clear roles and effective teamwork and organizational structures. Evaluation is seen as an important part of the feedback process, showing whether changes are appropriate and effective.

### Analytic Procedure

The transcripts of the focus group discussions were carefully read several times and, in parallel with this, the audiotapes were listened to repeatedly. During the transcription and the subsequent reading, notes were made regarding possible themes and patterns in the material. This process was initiated simultaneously with the data collection.<sup>15,16,22</sup> After this initial analysis, the i-PARIHS framework was considered suitable for a deeper analysis of the parts of the discussions that concerned the NCP/NCPT implementation process.<sup>21</sup> Thus, the analysis was data-driven in the initial stage, but in the latter stages was guided by the analytic framework.

Based on the i-PARIHS framework, a qualitative thematic analysis was performed, using the computer program OpenCode,<sup>23</sup> condensing the text to meaning units and classifying them in different codes and categories or themes.<sup>15</sup> During the analysis, the codes and categories were reviewed several times, resulting in recategorization of meaning units, codes, and categories, as well as renaming, merging, or division of codes and categories.<sup>22</sup> At this stage, we decided to mainly focus on the i-PARIHS context element at a local level because most parts of the material concerned this element. However, the thematic analysis was considered to provide only superficial and fragmentary information about the different implementation processes in the dietetics settings included in the study. Therefore, all the discussions were re-read after the thematic analysis to follow the

implementation narrative from each dietetics setting represented in the focus groups. During this stage of the analysis, the implementation narrative from each dietetics setting was followed and described based on the main categories found in the thematic analysis.<sup>24</sup> The first author (E.L.) performed most of the analysis, although during this process all authors read at least parts of the material and met for discussions at different stages, until all agreed on the final analysis.

Two of the authors in this study (E.L. and Y.O.) are dietitians well acquainted with the NCP/NCPT and the dietetics profession: E.L. is lecturer for the educational program for dietitians and Y.O. through her responsibility for quality development in a large dietetics department. The third author, A.-M.B., is a nurse with considerable experience of nursing implementation research and the i-PARIHS framework. These experiences contributed to the collection of data and analysis.

### Findings

Several implementation process aspects were discussed in the focus groups. The first thematic analysis based on the i-PARIHS context element resulted in the following main categories:

- leadership and implementation strategy concerns the process through which the initiative to implement the NCP/NCPT was taken and performed,
- group and colleagues concerns influence of the group culture and its receptiveness toward change,
- EHR structure concerns the supportiveness of the EHR toward NCP/NCPT implementation, and
- evaluation concerns feedback processes such as the setting and evaluation of goals in the implementation process.

A brief overview of these aspects in all the included settings is shown in [Table 2](#). The following analysis focused on these aspects as key elements in the implementation narratives of the 13 settings. To illustrate the diversity and the broad spectrum of these environmental aspects in dietetics settings, three typical implementation cases have been selected for presentation in greater detail. The reason for this is to allow readers to follow their implementation narratives, instead of providing fragmentary information from a larger number of workplaces. However, to prevent identification of the participants, and to be able to include information from several different settings, each case constitutes stories from two to three similar workplaces. All quotes are original quotes from the discussions. However, some details in the stories, and minor details in the quotes, have been altered to prevent identification. Case A represents dietitians from a small hospital, case B represents dietitians from a large university hospital, and case C represents a single dietitian working as the only dietitian at a multiprofessional primary care center. These three cases will function as examples in the further illustration of the four main categories presented above.

#### Case A

**Basic Information.** This is a small hospital with a dietetics department employing about 10 dietitians who almost all use the NCP/NCPT.

**Leadership and Implementation Strategy.** The implementation started in 2011 because the manager (who is a dietitian) was engaged in documentation quality development. Codes for medical diagnoses and interventions (classifications required by the Swedish National Board of Health and Welfare) had recently been implemented into the health care record, and there was an ongoing discussion regarding dietetics-related documentation. The dietitians perceived these experiences as an advantage in the NCP/NCPT implementation:

Just before we started with the NCP, this thing with diagnosis classification came along. And KVÅ [standardized intervention codes]. So we had already worked quite a lot with our health care records before this came along, and I think that has been positive. Because we were interested.

All dietitians in the department had attended one of the first Swedish NCP education sessions during 2011. Initially they perceived the NCP/NCPT as difficult and time-consuming. However, they also saw this as something new and interesting, and the group wanted to be in the forefront. The group is now implementing the NCP/NCPT, with their manager leading the process.

We were, like, “Let’s start this now, let’s go!” It wasn’t like what you hear from some places: “Let’s try to do one [PES statement] a week” or so, because then you don’t get into it. Instead, “Now, let’s do this for every patient!” Now, nutrition diagnosis is what we do.

The group has also started to write their local nutrition care guidelines based on the NCP steps; for example, by providing examples of nutrition diagnostic terms for different medical conditions.

We have the new routines that we have written, where we tried to incorporate this way of thinking.

**Evaluation.** In dialogue with the group, the manager set and evaluated the goal that 80% of dietetics-related notes of first patient visits should include PES statements. This goal was to be evaluated by using an automatic device in the EHR system. However, a technical mistake made the evaluation result lower than the actual result. The measurements ceased because the dietitians believed that these evaluations did not reflect reality.

Then there was some weird thing so that it looked like we didn’t do nutrition diagnoses, even though we did.

**Group and Colleagues.** Following the education session, the dietitians were inspired to discuss the NCP/NCPT and PES statements. They all had high expectations, believing that the NCP/NCPT entailed many benefits concerning both patients and health care professionals. They encouraged each other and everyone wanted to be part of the project. As they sat together in their open-plan office, spontaneous discussions often occurred during documentation sessions and coffee breaks. More formal discussions at lunch meetings and at joint health care record audits were also organized by the

**Table 2.** Overview of participants' implementation experiences in a focus group study exploring Swedish dietitians' experiences of the Nutrition Care Process and Terminology implementation process in various dietetics environments

Focus group	Dietetics setting	Type of setting	No. of persons participating in the focus group	Management and implementation strategy	Group and colleagues	Electronic health care record system	Evaluation
1	1.1	Academic setting	1	Dietitian-initiated partial implementation of NCP <sup>a</sup> in educational patient cases.	No dietetic colleagues. Discusses NCP regularly at small network meetings.	Not applicable	Not applicable
	1.2	Primary care center	1	No implementation. No support from management Does not access NCPT. <sup>b</sup>	Colleagues do not use the NCP. Has no network where NCP is discussed.	Some key words fit with the NCP	NCP use is not evaluated
	1.3	Primary care center	1	Dietitian-initiated implementation. No support from management.	No dietetic colleagues. Discusses NCP regularly at network meetings.	Some key words fit with the NCP	NCP use is not evaluated
2	2.1 <sup>c</sup>	Large hospital	5	Manager initiated implementation. One person has an assigned facilitator role, leading a group of NCP champions.	Mixed. Most are engaged, others still feel resistance. Discuss NCP regularly at department meetings.	Several key words fit with the NCP	Goal set (% PES <sup>d</sup> statements). Is regularly evaluated
3	3.1	Small hospital	5	Dietitians initiated implementation in dialogue with management.	Most dietitians engaged, meet regularly for NCP discussions.	Key words not adapted to the NCP	Goal set (% PES statements). Is not evaluated
	3.2	Small hospital	3	Dietitians initiated implementation in dialogue with management Manager went to NCP education session.	Most dietitians engaged, meet regularly for NCP discussions.	Key words not adapted to the NCP	Goal set (% PES statements). Is not evaluated
4	4.1	Small hospital	5	Manager initiated and leads implementation in dialogue with employees.	Engaged in the NCP, encouraging each other. Open discussion climate.	Several key words fit with the NCP	Goal set (% PES statements). Not evaluated due to technical problems

*(continued on next page)*

**Table 2.** Overview of participants' implementation experiences in a focus group study exploring Swedish dietitians' experiences of the Nutrition Care Process and Terminology implementation process in various dietetics environments (*continued*)

Focus group	Dietetics setting	Type of setting	No. of persons participating in the focus group	Management and implementation strategy	Group and colleagues	Electronic health care record system	Evaluation
5	See 2.1 <sup>c</sup>	Large hospital	3	See 2.1	See 2.1	See 2.1	See 2.1
	5.2	Primary care center	1	Dietitian initiated partial implementation. No support from management.	No dietetic colleagues. Has no network where NCP is discussed.	Some key words fit with the NCP	NCP use is not evaluated
	5.3	Primary care center	1	No implementation. No support from management.	No dietetic colleagues. Has no network where NCP is discussed.	Key words not adapted to the NCP	NCP use is not evaluated
6	6.1	Small hospital	4	No implementation. No support from management.	Dietitians work at different departments, without dietetic colleagues. Genuine resistance toward implementation.	Key words not adapted to the NCP	NCP use is not evaluated
	6.2	Primary care center	2	Dietitians initiated implementation. One person previously had a temporarily assigned facilitator role.	Discusses NCP occasionally with colleague.	Key words not adapted to the NCP	NCP use is not evaluated
7	7.1	Large hospital	4	Manager initiated implementation. One person previously had an assigned facilitator role.	Mixed. Some are engaged, others feel resistance.	Key words were restructured due to the NCP, which consumed a lot of resources	Goal set (% PES statements). Is not evaluated
	7.2	Small hospital	1	Manager initiated implementation.	Genuine resistance toward implementation.	Key words were adapted to the NCP, which forced dietitians into NCP use	Goal set (% PES statements). Is not evaluated

<sup>a</sup>NCP=Nutrition Care Process.

<sup>b</sup>NCPT=Nutrition Care Process Terminology.

<sup>c</sup>In total, eight dietitians from this hospital participated, of whom 5 dietitians were in Focus Group 2 and 3 dietitians were in Focus Group 5.

<sup>d</sup>PES=problem-etiology-symptoms.

manager. The dietitians described their group culture as discussion-friendly:

Then, we are pretty prone to want to discuss, and everyone is like, "But I think this and I think that." No one is really afraid of having their say, instead we really do like to discuss, so, yes, you don't have to feel that you do something wrong.

**EHR.** The EHR system has many preset keywords, which facilitated the incorporation of PES statements into the recording because there were already matching key words. However, the system could be even more NCP/NCPT friendly if dietitians had the possibility of adding preformulated phrases or roll-lists.

### Case B

**Basic Information.** This is a larger hospital, with a dietetics department employing about 60 dietitians. Some of the dietitians at this hospital, but not all, use parts of the NCP/NCPT.

**Leadership and Implementation Strategy.** The implementation started in 2011 after some of the dietitians had attended a national dietetics congress where the NCP/NCPT was presented by representatives from the Academy of Nutrition and Dietetics. The manager of the dietetics department (a dietitian) decided to implement the NCP/NCPT, and one person was assigned as a facilitator with the role of leading this implementation.

...we were forced into it [laugh]. Like, this is what we will do. [...] Well, forced may be the wrong word, but the decision was taken from above, that this is what we will do.

The implementation strategy was such that those dietitians who attended the national dietetics congress were assigned a leadership role for small discussion groups that met regularly to discuss nutrition diagnoses and other NCP issues, with supervision from the facilitator.

We had some method meetings in the beginning where each person brought a patient case, and then we sat down and tried to work together and make PES statements based on that. And we also had help from [the facilitator], and also from the university.

**Evaluation.** The management set a goal for the implementation. Firstly, the goal was at least one PES statement per day for every dietitian, but soon this goal was increased to include PES statements for all first visits. However, these goals were not evaluated through measurement.

...and for a while, we should write at least one PES statement per day, right? And then pretty soon for each [first visit], because we said (...), the more we do, the faster we get into it.

**Group and Colleagues.** In the beginning, many dietitians at this hospital considered the NCP/NCPT to be too complicated and not suited to their practice. Today, some dietitians have welcomed the NCP/NCPT implementation, whereas

others still feel a resistance, stating that the NCP/NCPT seems meaningless, difficult, and time-consuming. The discussion group leaders see it as their task to encourage the group members, helping them see the benefits of the NCP/NCPT.

In my NCP group there is a huge resistance to the NCP. They think that the NCP is dreadful, so I decided to try [to make them] a bit more enthusiastic. ...But I believe that many in the group don't see the purpose of it. And it isn't easy if you haven't had that enthusiastic pep talk that we got at the DRF congress. Because it takes a lot of time in the beginning. Before you get a feeling for what to choose, which are my diagnoses, and what are the differences between similar diagnoses?

**EHR.** After a while, the assigned facilitator leading the implementation moved on to another project. Nobody replaced her in this role. At the same time, the hospital's EHR system was changed and adapted to the NCP steps and NCPT terminology. At the same time, the dietitians were required to implement other diagnostic and intervention codes not from the NCP/NCPT in their clinical documentation. During these changes, many of the discussion groups stopped meeting, and most groups never got beyond the initial PES statement implementation.

Dietitian 1: No, we don't have a group right now, maybe we should have, but in that case we missed it. And [the facilitator] is not here now, so it's sort of been left hanging in the air. For the most part we were doing... PES statements for a long time, and then we sort of tried to get to know the other parts, but somewhere there, it all got dropped or whatever you say.

Dietitian 2: And then it went over to the new EHR system, we sat and discussed that, and then the whole thing died [laugh].

The adaptation of the preset keywords in the EHR system, and the inclusion of roll-list Nutrition Diagnoses was seen as facilitating the implementation:

Our templates [in the EHR system] have been changed to follow the NCP now, this process. ...Just, having it in the health care record now, that also helps, because before you had to look back and forth, but now it all sort of comes in a natural sequence.

### Case C

**Basic Information.** This dietitian works as the only dietitian at a small multiprofessional primary health care center. She does not use the NCP/NCPT.

**Implementation Strategy.** This dietitian went to some NCP orientation courses, and several times she decided to start implementation of the NCP because she believes this system has many benefits. However, due to a stressful situation, the implementation attempts have not yet been successful.

I went to some introductory education sessions, but as I don't use it [the NCP/NCPT], I forget very quickly, and you feel a certain aversion toward browsing in the

## RESEARCH

book. I find it is very difficult to navigate [in the NCPT manual], and, well, when you are in a hurry, you just write notes as usual because it is much quicker. But some day, I will also write using this; that is, my plan.

Time was mentioned as an important barrier for NCP use:

If I just write as usual, then I don't need to sit down with the book and search. That can take like 15 minutes sitting there, and then you still don't find the right thing. No, then you get so stressed, so you are like, now I have to finish this note, because now it's time for the next [patient]. So it gets harder if you have patients, when you are like fully booked and don't have any pauses in between.

**Leadership, Group and Colleagues, Evaluation.** The manager at this primary care center is not a dietitian and is unfamiliar with the NCP/NCPT. The management did not initiate the NCP/NCPT implementation, and no goal was set and no evaluation was performed. The dietitian has no dietetics colleagues to discuss and collaborate with, and she experiences difficulties in managing the implementation herself. Although she is a member of an e-mail list for primary care dietitians, this does not provide any support with NCP-related issues.

Dietitian: I can imagine this is being implemented in larger settings, but my manager has no idea what this is. Not a chance, no, there is nothing initiated from above, no "now let's work with this NCP," but it's rather up to me... because I don't have any colleagues either working with it.

Other dietitian in the group: Do you have a network to discuss the NCP?

Dietitian: Well, we do have a network [an e-mail list], but I've never seen a question about the NCP there. It is more practical questions about things to do with nutrition care.

**EHR.** At this primary care center, the EHR system is based on a structure for chiropractors. Therefore, the key words do not support the NCP structure, and the dietitian has no possibility to influence this.

Other dietitian in the group: Can you add your own key words to that EHR system?

Dietitian: No, I can't, and it is a German system, so those who can update it are in Germany. It's not prioritized, you could say, there are so many other things to prioritize.

## DISCUSSION

The focus group discussions that were analyzed and the cases that are presented represent a broad spectrum of implementation experiences and organizational settings. An important finding is that there is a diversity of environmental aspects, which in turn seem to lead to several different needs from the NCP/NCPT implementation process. These

experiences will be discussed here in relation to the i-PARIHS context element and earlier implementation studies.

## Leadership

The leadership and implementation strategy in Case A, at a smaller hospital, seemed less hierarchical, and more inclusive than in Case B, at a larger hospital. According to the i-PARIHS framework, an inclusive and promoting leadership leads to more successful implementation than a task-driven, hierarchical leadership. According to Vaccaro and colleagues,<sup>25</sup> in larger organizations there is often a need for a more inclusive leadership when presenting innovations, to compensate for the organizational complexity. At the same time, as in Case B, a larger organization often has a more hierarchical organization with a less-personal approach between management and employees.<sup>26</sup>

Case C, on the other hand, describes an organization where the dietitian stands alone in a multiprofessional environment, with no dietitian colleagues or support from the management. In addition, this dietitian had no possibility to influence the EHR structure and key words. Several of the dietitians in this study worked under similar circumstances. Over the past decades, multiprofessional teams have become an approach that is commonly used, where the dietitian is often included in or otherwise works as a consultant to the team.<sup>27,28</sup> In qualitative interviews, some American dietitians, especially in rural areas, expressed feeling professionally isolated and missing peer support.<sup>29</sup> Studies show that managers in multiprofessional health care environments must be engaged in a general vision rather than with details regarding the interests of specific professions.<sup>30</sup> However, in this case, the lack of specific dietetics support seems to have been perceived as a barrier to implementation. Porter and colleagues<sup>31</sup> found supportive management to be a key element for successful NCP/NCPT implementation. In i-PARIHS and in other literature regarding leadership in relation to successful implementation processes in health care, it is often assumed that the implemented change is initiated by management.<sup>32</sup> In Case C and several of the included settings, this implementation was instead initiated by the dietitians themselves. This might also be the case for other dietitians working in multiprofessional settings, and with a manager from another profession. Thus, in the NCP/NCPT implementation, there is a need to identify alternative strategies supporting those working as the only dietitian in a multiprofessional environment.

In earlier studies, time has been mentioned as a barrier to implementation as it was by the dietitians in this study.<sup>13</sup> However, in Case A, the dietitians seemed to have overcome this, whereas in Cases B and C a lack of time seemed to constitute a problem. Thompson and colleagues<sup>33</sup> explored the concept of busyness or lack of time, suggesting that it consists of both physical and psychological dimensions, which are influenced by environmental, cultural, and intra- or interpersonal aspects. These authors further argued that "lack of time" often does not refer to a lack of actual clock hours, but rather a lack of organizational and collegial support. Also, according to Tyden and colleagues,<sup>34</sup> who interviewed nurses concerning barriers to implementation, "lack of time" often actually meant a lack of approval by peers and/or a lack of interest. Thus, although not diminishing the

actual time pressure that many health care professionals work under, the approach to this time pressure and its effect on implementation success might differ depending on the organizational and management structure.

### Group Culture and Learning Environment

Group culture is considered an important aspect in the implementation process.<sup>32,35</sup> For example, Australian dietitians emphasized peer groups as valuable elements in the NCP/NCPT implementation.<sup>13</sup> According to Manley,<sup>36</sup> the culture at individual, team, and organizational levels creates the context for practice. In his work on learning organizations, Senge<sup>37</sup> argued that organizations that are built on a shared vision, with the opportunity for dialogue and discussion among the employees, will be responsive and will adapt to challenges such as the implementation of an innovation. Again, working as the only dietitian in a multiprofessional workplace, as in Case C, may not provide the supportive culture needed to accomplish a successful NCP/NCPT implementation. In Cases A and B there were enough dietitians at the same workplace to constitute a dietetics culture, which seemed to differ between the two cases. Dietitians in case A jointly constructed a picture of a coherent dietetics group, characterized by a receptiveness and willingness to change, whereas the culture in Case B seemed more ambivalent, with several dietitians feeling reluctant toward change. The larger size of Case B might be one aspect affecting this difference in group culture, because a larger group logically leads to a less coherent culture. In earlier studies, hospital size and group culture have been found to be connected, because smaller organizations have been observed to more easily create cultures positive to change and implementation of innovations.<sup>38</sup>

### Evaluation and Feedback Processes

According to McCormack and colleagues,<sup>32</sup> measurement is a complex but necessary aspect for environments aiming to implement a change. To capture the complexity of an implemented innovation, a variety of different measurement parameters and methods should be used. For example, instruments for assessing the use of NCP in EHR have been developed for such an evaluation.<sup>39</sup> In Cases A and B, goals had been set regarding the implementation of Nutrition Diagnoses. However, the achievement of these goals was not measured in either of the groups. Thus, the multiperspective evaluation as described in i-PARIHS was not included in the implementation strategy at any of the dietetic settings. It has been argued that the EHR used at most Swedish dietetics settings facilitate NCP/NCPT implementation and enable evaluation through systematic collection of information.<sup>14,40</sup> However, in the settings included in this study, these opportunities seem not to have been fully exploited.

### Further Discussion

Some further aspects of this study should be elucidated. To enable a clearer focus and a deeper analysis, only a minor part of the i-PARIHS framework was used. Thus, in this article, we have only considered the context at a local level in the dietetics settings included. A full, comprehensive evaluation of the implementation at the setting concerned would also

have included several other aspects, as described in the i-PARIHS framework.

In addition, the qualitative approach used does not allow for generalization of the results. Thus, we do not claim to have revealed the essential truth regarding the NCP implementation, or even the situation at the settings included, but we have instead aimed to highlight a variety of environmental aspects as expressed by Swedish dietitians, and to discuss these aspects in relation to the ongoing NCP implementation.

Earlier American and Australian literature suggests that Kotter's eight stages of change can be used for successful NCP/NCPT implementation.<sup>31,41,42</sup> We agree that this model might be useful for NCP/NCPT implementation among dietitians, but also recognize that it should be used in a flexible way, allowing for adjustments according to the specific needs of different clinical settings where dietitians work alone or in multiprofessional teams. These could in turn be identified using the i-PARIHS framework. However, both Kotter's eight stages of change and the i-PARIHS framework assume that management initiates the implementation. This was not the case in some of the workplaces included in this study, so implementation at these workplaces might need to be seen and further analyzed from other perspectives.

### CONCLUSIONS

Using the i-PARIHS context element in the analysis has helped in our identification of diverse dietetics-related environmental aspects in NCP implementation. It was obvious that working as the only dietitian in a multiprofessional workplace brought with it difficulties in the implementation process, relating to nonexisting support from colleagues or management. Also, dietitians at different types of workplaces had different experiences regarding leadership, group culture, and evaluation strategies, which seems to play a major role in the implementation process. Managers and dietitians initiating NCP implementation need to be aware of how to create an inclusive implementation leadership style and a supportive group culture, and how to ensure that the appropriate feedback processes and evaluation are performed. More studies are needed regarding this subject, but our results, together with earlier implementation literature, indicate that the challenges in the implementation process should be approached differently depending on the type of organization. Therefore, we believe that the NCP/NCPT implementation strategies used must be tailored and carefully thought out so that they are applicable to the specific dietetic setting being targeted.

In the NCP/NCPT implementation process, there is clearly a discussion needed regarding support for those working as the only dietitian in a multiprofessional setting. We also hope that the insights gained through this study will provide guidance for forthcoming studies and for the choice and evaluation of implementation strategies in different dietetics environments.

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**STATEMENT OF POTENTIAL CONFLICT OF INTEREST**

No potential conflict of interest was reported by the authors.

**FUNDING/SUPPORT**

This project was funded through the Faculty of Social Sciences, Uppsala University, Uppsala, Sweden.

**ACKNOWLEDGEMENTS**

The authors thank all dietitians who participated in the focus group discussions. We also thank Agneta Andersson, PhD, RD, and Afsaneh Koochek, PhD, RD, for their valuable contributions to the conception and performing of this study, and Åsa von Berens, RD, for observing the focus group discussions.