Transformative agency and tensions in knowledge management - a qualitative interview study for nurse leaders

Lunden, Anne
MRS. ANNE MARITA LUNDEN (Orcid ID : 0000-0002-0964-9127)

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Anne Lunden, PhD-student, MNS, RN, Nursing Director
City of Helsinki, Department of Social Services and Health Care
University of Eastern Finland, Department of Nursing Science
Kyläkunnantie 70 b
FIN – 00660 Helsinki
Finland
Europe
anne.lunden2@gmail.com
tel.:+358 503254228

Marianne Teräš, PhD, University Lecturer, Docent in Adult Education
Stockholm University, Department of Education
Frescativägen 54
10691 University of Stockholm
Sweden
marianne.teras@edu.su.se
tel.:+46-72 147 1276

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Tarja Kvist, PhD, Associate Professor, RN

University of Eastern Finland, Department of Nursing Science
PO Box 1627
FIN – 70211 Kuopio
Finland
Europe
tarja.kvist@uef.fi
tel.: +35840 3552623

Arja Häggman-Laitila, PhD, Professor, Nurse Director

University of Eastern Finland, Department of Nursing Science
City of Helsinki, Department of Social Services and Health Care
PO Box 1627
FIN – 70211 Kuopio
Finland
Europe
arja.haggman-laitila@uef.fi
tel.: +358 40 355 2749

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Conflict of interest

The authors declare that there is no conflict of interest

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Author contributions

AL, AHL, MT, TK were responsible for the study conception and design. AL performed the data collection. AL, AHL, MT performed data analysis. AL, AHL were responsible for the drafting of the manuscript. AHL, TK, MT, made critical revisions to the paper. AL, AHL obtained funding. AHL, TK, MT supervised the study.

Abstract

Aim
The purpose of this study was to describe Finnish nurse leaders’ perceptions of and experiences with knowledge management.

Background
Health science research has traditionally focused on knowledge transfer and research evidence instead of knowledge management, culture, and organizational learning. Systematic reviews indicate a lack of awareness about nurse leaders’ activities in knowledge management.

Design
Qualitative interview study according to the consolidated criteria for reporting qualitative research (COREQ) (See Supplementary Table 1).

Methods
Data were collected at a Finnish public, social, and healthcare organization from 33 persons in 2015 and 2017 through 35 individual interviews and 7 focus groups. Data were analyzed by thematic analysis.

Results
Nurse leaders’ daily knowledge management activities included assurance of smooth work functions and decisions about sudden changes. When managing knowledge promotion, nurse leaders focused on the near future and served information-providers, coaches, and developers of operating culture. Anticipatory management of knowledge requirements emphasized nurse leaders’ roles as assessors and visionaries. Tensions while managing knowledge were related to: changes in clients’ service needs, insufficient structures and tools to support the assessment and joint development of competence, time and information management, the operating culture, and nurse leader support. Participants reported only few attempts to solve tensions and therefore little to no transformative agency.

Conclusion
Nurse leaders prioritized daily knowledge management over management of knowledge promotion and anticipatory management of knowledge requirements. Knowledge management in nursing is a complex task requiring a command of different kinds of agency and related leadership styles. The
structures, processes, and tools supporting knowledge management should be developed to ensure that activities are systematic.

Relevance to clinical practice
A description of nurse leaders’ perceptions of and experiences with knowledge management could improve recognition of nurse leaders’ agencies for knowledge management, identification of related tensions, and application of lessons learned from tensions. This description could also promote nurses’ professional competence and supplement nurse leaders’ training.

Key words
Knowledge management, nurse leader, transformative agency, tensions

Introduction
Knowledge management (KM) is concerned with building an organization’s core competence and understanding strategic know-how (Alavi & Leidner 2001). It is based on learning processes associated with exploration, exploitation, and sharing of human tacit and explicit knowledge using appropriate technology and cultural environments (Jashapara 2005). KM has only been a topic of academic interest since the 1990s (Nonaka & Nishiguchi 2001, Davenport et al. 2003), and has been defined in various scientific fields from the perspectives of information transfer and use, strategic and quality management, and organizational culture (Wallace 2011). The definition of the concept varies widely (Dulipovici & Baskerville 2015).

Sibbald and Kothari (2015) defined KM as a strategy and process used to organize knowledge and support leadership. Knowledge can be generated within an organization and then accessed from within or outside that organization. Knowledge is transferred formally, through teaching and practice, or informally, through learning occurring alongside work. Validated knowledge is embedded in processes, practices, and instructions. KM is a process through which the management of work tasks is enhanced by acquiring, sharing, and creating new knowledge (Sanchez 2004). Knowledge comprises intangible resources of individuals and organizations that increase productivity and effectiveness (Grant 2013) and facilitate the renewal of operations (Alavi & Leidner 2001).

Background
The health sciences field has adopted the KM concept later than other scientific fields. The healthcare sector has traditionally focused on knowledge exchange and transfer of research evidence instead of on broader issues such as knowledge management, culture, and organizational learning (Ferlie et al. 2012, Karamitri et al. 2017). Karamitri et al. (2017) stated that successful KM in healthcare gains its maximum value by being patient-centered. For this to occur, learning strategies, means of knowledge transfer, interaction between patients and healthcare personnel, effective leadership, and organizational memory are of great importance.

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One strong research tradition focuses on the factors preventing and promoting the use of research evidence in nursing (Carlson & Plonczynski 2008, Saunders & Vehviläinen-Julkunen 2015). A growing field of research also focuses on evidence-based practices (EBP) and interventions (Häggman-Laitila et al. 2016, 2017). Researchers know that nurse leaders are aware of the importance of EBP. However, the level of nurse leaders’ understanding of the association between their roles and responsibilities and EBP has not been determined. Moreover, some observations indicate that leaders are passive and insufficiently committed to facilitating EBP (Wilkinson et al. 2011, Melnyk et al. 2016).

A systematic review (XXXX) of knowledge management studies in nursing indicated that the nurse leader’s role is understudied. Only five of eighteen studies included some description of the nurse leader’s role, categorizing the role as either that of a facilitator and/or an organizer. Systematic reviews by XXXX and Karamitri et al. (2017) corroborate previous systematic reviews on EBP (Gifford et al. 2007, Sandström et al. 2011) highlighting that KM is facilitated by an organizational culture that supports collaboration, information-sharing, and joint learning. Leaders should develop organizational culture, operate as role models, provide tools for KM, and reward people for their achievements. Another systematic review (XXXX) identified additional factors that promote KM: the commitment of supervisors to their tasks and the clarity, credibility, and responsibility of their roles. Ongoing development of supervisors’ management skills also promoted KM.

On the other hand, KM was prevented by an organizational culture where learning was not supported, the motivation to learn was low, and knowledge acquisition was difficult. Other preventive factors included insufficient time allocation for KM and development work and insufficient human resources. Studies on useful measures for promotion of competence and of facilitative organizational cultures remain sparse (Sibbald & Kothari 2015, Ham 2016). More research knowledge is needed to ensure that leaders can successfully implement new practices (McGowan 2016).

Nurse leaders’ KM-related activities manifest with their choices, and their manner of exerting influence and making statements. Their agency is shaped by their work history, experiences, professional knowledge and competence (Eteläpelto et al. 2013). Healthcare operating environments are constantly transforming, posing a challenge to KM in nursing. The challenges and barriers associated with change generate tensions between the currently-used approaches and new target approaches. Factors preventing and complicating nursing activities cannot always be solved using currently-available operating approaches and competence, which also creates tension in nursing activities. Tensions are key for initiating change and development (Engeström 2005, Engeström & Sannino 2011).
Nurse leaders’ experiences with KM and related tensions, and their goals to find solutions for improvement in these areas, have not been explored. In this study KM is considered a main concept that includes patient-care know-how, competence development, and leadership in EBP (Alavi & Leidner 2001, Ferlie et al. 2012, Sibbald & Kothari 2015, Karamitri et al. 2017). This study is part of a larger research project on KM and evidence-based nursing. The results of the larger project will be reported in two articles. This is the first of the two and it focuses on KM.

**Study purpose and research questions**

The purpose of this study is to describe nurse leaders’ perceptions of and experiences with knowledge management (KM) in nursing.

1. What kind of agency do nurse leaders possess when practicing knowledge management?
2. What kinds of tensions are involved with agency related to knowledge management?
3. What kinds of initiatives have leaders implemented to solve tensions when practicing knowledge management?

**Design**

A qualitative interview study conducted according to the consolidated criteria for reporting qualitative research (COREQ) (Tong et al. 2007) (See Supplementary File).

**Sample, settings and data collection**

This study was conducted at the biggest Finnish public, social, and healthcare organization in conjunction with supplementary training (8 course credits) provided by a university. The goal of the training was to introduce participants to EBP and its implementation. The training was organized to fulfill the organization’s strategic goals and was intended for all professionals that cared for patients.

Data were collected in two phases in 2015 and 2017 with 35 individual interviews and seven focus groups. In total, 33 persons with leader status participated in the study. At the time of the study, participants were working at emergency services, acute care units, shelter homes, dental care facilities, and occupational therapy units. During the first phase, 19 persons who had registered for the EBP training were individually interviewed, and 11 persons who supervised these 19 individuals participated in four focus-group interviews. During the second phase, which occurred at the end of the training, face-to-face individual interviews were conducted with 14 training participants and three focus groups with seven supervisors. At the second phase, one supplementary training attendee and two supervisors were interviewed for the first time.

A guide was developed for the theme interviews conducted during the first phase based on a systematic literature review (XXXX). The interview themes (Table 1) were clarified according to key questions which were used as necessary. The guide for the interviews conducted during the second phase was developed at the end of the training based on the results of the interviews that had been

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conducted at the start of the training. The purpose of these later interviews was to further expand and specify the themes.

Data were collected by four interviewers who collaborated to plan the interview themes. Before conducting the interviews, the interviewers familiarized themselves with the interview themes and agreed on interview practices. One pilot face-to-face interview and one pilot focus-group interview were conducted before performing the actual interviews for the study. Interview questions were reorganized and clarified based on the pilot interviews. In total, 785 pages of data, transcribed verbatim from the interviews, were collected.

Training attendees were younger than their supervisors, and had more nursing experience and less leadership experience than their supervisors. Training attendees also had more direct subordinates than their supervisors. Most training attendees and their supervisors held master’s degrees from a university and worked in leadership positions at different levels of nursing. Of all the training attendees, four worked in expert positions outside of nursing at the time of the interview. Only one training attendee interviewed had no leadership experience (Table 2.).

**Ethical considerations**

The organization at which this study was conducted granted a research permit for this study. Participants received both verbal and written information about the study and gave written consent to participate. Participation was voluntary, and participants had the right to refuse to participate in the study or to withdraw their agreement to participate at any time (World Medical Association 1964). Interviewee’s names were replaced with code names in the interview transcripts to ensure anonymity of the participants. The names of the interviewees’ organizations and units were not reported. The gathered data were kept in locked files, and only researchers had access to the material (Polit & Beck 2014).

**Data analysis**

The data were analyzed using thematic analysis (Vaismoradi et al. 2013, 2016). During the initialization phase of the analysis, the interviews were read through several times to form an overview of the data, to internalize their contents, and to detect preliminary themes. During the construction phase, data were classified into categories. The categories were labelled to identify themes. During the rectification phase, near-complete themes were formed, and the researcher took a break from the analysis process to create distance between herself and the data. The theme development process was subsequently revised, assessed, and verified by revisiting the data and ensuring acceptance of the themes formed. During the finalization phase, a clear story line was created based on the process of combining themes and sub-themes.
Results

Nurse leaders’ views on and experiences with knowledge management (KM) were organized into three main themes: daily knowledge management, management that promotes knowledge, and management that anticipates knowledge requirements (Figure 1). In total, seven subthemes describing the main themes were identified (Table 3). Since the goal of KM in the organization studied was to implement change and renew competence, transformative agency in KM was considered a core theme that unified the three main themes. Interviewees described the contents of the themes by either reflecting on their own activities or describing what KM is and what it should be. Associated tensions were identified for all three main themes.

Daily knowledge management, related tensions, and solution attempts

Daily KM is primarily concerned with the competence of individuals or individual work units (Figure 1). In the context of daily KM, nurse leaders act as decision-makers and verifiers of minimum competence (Table 3). Daily KM is a form of leadership occurring in the here-and-now, ensuring smooth flow of operations when sudden changes occur, and intervening during erroneous activities. When referring to daily KM, the interviewees used terms like “ad hoc” management and “putting out fires”.

“Sure, it [daily knowledge management] can be something such as changes happening in the operating environment. Like what happened with us. We had refugees coming in from all over the place.” Supervisor 16

The interviewees expressed that nurse leaders must have strong substantive knowledge of nursing and must vigilantly monitor situations in the operating environment when reacting to changes in the treatment and care needs of patients and clients and ensuring employee competence. Leaders must often make quick decisions and reallocate human resources to ensure provision of appropriate treatment to patients. The interviewees considered sudden changes in human resources, the operating environment, and patient care to be loaded with tension because, as nurses, they are responsible for competently conducting their work and for treating patients well whatever the situation. Human resources were often insufficient, and personnel could not always be given work tasks that best aligned with their competence. Attempts have been made to increase versatility in employee competence to ensure uniform quality of treatment and care in all situations.

Management that promotes knowledge, related tensions, and solution attempts

Management that promotes knowledge is focused on the near future, and concerns individuals or work units (Figure 1). The nurse leader acts as an information provider, a coach, and an influencer of the operating culture (Table 3). In the role of information provider, the nurse leader disseminates new knowledge and good practices in his or her unit, and transfers these to nurse leader partners as well, with the goal of using evidence-based knowledge. The interviewees expressed that tensions emerge due to difficulties obtaining knowledge since not all leaders have access to databases, for instance. The respondents also found it difficult to assess knowledge quality and reliability.

“And, of course, there’s this changing world and the devices used for producing knowledge, meaning that there’s just so much of all this information. We have to have a totally different capacity to see what is reliable....and assess if it’s going to increase our proficiency.” Supervisor 8

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The interviewees aimed to allocate time to the promotion of knowledge by organizing their work tasks and time management and establishing forums for sharing good practices. Some reported succeeding at these endeavors. The respondents also used their free time to familiarize themselves with new information. Sudden changes in daily operations were sources of tensions. Responses to these sudden changes were prioritized over tasks related to management that promotes knowledge. Tensions were also caused by a lack of development resources and insufficient capacity for creating operating models and structures that promote competence.

"I mean that [development] is not the first thing you're going to do as no one's life depends on it....it's not part of the everyday work or even the most important [part] of management....so where are you going to find the time...that's probably the biggest challenge now and in the future" EBP training participant 29

In their roles as coaches, nurse leaders enable, inspire, and support their employees to expand their competence. The qualification provided by a vocational degree is insufficient on its own for ensuring an individual possesses the competence required for working in different work units. According to the interviewees, nurse leaders as coaches are expected to have a vision of the overall required competence and an ability to rouse their employees to pay attention to target areas in the development of competence.

"In some way, the leader is like a coach who is responsible for right direction of the knowledge management ... and leader as a coach is responsible that nurses does the right things right ways." EBP training participant 6.

"Everyone is responsible for developing their own competence and leading their own work. But it's probably my duty as a nurse leader to see the whole and, on the other hand, create opportunities for learning and then wake people up to these situations...And then there's this sort of collective competence [promotion], that's probably more like something where my work is needed." EBP training participant 19

The interviewees expressed that management with a coaching approach should: engage all employees, share responsibilities, and promote communal learning. Leaders should encourage and support their employees to seek new knowledge independently by demonstrating this themselves. Some employees felt they needed more support from their leaders, and some leaders felt a sense of inadequacy about the support they provided. These feelings of employees and their leaders caused tensions related to knowledge management.

"For middle management, then, there is the challenge of how to support those people who are leading the daily practice there. That's an area where I at least personally feel a sense of inadequacy, [questioning] whether my skills are sufficient." Supervisor 4

In developing an operating culture that promotes knowledge, nurse leaders encourage employees to bring their competence forward, to attend training, and to experiment with new practices. They appreciate development ideas from the staff. The leaders perceived competence as a form of employee capital, and they believed that promotion of competence increased occupational wellbeing and appreciation of the employer.
“The fact that we provide good access to training here and you get new ideas there, that’s something that increases the commitment of our staff and helps them enjoy it here, that’s something very important for them. And that’s also something I keep bringing up a bit, having competence be your own capital, something no one’s going to take away from you, so reading and developing yourself is always worth it. And of course, we do get to be proud of our competent staff. That also raises the status of leadership, having such a great group of staff [who] are committed and capable and have this genuine proficiency.” EBP training participant 3

An operating culture that promotes competence manifests as a positive attitude towards development in the working community, acceptance of evidence-based practice, approval of experimentation, and a team approach to completing tasks. Nurse leaders were considered responsible for recognizing targets for renewal, launching changes, and acting as change agents. An operating culture that constantly assesses its own activities and considers whether these are effective and evidence-based was considered worth pursuing.

“The way the operating culture should be is that we must keep determining what it is, are we acting in a way that is effective and genuinely evidence-based. Kind of like challenging yourself all the time.” Supervisor 1

According to the interviewees, the operating culture did not always support the promotion of knowledge, which caused tensions. The interviewees reported attitudes that made networking complicated. People were sometimes uncompromising and unwilling to accept the knowledge and competence of other professionals. Multi-professional competence had not been fully implemented in patient work, and knowledge promotion for the entire working community was difficult. The interviewees found it challenging to inspire the entire working community and to obtain its commitment to improving competence, as not all employees considered competence improvement necessary. These employees were satisfied with the activities of the work unit and the current state of their competence.

“Everything is so well, we know everything so great, so why change it when everything’s going so well here”...so it’s a pretty challenging thing to do, how to talk to these people so that they would be the ones to say that I’ll do it, yes, you’re completely right, that they wouldn’t just show up because I tell them to, that they have to, but that I could somehow make them genuinely enthusiastic about it...” EBP training participant 11

Anticipatory management of knowledge requirements, related tensions, and solution attempts

Management that anticipates knowledge requirements is a form of visionary leadership that occurs long-term and involves support and assessment of the renewal of services. It targets several work units or the entire organization (Figure 1). Anticipating competence needs requires a vision of the kind of competence that will be required in the future as well as knowledge of employees’ current competence (Table 3). The interviewees expressed that competence assessments should be systematically focused on overall nursing competence in the working community as well as the competence of individual workers. The study participants reported that different approaches were used to assess competence, including score cards, competence maps, performance appraisals, and
assessments of work input. Some methods were considered obsolete and overly general for assessing the special competence required for patient care or client work in a given operating unit. However, at the unit level, some good, new, and shared assessment approaches that included employee involvement were discovered.

"But those forms, time has, like, passed them by. The last time around, we were focused on competence, discussions on competence. That means that we were discussing it, all of us agreeing about the themes, what it important... what is connected to these new competence requirements around here. Then the performance appraisal was based on what the employee personally thinks, what they have and what they are still missing. And whether they are ready to commit to the new operating model. Supervisor 16

The participants also believed that the inadequacy of the tools for assessing competence impeded the assurance that: employees would consider their work meaningful, employees would enjoy their work, and the quality of nursing would be as intended.

“You can utilize competence and make sure to retain this, work engagement, this flow of work ... and, then, on the other hand, [also make sure] that the competence isn’t much weaker than the task....as [when it is,] it’s frustrating and causes sickness absences and....poor quality there, in nursing...” EBP training participant 9

Nurse leaders use competence assessments to ensure that the strategic goals of the organization are met, and that the quality of work with clients and patients is consistent. Leaders use assessments to ensure that the basic competence of employees is sufficient, and to pay attention to competence areas that employees are personally interested in developing. In anticipatory management, the slow pace at which strategic goals were reached and difficulties verifying efficiency were sources of tension.

“If you want to lead competence, you need to have a pretty systematic way of charting those things, knowing what competence your people have...then you have to examine if their competence is in balance with the whole picture...that’s still always a requirement, the supervisor having the knowledge of the exact thing you need there.” EBP training participant 5

When envisioning the competence needs of the future, nurse leaders anticipate changes in the health and structure of the population, the development of the nursing field, as well as changes in the service system and the operating environment. This process requires leaders to actively seek and use new knowledge.

“That’s what the job is and for all of us, competency development is continuous. But when the customer structure changes, the operations change... that all requires this sort of constant alertness and more investments in that, and also considering how we’re going to [work], it’s not just about people participating in training.” EBP training participant 12

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Anticipatory management of knowledge aims to formulate an overall picture of future changes and the need for competence development that these changes will require. Simultaneously, there is a desire to keep one’s leadership and industry current. However, participants reported that tensions emerge in this context due to an increasingly rapid pace of changes and the fact that many different changes were concurrent.

“The way this working environment is, is that it changes incredibly fast as a whole at the moment, including our leadership structures, there’s new knowledge coming in all of the time and the legislation is changing at this incredible speed all the time...and, at the same time, it all impacts competence and those requirements and how we will look at our clients.” EBP training participant 16

Discussion

This study produced new information about knowledge management (KM) in nursing and related tensions, and about attempts to solve the tensions based on the experiences described by nurse leaders. No previous qualitative studies have been conducted on this topic. In fact, the research tradition on KM in nursing is generally lacking. Due to the lack of research knowledge, the role of nurse leaders in promoting competence in evidence-based practice is considered unstructured (Wilkinson et al. 2011, Melnyk et al. 2016).

A definition for the concept of KM in the context of nursing science is not yet established (Dulipovici & Baskerville 2015). This study elucidated concepts of nurse leaders’ activities in daily KM, management that promotes knowledge, and anticipatory KM requirements for future, and identified seven different types of agency. Furthermore, tensions associated with nurse leaders’ KM-related activities were empirically described in this study.

Tensions associated with KM were related to: changes in the service needs of clients and patients, lack of structures and tools supporting the assessment and joint development of competency, management of information, the operating culture, and the nurse leaders’ time management and support. Tensions were perceived as two opposing forces or dynamics that trigger development and learning. Therefore, the goal is not to eliminate them but, instead, to explore and examine them to determine their potential, and to use them to create solutions to existing problems. This approach to tensions constitutes transformative agency (Engeström 2005, Engeström & Sannino 2011, Eteläpelto et al. 2013).

Tensions were identified between the present situation and future needs, for example a need to update knowledge; they manifested as practical problems and challenges raised by the interviewees. In the data, tension markers included, for example, interviewees referring to something that “should”, “must”, or “needs to” be done in the future. Transformative agency must involve tolerance and identification of tensions so that KM practices can be developed for handling the future needs of nursing leaders (Engeström 2005, Engeström & Sannino 2011, Eteläpelto et al. 2013). This study
revealed that only few attempts had been made to solve the tensions, thus the developmental potential associated with solving tensions were not used in KM, and transformative agency was lacking. Further research should focus on analyzing tensions, the efforts made to solving them, and application of the lessons learned from the solutions to daily operations.

Daily KM occurred in the present moment and environment and involved the assurance of smooth flow of operations and decision-making during sudden changes. Management that promotes knowledge was focused on the near future. During this process, the nurse leaders’ work included information transfer, coaching, and development of the operating culture. In turn, management that anticipates knowledge requirements looked ahead to the future and emphasized the leader’s task as an assessor and visionary. Previous studies also highlighted that leaders should equally promote knowledge acquisition and management as well as the dissemination of current information among the working community (Innis & Berta 2016, Venkitachalam & Willmott 2017). The leader’s role in an operating culture that supports competence was also emphasized (Wilkinson et al. 2011, Melnyk et al. 2016, Karamitri 2017). According to Crozier et al. (2011), visible, visionary, strong leadership and multidisciplinary collaboration are required to transform activities so they are research- and innovation-based.

According to a systematic review by XXXX, nurse leaders serve as organizers and facilitators in KM. In this study the interviewees emphasized nurse leaders’ role as coaches. Previous studies revealed that emotionally intelligent nurse leaders who use resonant and empowering leadership styles have succeeded at coaching conversations with their staff. The prerequisites for successful coaching conversations are that: the staff is accustomed to having coaching conversations; the conversations focus on performance expectations and daily activities; and the participants feel that the conversations add value to their career development and organizations (Batson & Yoder 2012, McNamara et al. 2014, Cummings et al. 2018).

Different types of agency in KM require nurse leaders to apply different leadership styles, which, in turn, requires flexibility and diverse competence. For instance, when promoting competence, decision-making in suddenly-occurring situations requires new emphases on the cooperative relationship between the nurse leader and employees and employee involvement. As in previous studies (Ellen et al. 2014, Higuchi et al. 2017, XXXX), time management issues, lack of support, and lack of readiness for obtaining information were identified as tensions associated with the capacities of nurse leaders. A study by Nilsson et al. (2018) demonstrated that successful implementation of a renewal requires resource allocation, leadership committed to development, and decision-making authority. It is noteworthy that, as it relates to KM, the research participants made no reference to tensions arising due to their leadership styles, decision-making authority, or personal competency. This inspires reflection on the kinds of tools that should be developed for nurse leaders’ self-assessment related to KM. Future intervention studies should explore this topic.

Although nurse leaders attempted to anticipate and promote competence, they often focused on daily KM and “putting out fires”. Sibbald and Kothari (2015) concluded that KM will occur on an “ad hoc” basis unless it is supported by clear structure and sufficient managerial support. This trend makes it difficult to measure KM and the effectiveness of the resources spent on it. In this study, daily KM and management promoting knowledge were mostly focused on individuals. By contrast,
managing anticipation of knowledge requirements involved the entire organization and its operating environments. KM should not focus only on individuals, but should, like anticipation of knowledge requirements, involve the working community and organization; this would facilitate promotion of joint learning and multidisciplinary networking (Venkitachalam & Willmott 2017). Structural empowerment provides a theoretical framework for organizational development and produces psychological empowerment at the individual level (Goedhart et al. 2017). In addition to provision of learning and participation opportunities for employees, factors that structurally empower a working community include: access to information; support from peers, supervisors and the members of a multi-professional working group; and sufficient resources. According to the review by Goedhart et al. (2017), when nursing staff feel empowered, their work with patients and clients will be of high quality. Developing structures would thus appear to bring significant benefits for work with clients and patients in connection with development of optimal competence. Organizations should invest in structural development of their working community.

This study also demonstrated that KM produces many other important benefits in addition to proficiency development at the level of the nursing staff. Study participants believed that KM was associated with the promotion of occupational wellbeing of nursing staff and the attractiveness of their workplace. Among others, a review by McGilton et al. (2016), which focused on the nurse leader’s activities in directing patient work, supports these connections. According to the review, a leadership approach that provides resources for the nursing staff, encourages them, and that includes giving feedback regularly are positively associated with: employee satisfaction with work, occupational wellbeing, work efficiency, low attrition rate, and patient satisfaction.

**Strengths and limitations**

The research participants could be perceived as key informers since they had all worked or were working in leadership positions and, together, had an abundance of leadership experience in various working communities. The participants also worked at different organizational levels and were committed to developing competence in evidence-based practices. The credibility of the data collection methods was strengthened by instructing the interviewers to use uniform practices and by conducting pilot interviews based on the study themes. Rigor of the data was ensured by interviewing participants twice, and the interview themes were guided by a systematic review conducted on the topic and an analysis of the first round of interviews. The data collection methods included both individual and focus group interviews to ensure that the data obtained would be as versatile as possible. Interviewees were allowed to familiarize themselves with the interview themes beforehand. The interviews were conducted in the interviewees’ offices or in a space reserved specifically for the interviews to prevent interruptions. Sufficient time was reserved for each interview. The interviewers prepared notes based on the interviews and these were used during the analysis (Polit & Beck 2014).

The interview data of the training participants and their supervisors were first analyzed separately according to the date of data collection to ensure that all varying perspectives describing the topic were accounted for. The data was examined as a whole only once. The researchers agreed that data saturation had been achieved since the themes describing the results were found in both sets of data (collected in 2015 and 2017, respectively). Accuracy of the data analysis and conceptualization of the themes improved with research group meetings. The connection between the results and the raw data is indicated in this text using excerpts from the original transcripts to increase the
credibility and authenticity of the study. Conceptualization of the results was used in effort to ensure transferability of the results (Polit & Beck 2014).

Conduct of the study in only one large organization, albeit one including various operating units, may be considered a limitation of this study, as knowledge management is assumably carried out differently in other organizations.

Conclusion
In nurse leaders’ daily work, activities related to knowledge management (KM) are focused on ensuring necessary competence and responding to sudden changes. KM also involves knowledge transfer, coaching, and development of the operating culture for the near future, or longer-term activities in anticipation of future knowledge requirements. Nurse leaders often prioritized daily KM over the management of promoting knowledge and anticipation of knowledge requirements. Their activities were characterized by an ad hoc approach. The nurse leaders in this study were unable to use the development potential of the tensions arising from KM activities, and provided few ideas for solving these tensions, causing little to no demonstration of transformative agency. KM in nursing is a complex task that requires command of different kinds of agency and management of related leadership styles and competence. Clear structures and operating models are needed to ensure systematic KM and to verify the effectiveness of the resources used to accomplish beneficial KM. Intervention studies on KM are also necessary.

Relevance to clinical practice
A description of nurse leaders’ perceptions of and experiences with knowledge management could improve recognition of nurse leaders’ agencies for knowledge management and identification of related tensions. This description could also promote nurses’ professional competence and supplement nurse leaders’ training. There is a need to develop the structures, processes, and tools to systematically supporting knowledge management in nursing.
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What does this paper contribute to the wider global clinical community?

- According to systematic reviews, nurse leaders’ activities when practicing knowledge management are not known. There is no established definition for the concept of knowledge management in nursing science.

- This study produced concepts describing the nurse leaders’ activities conducted for daily knowledge management, management that promotes knowledge, and anticipatory management of knowledge requirements. The study also identified seven different types of agency practiced by nurse leaders. There were tensions related to the types of agency, and few solutions were offered for them.

- In the future, the structures, processes, and tools systematically supporting knowledge management in nursing should be developed, and the development potential related to the associated tensions should be used via transformative agency. The concepts produced in this study can be used to identify nurse leaders’ agency in knowledge management and related tensions.
Table 1. Interview themes and amount of data

<table>
<thead>
<tr>
<th>Questions</th>
<th>Data collection 2015</th>
<th>Data collection 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Participants</td>
<td>Pages</td>
</tr>
<tr>
<td><strong>Individual theme interviews</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thematic analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge management</td>
<td>19</td>
<td>356</td>
</tr>
<tr>
<td>Perception of EBP and assessments of personal capabilities and development needs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Development needs related to EBP in the working community</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role as a change agent</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Focus group theme interviews</strong></td>
<td>11</td>
<td>91</td>
</tr>
<tr>
<td>Thematic analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change management of competency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management of EBP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utilization and establishment of change agent activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change agent activities in promoting EBP</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Total                                                                      | 447         | 338     |

Table 2. Characteristics of the participants

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>EBP training participants (Med, range) N = 19</th>
<th>Supervisors for EBP training participants (Med, range) N = 13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>50 (35 – 59)</td>
<td>56 (50 – 61)</td>
</tr>
<tr>
<td>Healthcare work experience</td>
<td>28 (7 – 38)</td>
<td>25 (2 – 40)</td>
</tr>
<tr>
<td>Leadership experience</td>
<td>7 (0 -25)</td>
<td>17 (12 – 35)</td>
</tr>
<tr>
<td>Number of direct employees</td>
<td>30 (0 -200)</td>
<td>5 (3-50)</td>
</tr>
<tr>
<td>Highest education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master of Heath Care (polytechnic)</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Master of Sciences (university)</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>Doctor of Philosophy</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

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### Table 3. Leader’s agency and tensions in KM

<table>
<thead>
<tr>
<th>Leader’s agency in KM</th>
<th>Tensions in KM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Daily knowledge management</strong></td>
<td></td>
</tr>
<tr>
<td>• <strong>Verifier</strong></td>
<td>The sufficiency of competency of employees and the working community as service needs of clients and patients change</td>
</tr>
<tr>
<td>Active supervisor of activities</td>
<td></td>
</tr>
<tr>
<td>Reacting to sudden changes in the operating environment</td>
<td></td>
</tr>
<tr>
<td>Re-organizer of competency resources</td>
<td></td>
</tr>
<tr>
<td>• <strong>Decision-maker</strong></td>
<td></td>
</tr>
<tr>
<td>Intervening in inadequate competency</td>
<td></td>
</tr>
<tr>
<td>Taking responsibility for competency in the unit</td>
<td></td>
</tr>
<tr>
<td><strong>Management that promotes knowledge</strong></td>
<td></td>
</tr>
<tr>
<td>• <strong>Provider of information</strong></td>
<td>Difficulty in the availability of information and quality assessment</td>
</tr>
<tr>
<td>Seeking new information</td>
<td>Challenges in the allocation of time use</td>
</tr>
<tr>
<td>Introducing and sharing good practices</td>
<td></td>
</tr>
<tr>
<td>• <strong>Coach</strong></td>
<td>Sufficiency of support provided to employees and supervisors</td>
</tr>
<tr>
<td>Supporter of the development of competency</td>
<td>Versatile utilization of competency</td>
</tr>
<tr>
<td>Encourager of participation</td>
<td>Creating structures for the promotion of competence</td>
</tr>
<tr>
<td>Inspire</td>
<td></td>
</tr>
<tr>
<td>Promoter of communal learning</td>
<td></td>
</tr>
<tr>
<td>Solver of challenges</td>
<td></td>
</tr>
<tr>
<td>An example of the development of personal competence</td>
<td></td>
</tr>
<tr>
<td>Provider of authorization</td>
<td></td>
</tr>
<tr>
<td>• <strong>Developer of operating culture</strong></td>
<td>A change in the operating culture to support communal learning</td>
</tr>
<tr>
<td>Encourager of experiments</td>
<td></td>
</tr>
<tr>
<td>Change agent</td>
<td></td>
</tr>
<tr>
<td>Highlighting competency</td>
<td></td>
</tr>
<tr>
<td>Appreciating competency</td>
<td></td>
</tr>
<tr>
<td>Creating an atmosphere supporting development</td>
<td></td>
</tr>
<tr>
<td><strong>Anticipatory management of knowledge requirements</strong></td>
<td></td>
</tr>
<tr>
<td>• <strong>Assessor</strong></td>
<td>Inadequacy of tools used in measuring competency</td>
</tr>
<tr>
<td>Analyzing and assessing patient and client work</td>
<td>Difficulty of assessing the results and effectiveness of activities</td>
</tr>
<tr>
<td>Assessing competency in the working environment</td>
<td></td>
</tr>
<tr>
<td>Identifying competency needs of nurses</td>
<td></td>
</tr>
<tr>
<td>Launching competency development</td>
<td></td>
</tr>
<tr>
<td>• <strong>Visionary</strong></td>
<td>Rapidity of competency requirements</td>
</tr>
<tr>
<td>Anticipator of challenges in competency</td>
<td></td>
</tr>
<tr>
<td>Utilizer of new information</td>
<td></td>
</tr>
<tr>
<td>Planner of competency development</td>
<td></td>
</tr>
</tbody>
</table>
Figure 1. The dimensions of knowledge management

- Daily knowledge management occurs here and now and is often focused on individuals and work units and occurs in a very short term.
- Management that promotes knowledge is focused on individuals and working units and occurs in the near future.
- Anticipatory management of knowledge requirements is focused on organizations and occurs in the long term.