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MANAGEMENT | RESEARCH ARTICLE

Effects of a Swedish master's programme on quality improvement and leadership - A qualitative study on micro, meso and macro levels of the welfare sector

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Abstract: Improvement knowledge is recognised as an important competence for healthcare professionals in many countries. Researchers have studied the effects of improvement knowledge education but there is a lack of knowledge educations' operational effects. Research also lacks a system perspective. To address these gaps we use a model making it possible to study the welfare sector as a complex system. In this way, we intend to provide a deeper understanding of operational effects of a improvement knowledge curricula. We examine the effects of a master's programme on quality improvement and leadership in the Swedish welfare sector on micro, meso and macro levels. Twelve telephone interviews were performed with alumni exploring the experienced effects of the programme. On micro level, respondents reported that the engagement for improvement work increased and that patient/client/customer focus increased. Several personal effects were also described. On meso level, respondents described how the role as quality improvement facilitator developed and how measures were central for monitoring improvement. Several respondents believed the education contributed to improved

ABOUT THE AUTHOR

Annika Nordin (assistant professor) and Kristina Areskoug Josefsson (associate professor) both work at Jönköping Academy for improvement of Health and Welfare, at School of Health and Welfare, Jönköping University. At Jönköping Academy, improvement science, leadership and co-production are central research fields. The authors' interest covers the different kinds of effects education in quality improvement have, both for students, professionals and organisations. Another research interest concerns how patients and users in healthcare contexts co-produce services with healthcare staff, and more specifically, how the value of co-production is measured and described. The research presented in this paper is part of a larger research project exploring the effects of a master's programme on improvement knowledge and leadership in the welfare sector. The first study was a survey study and to enable cumulative contribution the present study is qualitative.

PUBLIC INTEREST STATEMENT

Quality in health care is crucial. Without quality, those in need of the services can get harmed or even decease. It is therefore important that healthcare professions have access to education in quality improvement. In Sweden, healthcare professionals can apply to an interdisciplinary master's programme on quality improvement and leadership. Previous research on the effects of quality improvement educations has not focused much on operational effects, why we do so in our study. Twelve alumni were interviewed and the answers analysed on four levels. The engagement for improvement work increased and alumni facilitated improvement better, but they requested more active support from their employers. Alumni were personally positive affected by the education and several believed it contributed to improved health and welfare on societal level. It is important educations on quality ensure useful, valuable outcomes. To capture all educational effects it is necessary to study effects on several levels.

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health and welfare on macro level. To capture all effects of an improvement knowledge curricula in higher education qualitative effects on several levels of the welfare system are important to acknowledge.

Subjects: Teaching & Learning - Education; Theories of Learning; Testing, Measurement and Assessment; Attitudes & Persuasion; Health Education and Promotion

Keywords: clinical microsystem theory; educational effects; improvement knowledge curricula

1. Introduction

In recent years, quality improvement has been recognised as an important core competence for healthcare professionals in many countries (Institute of Medicine (US) Committee on the Health Professions Education Summit, 2003; The Health Foundation, 2015; Säker vård, 2016). Researchers have described and examined different kinds of curricula of improvement, and their learning benefits (Jones, Shipman, & Ogrinc, 2015). The point of departure for these scientific reports is that healthcare professionals, knowledgeable in quality improvement, can actively improve the quality of care and services for patients (The Health Foundation, 2015).

It is therefore discouraging that most scientific reports on improvement knowledge curricula have not included operational effects of quality improvement competence (Wong, Etchells, Kuper, Levinson, & Shojania, 2010). Instead, operational effects should be a key component of evaluations of improvement knowledge curricula, to capture the full impact of the education on the welfare sector. However, it is a simplification to study operational outcomes without also considering their interconnections to their contexts. To gain a deeper understanding of the effects of education, we believe it is important to have knowledge of where the operational outcomes arise and how individuals working in these contexts understand them. In improvement knowledge, system understanding is central (Deming, 2000). According to Deming, the boundary of a system can be drawn differently, e.g. around a company, industry or even country. Large systems offer greater possible benefits but are more complicated to lead (Deming, 2000). As far as we know, there are no scientific reports of improvement knowledge curricula taking a system perspective.

To address the lack of scientific reports on operational effects, the impact of contexts and system understanding, we use a model for analysis making it possible to study the welfare sector as a large and complex system. In this way, we intend to provide a better understanding of the operational effects of improvement knowledge on several levels, including a societal level. In the curricula of the investigated master's programme systems thinking and the clinical microsystem (CMS) theory function as a frame of reference underpinning the teaching and training of improvement knowledge. The CMS theory describes healthcare as embedded systems including micro, meso and macro system levels (Nelson, Batalden, & Godfrey, 2007).

The purpose of the study is to explore alumni's experienced effects of a master's programme on quality improvement and leadership in the Swedish welfare sector on micro, meso and macro levels. Previous studies on improvement knowledge curricula have not taken a system perspective, specifying where the effects occur. Through the use of the CMS theory in this paper, we expect to provide new knowledge on the effects improvement knowledge education can provide, and where these effects are manifested.

2. Theoretical background

The CMS theory is a powerful theory supporting the improvement of healthcare quality (Godfrey, Melin, Muething, Batalden, & Nelson, 2008). The concept of CMS is based on the "smallest replicable unit", a concept that was first described at the end of the 20th century (Quinn, 1992). The novelty of the concept was its clarification of *where* quality is created; in frontline delivery units.

Many quality improvement concepts originate from the quality evolution in Japan (Andersson, Eriksson, Torstensson, & Mi Dahlgaard-Park, 2006). The CMS theory shares these intellectual roots and includes some of the established improvement tools, i.e. process mapping and Plan Do Study Act cycles (Nelson et al., 2007). More recent research on quality improvement in healthcare contexts emphasises that patients and users co-produce service with healthcare staff (Durose, Needham, Mangan, & Rees, 2017).

Earlier research on CMSs has identified nine success characteristics of high performing CMSs (Nelson et al., 2007, 2002). The success characteristics have been slightly different organised; however, patient focus, staff focus, interdependence of care teams, information and information technology, process improvement, performance patterns, CMS leadership, culture and organisational support are pinpointed as CMSs' success characteristics.

The concepts of micro, meso and macro levels are central to CMS theory. They are established levels of analysis that have been used for a long time in the scientific community, as, for example, in Bronfenbrenner's seminal work on ecological systems (1979). In CMS theory, healthcare is described as nested systems, with six layers of the healthcare system, represented by a set of concentric circles (Nelson et al., 2007). At the innermost level are patients and their individual self-care systems. At the second level are caregivers and patients, and CMSs at the third level. The CMSs are nested within the fourth level, the mesosystem level. The macrosystem level constitutes the fifth level and the sixth level is the external milieu for healthcare systems, i.e. the community, the regulatory context and healthcare policies (Nelson et al., 2007).

2.1. Empirical background

In Sweden, the welfare sector is a collective term for tax-funded services for which the state, county councils, regions or municipalities are responsible. The welfare sector includes services for children and the elderly, social care, education and healthcare. Target groups for the explored master's programme are practitioners and decision-makers in the Swedish welfare sector.

The master's programme was launched in 2009. It is financed through the university offering the programme, in collaboration with the municipalities and the healthcare region in the area. The faculty is multidisciplinary, including employees with educational and professional backgrounds in engineering, healthcare, social work and sociology, from professorial to doctoral student levels. Most faculty teachers have long-term and ongoing experience of both clinical work and improvement work in multidisciplinary contexts.

The admission requirements include academic achievements (a bachelor's degree or equivalent professional qualification) and two years of professional work experience.

Approximately 80% of the students are women. This high proportion of female students reflects the predominant proportion of female employees in the Swedish welfare sector (Statistics Sweden, Women and men in Sweden, 2018).

The studies are part-time for the first two years and full-time for the last year. Students have been able to complete after two years, leading to a one-year master's degree. Most students proceed the third year and graduate from the two-year master's programme (120 ECTS credits). Throughout the education, papers and assignments are designed to enable practical training and applications of quality improvement methods at students' workplaces. In the final year of the programme, students initiate, design, lead and study quality improvement projects to apply the improvement knowledge and leadership skills provided by the master's programme. The projects are reported, evaluated and examined in master's theses.

The basic learning method is the blended learning approach, meaning that the education takes place partly online and partly on campus. The programme curriculum is based on the Institute for

Healthcare Improvement's eight knowledge domains for the improvement of healthcare (1998) and aims to improve the welfare sector. The learning outcomes are continuously followed in course evaluations and examination assignments.

3. Method

This study is part of a research project exploring the effects of a master's programme on improvement knowledge and leadership in the welfare sector. It is a qualitative interview study with the objective of gaining deeper insights related to the results from a previous quantitative study. The first study was a survey study with questions formulated as self-reported estimates. The study describes how numerous best practice techniques for adult learning were used in teaching and how respondents developed behaviours central for quality improvement (Nordin & Areskoug-Josefsson, 2019).

3.1. Participants

The survey was sent to 139 graduates of the programme, achieving a response rate of 41% (57 respondents) (Nordin & Areskoug-Josefsson, 2019). The participants in the interview study were recruited from the first study. Respondents could state their interest in participating in the interview study by voluntarily including their telephone number in the survey. In total, 34 respondents announced their interest in participating (Figure 1). After the researchers had excluded participants reporting incomplete telephone numbers, or switchboard numbers, 25 participants remained. Another five respondents were excluded due to the risk of bias. Altogether, 19 participants were invited to participate in the interview study.

In March 2018, an invitation letter with information about the purpose and procedures of the study, including a timetable with selectable dates for interviews and a stamped envelope with a pre-printed return address was sent out to the 19 participants. Twelve participants returned the informed consent form and suggested dates for interviews. Interview dates were confirmed by text message conversations with the interviewing researcher. All respondents were women who had graduated 2012–2017. Three respondents had graduated from the one-year master's programme and nine from the two-year master´s programme. Eight of the respondents worked in healthcare and four in municipalities or other organisations in the welfare sector.

3.2. Interviews

The semi-structured interview guide was developed in collaboration among the researchers and was based on four themes summarising the learning objectives of the master´s programme (improvement knowledge, organisation and leadership, scientific approach and benefits for the welfare sector). The interviews concerned participants' experiences of the master's programme and how they perceived the value of the programme. Respondents were asked to describe the effects and where they occurred. To enable a cumulative contribution to the knowledge achieved

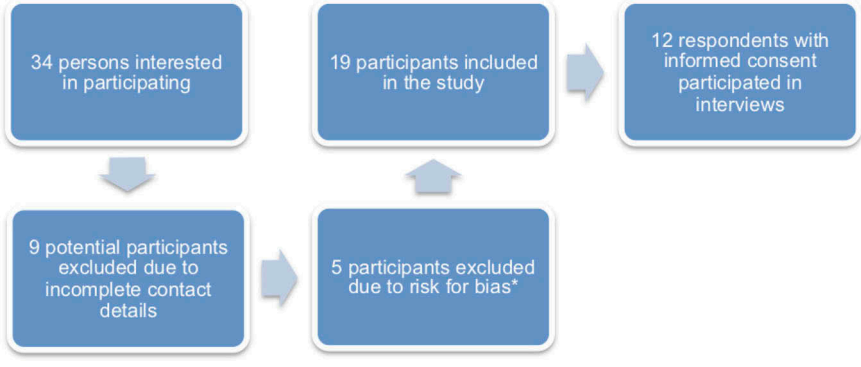

Figure 1. Participants in the interview study. *Participants who had engaged in work-related relationships with the researchers or the master's programme since graduation.

in the foregoing survey study, the questions were open-ended. The interviews were carried out by telephone by the first author in April 2018. The interviews lasted approximately 40 minutes, were audio-recorded and transcribed verbatim. To improve readability, some quotes have undergone small changes in the translation into English. The meaning of the quotes has not been changed. To observe confidentiality and to highlight that quotes originate from different persons, the respondents are referred to using numbers in the text.

3.3. Coding and analysis

The coding was conducted using a stepwise procedure. First, all the transcribed interviews were carefully read through. In a second reading a thematic coding was conducted (Braun & Clarke, 2006). The first researcher marked meaning units that were considered to describe effects of the master´s programme on micro, meso, or macro levels. The meaning units were sorted into three thematic tables, one for each level, and were agreed upon by both researchers. The thematic tables were supplemented with columns in which numerical codes indicated who had made each statement. In the continued coding the nine success characteristics by Nelson et al. (2002) and (2007) were used as deductive categories, with some contextualisation (Table 1). In the contextualization of categories, it was considered how the categories could be improved to cover the welfare sector and not only healthcare organisations. Thus, the categories were not changed but broadened. After a first coding, the categories were evaluated by the researchers. It was noted that the respondents described many personal effects of having participated in the master's programme and an inductively developed category, "Personal growth", was included at the micro level. It was also noted that the Nelson et al. categories (2002 and 2007) poorly described respondents' descriptions at the macro level and new categories were therefore inductively developed for this level. The first researcher completed the coding and the researchers jointly discussed the coding until consensus was achieved.

3.4. Ethical considerations

The study was preceded by considerations of research ethics, specifically regarding the benefits of participation for the participants (Council for International Organisations of Medical Sciences [CIOMS], 2002). It was considered beneficial for participants to reflect on the personal and organisational

Table 1. Categories in the analysis of the master's programme

Categories	Categories Micro theme	Categories Meso theme	Categories Macro theme
Nelson et al., 2002 & 2007	Interview study	Interview study	Interview study
Staff focus	Staff focus	Staff focus	-
	Personal growth		
Interdependence of care team	Interdependence of microsystems	Interdependence of microsystems	
Patient focus	Patient/client/ customer focus	Patient/client/ customer focus	-
Information/ Information technology	Information/ Information technology	Information/ Information technology	-
Process improvement	Performance and improvement	Performance and improvement	Improved health and welfare
Performance patterns			
Clinical microsystem leadership	Microsystem leadership	Leadership	Efficiency
			Impact
Culture	Culture	Culture	System perspective on welfare sector
Organisational support	-	Organisational support	Supportive infrastructure

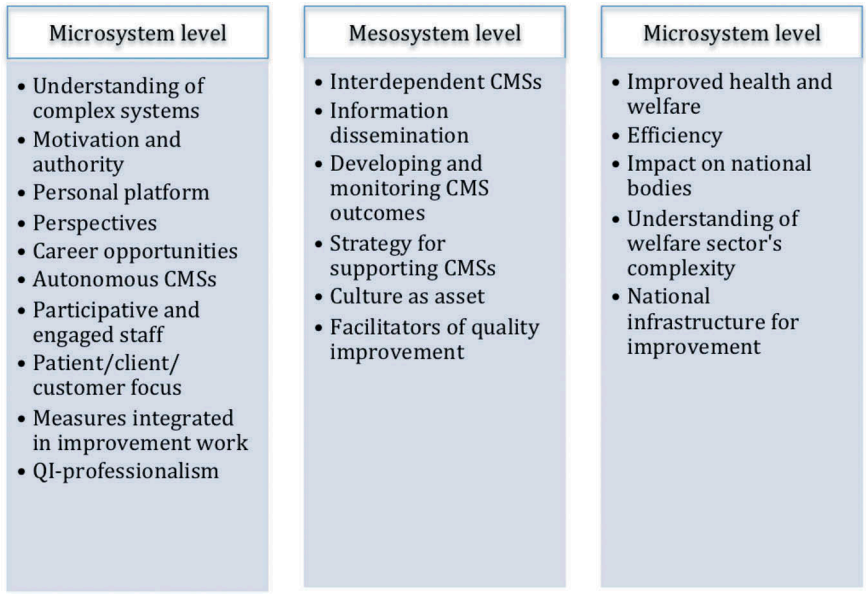

Figure 2. Summary of effects of the master's programme on micro, meso and macro levels.

consequences of a completed higher education. The participants were given verbal and written information about the purpose and procedures of the study and the principles of confidentiality, the right to withdraw and voluntariness were explained once again before the interviews started. The study does not need ethical approval according to Swedish regulations, but the ethical recommendations stated by the National Ethical Review Board were followed.

The statements of responsible research publication were followed in the publication stage of research (Wager & Kleinert, 2011).

4. Results

Key findings of the analysis are in the text marked with italics. These key findings are also summarised in Figure 2. Categories without comments from respondents are left out in the presentation.

4.1. Effects on the micro level

The respondents described how they had been personally affected by the education (the "Personal growth" category). The respondents stated they had gained a better *understanding of complex systems* and how the welfare system is interconnected. One respondent, employed in a municipality, said, "This means that you get to meet colleagues employed in other work units than municipal. You get another understanding …" (Respondent No 12). The respondents described gains in *motivation and authority*. "Who, if not I, should do this? It's about time now. I also feel that I have experience and knowledge and I know what I am talking about when I dare to engage in something" (Respondent No 4). Several respondents mentioned that they had gained a *personal platform* providing them with a feeling of security and that they had discovered new *perspectives* and opportunities. "I think it's a fantastic personal development. I would probably never have thought it could be so rewarding" (Respondent No 8). Some of the respondents had taught and supervised quality improvement projects. Several said they had developed a specific professionalism in quality improvement and that the education had entailed *career opportunities*.

The "Interdependence of microsystem" category concerns how staff interactions are characterised by trust, collaboration and respect of competences (Nelson et al., 2002). The respondents described their role as change agents supporting *microsystems in becoming more autonomous*

enabling *staff to participate and engage* in improvement work. Respondent No 9 said, "It is of great value for managers, employees, relatives and patients to feel important".

The respondents talked in detail about their strengthened *patient/client/customer focus* and the importance of organisational safety (the "Patient/client/customer focus" category). They asked patients/clients/customers about their experiences and invited them to participate in improvement projects. Furthermore, the respondents continuously tried to imagine the needs and perspectives of the patients/clients/customers. Respondent No 6 explained, "I think this has influenced my entire work attitude … When we develop our operation in different ways, we need to return to the question of how this is beneficial for our patients". One respondent (No 12) explained how the municipality collaborated with elderly people by inviting them to join an advisory board. The respondents also expressed self-criticism regarding the limited direct involvement of patients/clients/customers in quality improvement projects. "… however, we interview patients and try to collect patient opinions. But we rarely have patients engaged in concrete improvement projects" (Respondent No 3). Some explanations for not including patients/clients/customers were short treatment periods in healthcare and patients/clients/customers having cognitive difficulties.

The respondents described the strength of including *measures as an integral part of improvement work* (the "Performance and improvement" category). Others described how transparent operational outcomes promote staff *engagement and understanding*; "… we talk a lot about accessibility … so that they [the staff] understand. And we also think they get more involved and ask themselves how they can contribute to improvement" (Respondent No 7).

Leadership was understood as closely related to *quality improvement professionalism* (the "Microsystem leadership" category). Knowledge of quality improvement methods was described as assets supporting a structured and informed leadership style. "As a manager I have been greatly helped by the knowledge gained from my education, because I see another structure. And that is what the employees want to have: structure" (Respondent No 11).

4.2. Effects on the meso level

The respondents gave examples of how a meso level function could help *microsystems to independently conduct improvement work* (the "Interdependence of microsystems" category).

Based on the respondents' statements, the master programmes' effects on patient/client/customer focus on the meso level are not clear. However, several respondents exemplified how they actively supported *information dissemination* (The "Information and information technology" category). Dissemination of knowledge and information was described as a strategic responsibility for actors at the meso level. '… I am a lobbyist. I facilitate. I become like a lubricant in a machine …' (Respondent No 3).

The respondents emphasised the importance of *developing adequate measures and to monitor CMSs' outcomes* (the "Performance and improvement" category). One respondent said "… what I use is the knowledge I gained from the education … it is important to have structure and … it is important to request results" (Respondent No 12).

Some respondents saw how the education had affected their leadership at the meso level. They had developed a deliberate *strategy when supporting microsystems* and they believed they were more influential in formal committees (the "Leadership" category). One respondent described her mediating role, explaining the limited capacity top management has to support each individual microsystem.

Culture was described as an asset enabling respondents to conduct improvement work, even if respondents did not define in detail their organisation´s culture or core values. Culture was also

described as something respondents consciously worked on, to support staff engaging in quality improvement projects (the "Culture category").

The respondents predominantly emphasised the lack of organisational support for improvement work. At the same time, they perceived themselves as *facilitators of quality improvement* projects (the "Organisational support" category). The respondents hoped top management could show another attitude and understanding for improvement work. They also hoped for better allocation of staff and time. In addition, they believed existing knowledge and motivation could be better nurtured.

4.3. Effects on the macro level

The respondents believed the master's programme contributed to *improved health and welfare* on a macro level (Respondents No 3, 5, 7, 8, 10; The "Improved health and welfare" category). One respondent said, "Yes, I believe so. Definitely ..." (Respondent No 5). The respondents talked about improved *efficiency* (the "Efficiency" category) that the master's programme had enabled them and their organisations to act more efficiently, and had ultimately been beneficial on a macro level. "You improve for those in need and you probably create some space and possibilities" (Respondent No 2).

The respondents mentioned that the master's programme had both indirect and direct impacts on a macro level (the "Impact" category). When respondents engaged in local improvement, they impacted their organisations, which in turn *impacted on a macro level*. Some respondents worked in *national boards and committees* and explained that through these bodies they directly impacted on a macro level. One respondent described her experiences of working in a national body; "... quite easy for me to try to participate and influence ... there is nevertheless a willingness to listen ... " (Respondent No 10).

In several interviews, the master programme´s multidisciplinary target group was emphasised as a great strength. The plurality was believed to increase in-depth *understanding of the welfare sector's complexity* and the likelihood of good *macro level effects* (the "System perspective on welfare sector" category).

One respondent (No 10) described how improvement knowledge supported the ambition of building a *national infrastructure* facilitating development (the "Supportive infrastructure" category). She called the ambition "a gigantic construction" and described improvement knowledge as helpful to develop national indicators and leadership capacity.

5. Discussion

The respondents gave a multitude of descriptions of the personal effects of the programme that extended beyond their role as professionals in their CMSs (in italics in Figure 2). Personal effects were not included in the original purpose of the study, but since they represent significant results, they are explored at the beginning of this section. Other recent studies have also reported on the personal effects of improvement knowledge education (Smith, Alexandersson, Bergman, Vaughn, & Hellström, 2019). In interviews, the respondents in our study described how the acquired knowledge and experience had changed them as individuals. The respondents stated they had gained greater courage, self-esteem and the capability to see things from different perspectives. Mezirow's seminal research on transformative learning can provide a deeper understanding of these descriptions. According to Mezirow (2003), transformative learning is a process by which students transform problematic frames of references (or meaning perspectives) into more open, reflective and including frames. For this process to occur, critical reflections on assumptions are central (Mezirow, 1997). Through reflection, students' assumptions about themselves can change and provide new frames of reference that are more functional and enable them to solve problems in more constructive ways. Critical self-reflection can be challenging, and it is reasonable to believe that study motivation facilitates the process. Relevance is fundamental to study motivation (Kember, Ho, & Hong, 2008). Students are prone to experiencing relevance when a theory can be

applied in practice, or when students can relate studied topics to their own lives, to local issues or generally current topics (Kember et al., 2008). Learning-by-doing activities in quality improvement education engage students (Langstrand, Cronemyr, & Poksinska, 2015). Capstone projects in quality improvement are also engaging and based on learning-by-doing activities, but it is difficult to ensure they are both empirically valuable and aligned to educational learning outcomes (Martinés León, 2019). In the master's programme, students continuously receive feedback on their application of improvement methods when working with local issues or current topics at their workplaces. Students also receive coaching in their improvement projects, academic feedback from faculty members and collegial feedback from fellow students. This multifaceted feedback supports self-reflection, and based on respondents' descriptions, it seems they experienced transformative learning.

The concept of the deliberate professional describes how students in higher education develop professional integrity enabling them to act independently and to make their own considerations and decisions at their workplaces (Trede & Jackson, 2019). "Who, if not I, should do this? It's about time now. I also feel that I have experience and knowledge and I know what I am talking about when I dare to engage in something" (Respondent No 4) is an eloquent illustration of deliberate professionalism. With this deliberate professional attitude, the alumni can offer their employers knowledge, challenges and additional perspectives. Thus, two probable additional personal effects of the master's programme are transformative learning and deliberate professionalism.

5.1. Micro level

Early in the education students undertake a personal quality improvement project. Experiences of such projects impact the development of quality improvement knowledge but to translate personal experiences into organisational levels, students need support. Facilitated self-reflection enables knowledge translation but this alone is not enough. Faculty need to convey that personal experiences are integral to improvement knowledge, and preferably, students should have their own experience of both personal and organisational quality improvement projects (Mikkelsen Kyrkjebø, 2006). This highlights the importance of faculty competence in quality improvement education. The faculty of the master´s programme has extensive experience of quality improvement work in various contexts and the department has published a rich body of academic literature, including doctoral theses, in quality improvement. This competence is most likely to have impacted upon their quality improvement professionalism. The respondents stated that CMSs became more autonomous and patient/client/customer focused. According to Mezirow, autonomy refers to "the understanding, skills and disposition necessary to become critically reflective of one's own assumptions and to engage effectively in discourse to validate one's own beliefs through the experiences of others, who share universal values" (1997, p. 9). Taking stock of this definition, it seems that the strengthened patient/client/customer focus facilitates CMSs becoming more autonomous. The perspective can function as a critical lens and an external frame of reference when CMSs verify their actions.

5.2. Meso level

The respondents described the development of a culture enabling improvement work as an effect of the master's programme. Other researchers have described organisational capability for improvement as an effect of improvement knowledge education (Smith et al., 2019). Culture describes how groups of people, based on shared assumptions jointly solve problems (Schein, 2010). Culture has a structural stability, defining the group. Culture is a deep, often intangible phenomenon covering all behaviours of a group. Culture and climate are close, but not equivalent. Climate is a manifestation of the culture. Climate can be locally created but culture is the mutual evolvement of shared experiences and learning (Schein, 2010). The respondents described how they deliberately tried to influence the "culture" for the benefit of quality, indicating that they did not notice the differences between the concepts of culture and climate.

Post-training behaviours are dependent on the quality of the education and the learners' ability to perform. Contextual factors are also crucial (Burke & Hutchins, 2007). Contextual factors with high relevance are a climate enabling knowledge transfer, support from supervisors and colleagues, and learners having the opportunity to use the acquired knowledge (Burke & Hutchins, 2007). Some respondents claimed these factors were missing in their organisations, thus limiting the effects of the programme. It can be tempting for organisations to ascribe the education the entire responsibility for the lack of behavioural changes. However, to optimise the educational effects it is important organisations work on their contextual factors and organisational climate.

5.3. Macro level

In the previous survey study on the master's programme, one question in the interview guide concerned whether respondents believed the programme contributed to improved welfare and resource management (Nordin & Areskoug-Josefsson, 2019). The question received the second highest score in the survey. The respondents in both studies had degrees in higher educations, i.e. in physiotherapy, medicine and nursing, which are educations aiming to promote health and welfare. It could therefore be natural for the respondents to assume that also the master's programme positively affects the macro level. Despite this, it seems as if, prior to the interviews, the respondents had not reflected on how macro level effects develop in detail. They pinpointed several macro level effects, but the descriptions taking a patient/client/customer perspective were more detailed. One plausible explanation for this is that respondents had more experience of contacts with patients/clients/customers.

5.4. Practical implications

In the Ecological Systems Theory social context is described as nested (Bronfenbrenner, 1979). Some researchers question this view and suggest a Social Networked Model. In such a model, the ecological environment is described as a collection of structures that overlap in various ways, through the direct and indirect interactions of its participants (Neal & Neal, 2013). In line with this view, the effects of the master's programme can be transferred to other levels in the system, by actors' interactions. Within CMS theory, healthcare is also described as nested (Nelson et al., 2007). However, the respondents gave several descriptions of how they perceived the effects of the master's programme were transferred between micro, meso and macro levels. They also described how they as individuals functioned as intermediates between levels. Improvement knowledge students need an understanding of how effects emerge ecologically in socially complex systems. Knowledge of the functionality of networked systems provides complementary understanding to CMS theory and seems valuable to include in improvement knowledge curricula. One way to facilitate understanding of networked systems could be to help students to recognise the transformative learning they undergo and how they, with their new skills, can function as networking intermediates of improvement knowledge in the welfare system.

Another practical implication regards how organisations support employees to engage in improvement work. Effective support requires knowledge and documentation of which employees are trained in improvement knowledge but it seems that organisations lack this information. The first step for organisations with the ambition to support improvement work could be to survey what improvement knowledge and engagement employees have and asses training needs.

5.5. Methodological discussion

The nine success characteristics of high performing CMSs did not function as deductive codes at macro level, which in retrospect should have been anticipated. A deviation from the original study design was made and some inductive codes were developed. The inductive codes can provide additional understanding of the purpose of the study. The codes can be interpreted as both effects of the master's programme at macro level and as success characteristics. For example, the respondents described "supportive infrastructure" as an effect of the master's programme but it is also reasonable to assume that supportive infrastructure facilitates local CMS improvement work, thus being a success characteristic.

Scholars advocate telephone interviews for data collection while acknowledging its limitations (Cachia & Millward, 2011). To minimise the weaknesses of the method, eight measures are suggested (Glogowska, Young, & Lockyer, 2011). All suggestions were followed, with special attention given to considering the interview approach at the design stage of the study and to give early and detailed information to respondents.

Self-assessment helps students to develop a critical attitude towards their own work endeavour and increases their study involvement. Research also shows that students assess their performance higher than professors and peers (González-Betancor, Bolívar-Cruz, & Verano-Tacoronte, 2019). The described effects of the master's programme are indirectly linked to how the respondents perceived their own achievements and thus there is a risk the effects are over-estimated. At the same time, there are circumstances affirming the respondents' descriptions. The master's programme has high application numbers and high alumni representation in continuous learning activities post graduation, as well as organisations financing alumni PhD projects. This implies alumni and organisations are satisfied with the programme and value the knowledge and skills it provides.

Given that students who do not finish the education are probably less satisfied with the education than graduates, the fact that all the respondents were graduates might have influenced the study. This selection bias is inevitable since only graduates have experience of the completed programme's effects. A suggestion for future research is therefore to also study the experiences of students who have not completed their education. This could give valuable knowledge of how curricula in improvement knowledge in higher education can be improved.

6. Conclusions

The study showed that a master's programme in quality improvement and leadership can have a large impact, affecting micro, meso and macro levels, but also a personal level. CMSs can get more autonomous and patient/client/customer focused. On a meso level, CMSs can conduct improvement work more interdependently; however, their organisations need to provide better support. On a macro level, respondents believed the master's programme was beneficial for improved health and welfare.

With a networked understanding, the effects of the master's programme are transferred between levels of the welfare system, and the developed personal platform, transformative learning, deliberate professionalism and patient/client/customer focus played significant roles. Thus, to capture all effects of a improvement knowledge curricula in higher education, experienced qualitative effects on several levels of the welfare system are important to acknowledge.

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