ISSN: 2833-9320

Research Article

International Journal of Health Policy Planning

Public Health Care Managers' Views on Knowledge Management

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Submitted: 2025, Feb 10; **Accepted:** 2025, Mar 05; **Published:** 2025, Mar 25

Citation: Kosklin, R., Lammintakanen, J., Kivinen, T. (2025). Public Health Care Managers' Views on Knowledge Management. *Int J Health Policy Plann, 4*(1), 01-11.

Abstract

Purpose: *The purpose of this study is to investigate public health care managers' views on Knowledge Management (KM), and how managers' individual and organisational factors are related to their views.*

Design/Methodology/Approach: *Data was gathered through a survey of strategic, middle and first-line managers (n=406) in the public health care sector in Finland. The data were analysed using SPSS (version 28.0). Factor analysis was performed to formulate sum variables. The Kruskal-Wallis test and the Mann Whitney U test was used to determine the relationship between managers' background and sum variables.*

Findings: *Managers' views on knowledge management were quite positive. Organisational factors, such as management position in the organisation, the nature of the work and the organisation they work had more influence on managers' views on KM than their individual characteristics. Health care managers expressed the most positive views about knowledge use in management. By contrast the creation of common managerial knowledge was considered as the weakest component of KM. In this study we found new KM component, which was named comprehensive knowledge about operations.*

Implications: *These findings indicate the need to consider how to enhance creation shared knowledge among the health care managers, and development of organisational practices, culture, and strategy from knowledge management perspective. The results can be used developing KM in health care environments.*

Keywords: Knowledge Management, Manager, Management, Health Care

1. Introduction

Knowledge Management (KM) is critical in health care context to organize knowledge, which is a key asset in health care operations and management [1-7]. The amount of information related to the patient and the organization is constantly increasing, therefore health care organisations are regarded as knowledge-intensive organisations [8-10]. Over years, health care organisations have been exposed to multiple structural changes, which have led to more complex and bigger organisations, and fragmentation of knowledge flows [11-13]. KM promotes the ability of health care organisations to provide the high-quality and safety treatment by combining human resources, processes and state-of-the art technology within an organisation [14]. KM seems also to be one of the most important elements that improve patient safety and quality in different way [15]. In addition, KM practices can minimize deviation in delivering health care organisation. The wider effects of KM also extend to health care organisations performance [16,17]. Therefore, KM needs to be managed more systematically in health care.

In health care KM has been studied from different perspectives, but less is known about managers' views related to KM. Previous studies have focused on for example examining the nature of health care information, KM tools and barriers, and enablers to adoption of KM practices [18-23]. Several research findings suggest that management is a key element in promoting the success of KM in health care organisations [10,14,24,25]. Health care managers have a distinct role in activities to manage knowledge and in the implementation of KM [21,26]. Both the organisational context and managers' individual backgrounds can affect their interaction

and how they use knowledge within their management practice to promote better health care services [18,27].

In summary, previous studies emphasise the role and meaning of KM in health care, but we don't have enough information from the views of managers on how they themselves assess KM in their management work, and what are their experiences about various KM components like knowledge availability, knowledge creating, knowledge sharing and knowledge use in management, which have been recognised crucial elements of KM both in theory and in practice [28-30]. In this study we investigate the views of public health care managers on KM in their organisations, and how they access knowledge, share and use knowledge in their managerial work. In addition, we investigate how do managers' background characteristics relate to their views on KM.

The study addresses to answers following two questions:
• How do health care managers view knowledge management in their organisations?
• How do health care managers' background characteristics (i.e. age, educational background, management experience, management position in organisation, nature of work and working organisation) relate to their views on knowledge management?

1.1. Health Care Organisations as a Context of Knowledge Management

The institutional, strategic, and operational demands that shape management action in health care sector are distinctive [27]. According to previous research, distinct organisational culture, organisational structure and borders between professions complicate the applications of KM in health care [31-34]. Health care management not only involves managers at many different organisational levels, but also a wide range of specialism, backgrounds, role types, and modes of delivery [35]. The professional clinical background of the managers is related to their management [27]. Different managers with different professional backgrounds often work separately, which tends to hamper organisational performance by inhibiting professional interaction and sharing of managerial knowledge [36,37]. Managers' gender, age, management position in organisation, educational attainment, and years of experience as a manager are all strong contributing factors for KM [14]. In health care organisations KM has specific features (e.g. Hierarchical Structures, Legal, Ethical and Moral Obligations) that needs to be considered when managing knowledge and developing KM in this context [18,38].

According to previous research various knowledge types in health care include patient-level and clinical knowledge, professional experiences, organisational knowledge (e.g. financial and personnel information, management knowledge), information about local population's, health needs, nationwide information and research knowledge [27,38-41]. Health care organizations save vast amounts of different operational data but cannot analyse and process it sufficiently to make use of it in managing their operational activities [42]. In addition, managers are often expected to make difficult decisions within tight timeframes. Their knowledge needs are complex, context-dependent, and involve social processes [43]. Many differing knowledge needs make practical KM in health care difficult [17, 32, 44]. For this reason, in health care is an increasing need to use effectively information technologies and develop new knowledge-oriented platforms to improve information processes and to development KM in health care systems [34,45].

Knowledge sharing is one of the most building blocks for an organisation's success, and one of the most important practices for organisational effectiveness and performance [16,17,44,46-48]. Different staff members in health care have diverse backgrounds, training and specialist knowledge, enabling them to work and observe different problems. In this context, managers act as knowledge sharing facilitators and partners in decision making [49]. Expert managers are more proactive in sharing their knowledge and tend to share their knowledge more than novice managers do. Tacit managerial knowledge is often difficult to share, but the use of tacit managerial knowledge in daily managerial work is associated with managerial success [50]. In summary, the purpose of KM is to promote and provide effective knowledge, at the right time and in the right place, for managers to make better decisions [21]. However, the flow of knowledge and KM in health care context is compromised by many factors, including those relating to the managers as individuals, their professional education, and organisational structures as well as organisational cultures.

2. Material and Methods

At the time of data gathering, health and social care reform was implemented gradually in Finland. It changed the governance structures by transferring responsibility of health and social care services from municipalities to larger welfare regions and integrated public primary health care, special health care and social services into same organisation. Each region had the central hospital or university hospital [11]. We didn't find any validated survey that could have been used to evaluate healthcare managers' views on KM. The survey of this study was built in many phases. We familiarized ourselves with the theory related to the topic and the research on KM previously carried out in Finnish health care. The survey was formed by the research group consisting of various health care experts. After this, the survey was tested with the help of 17 people belonging to the target group and necessary adjustments were made accordingly. Following the principles of stratified sampling, six organisations, including two hospitals and four integrated organisations selected for the study. The target group included both managers having different professional background working at different levels of the organization, and those who worked in development and expert positions. The survey includes four different sections, and in this study, we reported the results of the health care knowledge management section.

The survey was conducted as a Webropol survey, and the link was sent via e-mail to all managers based on name lists received from the organisational coordinators in autumn 2018. Altogether 1091 managers were identified working in these six organisations. Of them 406 responded to the questionnaire and response rate was 37 percent after one reminder. The proportion of missing

responses varied from 0,2 to 3,0 percent. In this study altogether 27 statements about managers' views on knowledge needs, availability, sharing and use were analysed. The questionnaire used a five-point Likert-scale on which 1 denoted "completely agree", 2 denoted "somewhat agree", 3 denoted "neither agree nor disagree", 4 denoted "somewhat disagree" and 5 denoted "completely disagree".

The data were analysed using the IBM SPSS Statistics software (Windows Release 28.0). Prior to analysis the scale of all Likert-scaled variables was reversed, and all variables were converted into the same order. In addition, two of the background variables "management position in organisation" and "nature of the work" were re-coded. To address of the research questions, we used frequency distributions of all variables to describe the data. A correlation matrix was constructed for all variables, and the significance level of the correlations between variables was calculated using Spearman's correlation coefficient. The relationship between the variables were assessed using the cut-off values ($r < \pm 0.30$, $p < 0.1$). One variable was excluded from the analysis as it showed little correlation with the other variables. Next, exploratory factor analysis was performed. Among the set of variables, the factors that could best explain the variation of the observed variables were searched without strong pre-assumptions about the number of factors to be found. We did factor analysis to find the factor model that best describes the research data [51,52]. Factor analysis with Oblimin rotation and generalised least squares analysis was performed to formulate sum variables. The sum variables were formed into mean variables, so that the values remained in the same form as the original variables. Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0,879 and the Bartlett's Test of Sphericity was significant ($p = 0.000$). Four variables were removed from the analysis due to their low communalities ($h2 < 0.3$). Although the factor loading of four variables was < 0.4, they were included, because they fit well into the factor model.
Sum variables, reliability was evaluated using Cronbach's alpha. The alpha values of the sum variables varied between 0.61 and 0.76. Sum variables were further analysed alongside background variables. Means, medians, standard deviations, and analysis of variance were used in these analyses.

Finally, we used non-parametric tests to analyse relationship between background variables and sum variables because all sum variables were not normally distributed. The Kruskal-Wallis test was used to determine the relationship between the background variables such as age, management experience, organisation, position, and nature of the work. The Mann Whitney U test was used to determine the relationship between the educational background. The level of significance was set at <0.05 (*p<0.05, **p<0.01, ***p<0.001).

3. Results

The respondents represented well health care managers in Finland. 84,5 % were female and had longstanding experience in health care management. 63,3 % of managers were over 50 years. Over half of the respondents (52,4 %) had worked in health care management for 10 or more years. Only a few of them (3,9 %) had worked as managers for over 30 years. Half of respondents (51,7 %) were first-line managers. The educational background of respondents varied, and more than a third of them (34,7 %) had a university degree. Other respondents had a degree from a university of applied sciences. The nature of managers' work varied. More than half (57,9 %) of respondents were involved in full-time management and administrative work. A third (33,5 %) of respondents reported doing both management and clinical work, and a smaller number (7,4 %) focused on expert and development work. Background information is presented in Table 1.

Background	N	%
Gender		
Female	343	84,5
Male	58	14,3
Missing	5	1,2
Age		
40 or under	43	10,6
41-50	105	25,9
51-60	204	50,2
61 or over	53	13,1
Missing	1	0,2
Educational Background		
University Degree	141	34,7
University of applied science	265	65,3
Missing	0	0
Management Experience		
Under 5 year	87	21,4
5-9 year	94	23,2

10-19 year	149	36,7
20-29 year	48	11,8
30 year or over	16	3,9
Missing	12	3,0
Management Position		
Strategic Managers	47	11,6
Middle Managers	144	35,5
First-Line Managers	210	51,7
Missing	5	1,2
The Nature of Work		
Full-Time Management and Administrative Work	235	57,9
Management and Clinical Work	136	33,5
Expert and Development Work	30	7,4
Missing	5	1,2
Working Organization		
Integrated Organization 1*	45	11,1
Integrated Organization 2	82	22,2
Integrated Organization 3	68	16,7
Integrated Organization 4	73	18,0
Central Hospital	67	16,5
University Hospital	70	17,3
Missing	1	0,2
*Integrated organisation provides primary and special health care services as well as social services		

Table 1: Respondents' Background Information

Altogether 22 variables remained in the final factor model, and factor analysis resulted in five factor solutions. Eigenvalue one was used as a criterion for the number of factors. Five variables were loaded on three factors, four variables on one factor and three variables on one factor. Five sum variables were formed on this basis of factor analysis and were named to reflect the components of the KM in health care as follows:

1) Creation of common managerial knowledge
2) Knowledge use in management
3) Knowledge sharing
4) The availability of different types of knowledge and
5) Comprehensive knowledge about operations.

All factor loadings are presented in Table 2.

Creation of Common Managerial Knowledge describes manager's real-time consideration of knowledge needs in management, such as information relating to strategy implementation, written guidelines about management practices, use of internal and external information, and IT-systems providing congruent information.

1. Creation of Common Managerial Knowledge	**1**	**2**	**3**	**4**	**5**
The operational knowledge required for management is real-time	0.70			-0.48	
Managers' knowledge needs are discussed regularly in our organisation	0.69		-0.31		0.38
Good management practices are written as guidelines and shared for use of managers	0.67				0.33
The strategy outlines the management and use of internal and external information in our organisation	0.42			-0.41	0.40
IT-systems automatically provide congruent information to all managers	0.40			-0.34	
2. Knowledge use in management					
I systematically monitor the achievement of the goals set for the operation		0.75			
I analyze systematically the activities of my area of responsibility with the help of collected knowledge		0.71			
If necessary, I will change the activity based on the monitoring knowledge		0.69			
I need knowledge about the operations of organisation to justify my decisions		0.51			

3. Knowledge sharing					
There is little knowledge exchange between the different units in our organisation	-0.37		0.64	0.34	-0.37
The sharing of knowledge in our organisation takes place mainly within professional groups			0.60		
There is lot of information available, but little knowledge is available for management	-0.33		0.34		
4. The availability of different types of knowledge					
The implementation of the budget is available timely knowledge				0.59	
There is sufficient information about the population and the operating environment available in the planning of activities	0.45			0.58	
I have access to all the knowledge I need for my job	0.31		-0.34	0.52	
I get enough information from other employees in the organisation to carry out my job	0.40			0.42	0.37
Information about health and social reform is processed at various management meetings in our organization				0.36	0.31
5. Comprehensive knowledge about operations					
Customer feedback is regularly processed at joint management and employees' meetings	0.30				0.55
We utilize the knowledge obtained from the customer service process in the organisation development	0.48			-0.45	0.54
I follow customer and patient feedback regularly					0.40
We evaluate regularly the results accomplished in development projects in joint meeting			-0.35	-0.36	0.37
Customers have sufficient information about the quantity and quality of the organisation's service			-0.41	-0.36	0.33

Table 2: Loading of Variables on Different Factors

Knowledge use in Management describes the use of knowledge in managers' work and includes monitoring the achievement of goals with the help of the information that has been collected. It also includes justifying decisions, goals and changing activities based on monitoring information. **Knowledge Sharing** describes structured knowledge sharing in organisations including information exchange and knowledge sharing between different professional groups and units in the organisation. T**he Availability of Different types of Knowledge** describe timely information about population, budget, operating environment, and changes. These items focus on manager's access to knowledge relating to the organisation's operations in their job.

Comprehensive Knowledge about Operations summarises the different types of knowledge that managers need in their job, such as client feedback, information about client service process and development projects.

The variable variation was best explained by the creation of common managerial knowledge factor, which loaded 5 variables. This factor's eigenvalue was 5,9 and it explained 24,84 % of the variance of the variables.

In contrast, the variable variation was least explained by the factor comprehensive knowledge about operations, which loaded 5 variables. This factor's eigenvalue was 1,0 and it explained 2,35 % of the variance of the variables.

The total explanatory power of the model was 53,9 %. The mean values of the sum variables vary from 2,92 to 4,08. Health care managers expressed the most positive views about knowledge use in management and the availability of different types of knowledge. The creation of common managerial knowledge was considered the weakest aspect of KM. The sum variables generated by factor analysis and the mean values of the answers by background variables are summarized in Table 3.

Sum variable realization	**Creation of common managerial knowledge**	**Knowledge use in management**	**Knowledge sharing**	**The availability of different types of knowledge**	**Comprehensive knowledge about operations**
Items	5	4	3	5	5
N	399	404	402	397	399
Mean	2,92	4,08	3,39	3,54	3,42
Median	2,80	4,00	3,33	3,60	3,40
SD	0,759	0,610	0,751	0,742	0,712
Eigenvalue	5,9	2,2	1,4	1,3	1,0

% of Variance	24,838	8,006	3,744	3,262	2,354
Cronbach's alfa	0,75	0,77	0,61	0,69	0,71
Background variables	**Mean**	**Mean**	**Mean**	**Mean**	**Mean**
Age					
40 or under	2,80	4,31	3,49	3,41	3,35
41-50	2,88	4,11	3,41	3,55	3,40
51-60	2,92	4,26	3,39	3,55	3,41
61 or over	3,10	4,32	3,30	3,60	3,62
Educational background					
University degree	2,83	4,30	3,39	3,55	3,34
University of applied science	2,97	4,20	3,39	3,54	3,47
Management experience					
Under 5 year	2,96	4,26	3,47	3,50	3,36
5-9 year	2,80	4,22	3,47	3,53	3,42
10-19 year	2,91	4,26	3,30	3,55	3,46
20 - 29 year	3,08	4,33	3,35	3,65	3,55
30 year or over	2,92	3,88	3,69	3,49	3,23
Management position					
Strategic managers	2,92	4,62	3,06	3,83	3,59
Middle managers	2,75	4,19	3,48	3,44	3,19
First-line managers	3,05	4,18	3,42	3,55	3,57
The nature of work					
Full-time management and administrative work	2,91	4,14	3,39	3,56	3,43
Management and clinical work	3,03	3,95	3,34	3,57	3,53
Expert and development work	2,53	4,14	3,70	3,27	2,92
Working organization					
Integrated organization 1*	3,07	4,29	3,31	3,55	3,31
Integrated organization 2	2,77	4,20	3,66	3,56	3,13
Integrated organization 3	3,05	4,19	3,10	3,77	3,59
Integrated organization 4	3,11	4,23	3,31	3,92	3,77
Central hospital	2,75	4,28	3,50	3,24	3,29
University hospital	2,86	4,24	3,39	3,18	3,48
Likert-scale on which 1 denoted "completely disagree", 2 denoted "somewhat disagree", 3 denoted "neither agree nor disagree", 4 denoted "somewhat agree" and 5 denoted "completely agree.					

Table 3: The Sum Variables Generated by Factor Analysis and the Mean Values of the Answers by Background Variables

Creation of common managerial knowledge ($p< 0.05$) had a statistically significant relationship with the management position in organisation, the nature of the work, and the organisation worked for. First-line managers evaluated the creation of common managerial knowledge a little more positively than strategic managers and middle managers did. However, expert and development managers evaluated the creation of common managerial knowledge more negatively than did managers involved in full-time management and administrative work or both administrative and clinical work. Differences between organisations were apparent in how managers evaluated the creation of common managerial knowledge. The mean values of the responses varied in different organisations between 2,75 and 3,11, with managers working in three integrated organisations responding more positively than managers in other organisations. Background variables such as respondents age, management experience and educational background showed no relationship with the sum variable creation of common managerial knowledge.

We found a statistically significant relationship between knowledge use in management and management position in the organisation ($p< 0.001$). Strategic managers evaluated the use of knowledge in management more positively than middle managers and first-line managers did, while middle managers and first-line

managers evaluated the use of knowledge in management rather similarly. Educational background, management experience, and nature of the work showed a statistically significant relationship with the use of knowledge in management ($p< 0.05$). Managers with university degree evaluated the use of knowledge in management slightly more positively than did managers with a degree from a university of applied science. Managers who had been in management for 20-29 years evaluated the use of knowledge in management most positively. In contrast, managers with more than 30 years' management experience evaluated the use of knowledge in management more negatively. Further, both managers doing full-time management and administrative work and managers doing expert and development work evaluated the use of knowledge in management more positively than those involved in both management and clinical work. Respondents in all groups of background variables evaluate the use of knowledge in management positively. The mean values of responses varied between 3,88 and 4,62 in all groups by background variable. The use of knowledge in management showed no relationship with respondents' organisation.

We observed a statistically significant relationship between knowledge sharing and organisations ($p<0.001$). Managers' views on knowledge sharing varied in different organisations, and the mean values of the answers from different organisations were between 3,10 to 3,66. In one integrated organisation and in central hospital managers had a more positive view on knowledge sharing than managers in other organisations did. In addition, there was a statistically significant relationship between knowledge sharing and management position in the organisation ($p< 0.05$). Middle managers evaluated knowledge sharing more positively than strategic managers did, and a little more positively than first-line managers. There was no statistically significant relationship between knowledge sharing and respondents' age, management experience, educational background, or nature of the work.

There was statistically significant relationship between availability of different types of knowledge and working organization ($p< 0.001$). The mean values of the answers varied in different organisations between 3,18 and 3,92. Managers evaluated the availability of different types of knowledge most positively in two integrated organisations. Managers working in the university hospital and central hospital evaluated it more negatively. There was also a statistically significant relationship between the availability of different types of knowledge and management position in organisation ($p< 0.01$). Strategic managers evaluated the different availability of knowledge more positively than middle managers and first-line managers did. Knowledge availability displayed no relationship with managers' age, management experience, educational background or the nature of their work.

We found a statistically significant relationship between comprehensive knowledge about operations and management position in the organisation ($p< 0.001$). Strategic managers and first-line managers evaluated comprehensive knowledge about operations in almost the same way, and their views were more positive than those of middle managers. There was also a statistically significant relationship between comprehensive knowledge about operations and the nature of a manager's work ($p< 0.001$). Managers doing both management and clinical work evaluated comprehensive knowledge about operations more positively. In addition, there was a statistically significant relationship between comprehensive knowledge about operations and working organisation ($p< 0.001$). There were differences between organisations in how managers evaluated comprehensive knowledge about operations, and the mean values of responses varied from organisation to organisation between 3,13 to 3,77. Comprehensive knowledge about operations showed no statistically significant relationship with managers' age, management experience or educational background. The effect of the respondents' background variables on the mean of the sum variables is shown in Table 4.

Background	**Test**	**Creation of Common Managerial Knowledge**	**Knowledge use in Management**	**Knowledge sharing**	**The availability of different types of knowledge**	**Comprehensive knowledge about operations**
Age 40 or under 41-50 51-60 61 or over	Kruskal- Wallis df Asymp. Sig.	3.611 3 0.307	5.110 3 0.164	1.390 3 0.708	2.292 3 0.514	3.801 3 0.284
Management Experience under 5 Year 5-9 Year 10-19 Year 20 Year or Over	Kruskal- Wallis df Asymp. Sig.	5.096 4 0.278	9.748 3 0.021*	5.231 4 0.264	2.284 4 0.684	3.722 4 0.445

Educational Background University Degree University of Applied Science	Mann-Whitney U Test	2,000 Z -1,407 p = 0,159	2,500 Z 2,075 p = 0,038*	6,500 Z -0,124 p = 0,902	6,000 Z -0,115 p = 0,908	3,500 Z -1,899 p = 0,058
Management Position Strategic Managers Middle Managers First-Line Managers	Kruskal-Wallis df Asymp. Sig.	8.060 2 0.018*	38.313 3 < 0.001***	11.007 2 0.004**	10.192 2 0.006**	24.713 2 < 0.001***
The Nature of Work Full-Time Management and Administrative Work Management and Clinical Work Expert and Development Work	Kruskal- Wallis df Asymp. Sig.	7.328 2 0.026*	7,414 2 0.025*	5.158 2 0.076	2.419 2 0.298	16.331 2 < 0.001***
Working Organization Integrated Organisation1* Integrated Organisation 2 Integrated Organisation 3 Integrated organisation 4 Central Hospital University Hospital	Kruskal Wallis df Asymp. Sig.	14.600 5 0.012*	5.003 5 0.415	22.285 5 < 0.001***	48.626 5 < 0.001***	36.523 5 < 0.001***
The level of significance *p<0.05, **p<0.01, ***p<0.001. * Integrated organization provides primary and special health care services as well as social services						

Table 4: Respondents' Background's Impact on the Sum Variables

4. Discussion

The aim of this article was to investigate how health care managers viewed knowledge management in their organisations and how background variables, such as their age, educational background, management experience, management position, organisation, and the nature of their work are related to their views about KM. Managers viewed different KM components quite positively, but components are still handled quite separately in managerial work. This complicates the systematic implementation of KM in health care. Compared to previous studies [27,29,30] this study introduces a new component of KM, namely comprehensive knowledge about operations, which pulls together the different types of knowledge that managers need to perform their job. Managers position in their organisation affects their view of KM and its components. This is seen clearly in relation to knowledge use in management and comprehensive knowledge about operations. These findings reflect health care management practices and the different roles that managers play in KM, as distributors of knowledge, users of comprehensive knowledge about operations, and users of available knowledge. In health care knowledge have wide spectrum of different uses, and it is utilised also to confirm the practices in the organisation [18,27].

According to the results, the weakest component of KM is the common managerial knowledge in management, which includes the real-time information managers need to carry out their work. Their responses reflect the importance of knowledge in health care, but also the limited ability of health care organisations to produce the real-time information that managers need [9-10]. Previous research has described knowledge sharing in health care as problematic [18]. In this study, managers did not evaluate the sharing of knowledge as particularly positive or particularly negative. However, their views about knowledge sharing remained more negative than their views about different knowledge availability and comprehensive knowledge about operations. Knowledge sharing could be improved by removing hierarchical and structural barriers between different managers in the traditional operating culture of health care organisations [22-31].

Managers evaluate the use of knowledge in management significantly more positively compared to the other components of knowledge management. Despite, the lack of common managerial knowledge, managers in health care expressed the view that they use knowledge well [41]. The use of knowledge is an essential part of KM, so its efficient use affects the whole level of KM in health care. The increase in the amount of information has made it difficult for managers to access the information they need in their work [10]. The knowledge offered to the managers must be meaningful timely to address actual management challenges. The time managers spend searching for the relevant knowledge is a significant barrier to knowledge utilisation. Providing knowledge in the form of knowledge products that meet managers' need would facilitate both better management and better use of the growing amount of knowledge being generated in the health care sector [45].

The most significant of the background variables turned out to be the organisation, in which managers worked. Organisation seems to have an impact on the use of KM in health care. The effect was seen most clearly relation to knowledge sharing, the availability of

different types of knowledge, and making use of a comprehensive knowledge of operations. It is worth noting that managers' answers about different components of KM varied in all organizations. Organization-specific differences may be explained by different perspective on KM in management, different operating practices, and organizational cultures [10,27]. Health care organisations operate independently, and good KM practices are not easily shared between organisations. In health care reforms, systematic work is needed to promote knowledge management and to share good KM practices widely in health care. Benchmarking and learning from each other could also promote the implementation of consistent KM practices within organisations.

Managers' position relates closely to the nature of their work. Strategic managers evaluate knowledge use in management more positively than other managers do. They need a great deal of administrative and operational knowledge in their work, and they are expected to have extensive knowledge control. By contrast, managers involved in expert and development work had positive views about knowledge use in management and knowledge sharing but were more negative about other KM components. This can be explained by the different role, that expert and development managers play in their organisations. In health care organisations managers also process knowledge differently in their work. Their individual backgrounds, i.e., age and management experience, do not explain the adoption of knowledge management in health care. The importance of educational background also remains minor. Rather, organisational factors, such as management position in the organisation, the nature of the work and the organisation they work, are more relevant. This result differs from recent findings, which highlighted the influence of managers' individual factors having an impact on KM [14]. This raises questions about organizational culture in different countries and organisation (i.e. public health care and private health care) and its influence on the actions of managers. Health care organisations could benefit from KM development programs, where managers at different levels of the organisation jointly innovate good knowledge management practices.

The questionnaire was developed specifically for this study. The study focused on managers working at different levels of six health care organisation in Finnish public health care. The response rate was quite moderate for electronic survey (37 percent) a following one reminder. This corresponds well to managers' response rate in other studies, too. The formulation of the statements was pilot tested to improve the validity of the measure. The questionnaire was quite understandable and easy to answer for the respondents since numbers of missing values and unfinished questionnaires were very low. For data analysis, we used a factor model to enable grouping of the knowledge sources. The sample size of this study was sufficiently large (n=406) for factor analysis. The methodological approach used was worthwhile because it allowed for the simultaneous examination of many variables while enabling the data to be presented succinctly [51,52]. Factors loading varied between different factors, but the entities formed were logical. The Cronbach's alpha values were quite good for sum variables (0.61-074). The respondents represented well the Finnish health care managers in general and therefore, the results reflect the views of public health care managers in Finland on KM. The results of this study cannot be generalized directly to other health care environments, but the results provide an opportunity to compare managers' views on knowledge management in different health care environments and cultures.

4.1. Implications

Results of the study can be utilized in the development of knowledge management as part of health care management. We found a new component, comprehensive knowledge about operations, which brings customer information into the discussion of KM. Furthermore, organisational factors were found to influence more on the managers views on KM than managers' individual factors. Both findings indicate the need to enhance creation of shared knowledge among the health care managers. In addition, these results can be used in training of health care managers. A validated questionnaire to evaluate health care managers' views about KM is missing. The questionnaire developed for this study can be developed further and this study also gives indications to the development of the systematic and validated questionnaire in the future.

5. Conclusions

In conclusion, well-planned KM systems which recognize the creation of common managerial knowledge of health care managers working in different positions and which produce analysed knowledge are needed. In this study, the individual factors of managers were not clearly related to the KM components while organisational factors seem to have more clear relation. In the development of KM in the organisations, the different knowledge needs of different managers should be considered. Benchmarking and learning from each other could therefore promote the implementation and developing of KM practices in and within public health care organisations. Common discussions about available information are needed to enhance knowledge creation and to gain knowledge sharing organisation culture in health care organisations.

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