



# The work done in healthcare projects

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## Abstract

**Aim:** The aim of the study was to analyze healthcare projects from the viewpoint of the planning, implementation and evaluation of the projects. The purpose was to generate knowledge about the work done in projects that can be utilized in healthcare management.

**Methods:** The study was a non-experimental survey. Descriptive statistics were collected using a convenience sampling method. The data were collected from all hospital-funded development projects in all acute care setting in one Finnish university hospital (€1.1M spent on funding for the projects in 2008–2010; 58 projects). 397 project participants were recruited for participation in the web survey which formed the basis for the research data. The e-questionnaire was comprised of five domains: Time and staff resources used for the project (7 questions); Project planning and providing information about the project (8 questions); Experiences of project implementation (16 questions); Evaluation (7 questions); Human resources affecting the project outcomes (26 questions). The questionnaire included background information as well as open-ended questions enquiring about the participants' views on the development of project related activities. After two survey rounds the response rate was 29.5% (n=117). Quantitative data were analyzed using descriptive statistics. Qualitative data were analyzed using content analysis.

**Results:** 71% of the project participants took part in the project in addition to their usual responsibilities. The participants were mainly physicians and nurses (77%). Half of the participants were in managerial positions and had previous project experience. 50% of the participants thought that the information communicated about the project was sufficient. The project groups were multi-professional; cooperation was seen as having been successful and that aims were perceived as having been achieved successfully (92.5%). Although the participants noticed a conflict between their own work and the project work, their eagerness for future-oriented development and smooth integration of project results as part of their daily routines were the main reasons they took part in the projects.

**Conclusions:** Setting up clear guidelines and adhering to them would encourage experts to take part in projects. Dissemination of information during the project internally and externally would strengthen the degree of commitment of the project participants. Integration of projects into the hospital strategy would be of primary importance to guarantee the success of long-term systematic development work.

**Keywords:** Project, project management, project work, health care, human resources

## Background

Since the early 2000s, healthcare services in Scandinavia have been characterized by an increasing amount of work done in projects [1]. In this study, a project is seen as a unique, goal-oriented and planned entity of work separate from normal daily work [1]. A project is also an arena in which knowledge is transferred [2] and generated, and learning is essential for success [3].

In healthcare, projects are used as an aid to implement changes

[4] and in an attempt to bring added value to the organization [5]. However, not all projects achieve their goals [6] and the results are not always permanent. The success of the work done in projects is influenced to a significant degree by project management and planning, and by the commitment and participation of staff and leadership [7–9].

The work done in projects and project management has been studied extensively since the early 2000s from the perspectives of engineering science [2] as well as economics and

information technology [10,11]. To date, healthcare projects have been relatively little studied from the viewpoint of the staff and management. Research has focused on the results achieved with projects [12], their evaluation [13], and aspects such as how to reduce costs in healthcare services with the help of project management [14]. In Finland, the work done in healthcare projects has previously been studied using interviews [1,3,15], but to our knowledge, no descriptive survey-based study has been conducted prior to this. It is particularly important to study this subject in Finland because significant sums of money have in recent years been allocated to development work carried out in projects. For example, in 2008-2011 more than 100 million Euros were designated for development work within National Development Program for Social Welfare and Health Care (KASTE) projects [16].

There are different types of projects in health care. There are internal, small-scale projects without any resources of their own, as well as large-scale projects with external funding, involving several organizations. Large-scale projects are usually initiated externally, meaning that their objectives are set, e.g., by the Ministry of Social Affairs and Health. Small-scale projects typically include, for example, reorganization of ways of working in a hospital ward according to a specific schedule and towards certain goals [1]. People working in health care projects often do so in addition to their own day jobs, and the projects are intended to be carried out on meager resources, or in many cases with no additional resources whatsoever [17]. The projects explored in this study fall between these two types.

### Factors that define and guide project activities

A typical feature of most projects is that they have their own time and financial resources [7,10] and consist of a number of phases in order to enhance the achievement of their objectives. Projects usually consist of three phases: planning, implementation and evaluation [18]. During the evaluation phase, a total evaluation of the work, achievement of objectives and the results of the project is carried out [7].

It has been customary to apply traditional project management methods in healthcare projects, with an emphasis on so-called 'classic project attributes' such as time scale, resources, project organization, phase structure, objectives and evaluation that make up the basis especially for large-scale projects in all fields. However, looking at these classic attributes is not enough when aiming to study the essence of the work done in projects [17]. What makes it difficult to apply traditional project methods in the healthcare context is that healthcare processes and the end results of the projects are complex and hard to measure [19] since the aim of the work is in most cases to improve the well-being of patients or staff [20].

Project research has in recent years focused increasingly on the effects of human factors in projects. Earlier studies have shown human resources to be a key factor for project success [21]. In healthcare projects, human resources refer to factors

which project organization members possess and are separate from financial resources. Human resources can be divided into two groups: the knowledge, skills and characteristics of the project manager and individual project team members [15] and the common values manifested in team work and attitudes toward work and collaboration [20].

The skills of the project manager are particularly important for project success. Project managers are expected to have experience, and to display professional competence in addition to possessing good interpersonal skills [8,22-25]. Employees' individual human resources are also affected by the leadership style and emotional intelligence of the project manager. Individual project workers bring their own ways of learning, developing activities and working in stressful, time-sensitive situations into the project [20].

In teamwork, human resources consist of the group members' individual competencies and characteristics. On the project group level, the dimensions of human resources include interaction, trust, innovativeness and staff well-being [3,26]. A project group that is able to utilize its competence to the full at as early a stage as possible is able to respond to the demands they are faced with, thus promoting project success [11]. This is associated with the utilization of the collective competence of the project group [11], open dissemination of information and discussion aimed at assessing activities [27], as well as the ability to provide constructive feedback [8] and deal with unexpected situations [13]. The ability to learn from the mistakes of earlier projects is also an important skill from the viewpoint of human resources [3]. Taking into account the effects of different professional and organizational cultures and motivating the project group also occupies a key position in project group work [28]. This is of particular importance in the healthcare sector where multiprofessional collaboration is frequently conducted within projects. Multiprofessional collaboration means that experts from different fields work together, pooling their expertise for the good of patients [29].

### Aims

The aim of this study was to analyze healthcare projects from the viewpoint of the planning, implementation and evaluation of the projects. The purpose was to generate knowledge about the work done in projects that can be utilized in healthcare management.

### Research questions

1. What are the background characteristics of the project participants?
2. How was the project planning, information about and implementation carried out?
3. What human resources affected to project outcomes?

### Study design and research methods

The study was a non-experimental survey based on a pluralistic philosophy of science approach and it combines quantitative

and qualitative research design [30,31]. This approach is well suited for the study of work carried out in projects because of the complex nature of the phenomenon. Descriptive statistics were collected using a convenience sampling method. The data was collected from 58 hospital-funded development projects in an acute care setting in one Finnish university hospital (€1.1M spent on funding for the projects in 2008-2010; 58 projects). All 397 project participants were recruited for the study. An electronic questionnaire and information concerning the research survey was sent to the participants by the research team in March 2012. After two survey rounds the response rate was 29.5% (n=117). Quantitative data were analyzed using descriptive statistics. Qualitative data were analyzed using content analysis.

### Questionnaire

The questionnaire was comprised of five domains: Time and staff resources used in the project (7 questions); Project planning and informing about the project (8 questions); Experiences of the project implementation (16 questions); Evaluation (7 questions); and Human resources affecting the project outcomes (26 questions). Structured questions were evaluated with a Likert-type scale (1, totally agree - 5, totally disagree). The questionnaire also included three open-ended questions on the development needs of project activities related to human resources in projects and seven background questions related to the participants' education and work experience.

### Data analysis

The data consisting of answers to the structured questions were analyzed using descriptive statistics. Qualitative data were analyzed using content analysis [32]. Content analysis was used in an attempt to gain an understanding of the views of the staff related to project work and human resources in projects and to create an overall picture of those views [31]. The process of content analysis began by reading through the answers to open questions several times. Answers to research question number four (What kind of views do project team members have of the human resources that affect project activities?) were sought from the data. Thought entity was chosen as the unit of analysis [32] after which the data were condensed and sub-categories were formed. As answers to the research question, the following condensations of data sub-categories were formed and named to describe their contents: eagerness for development and smoothness of operation.

## Results

### Participants' background characteristics

The quantitative data consisted of responses from 124 persons and the qualitative data of 117 responses. After two survey rounds the response rate was 29.5% (n=117). Nearly two in three of the participants were women. Half of the respondents were physicians, one third were nurses and every fifth person

had some other form of education. The largest single groups were physiotherapists (n=7) and physicists (n=2). A total of 61.5% of all participants worked in managerial positions. Nearly half of the participants had previously worked in 1-3 projects, while one in four had not taken part in any projects before. The mean age of the participants was 52 years. 95.0% of the participants had work experience in the range of 15.1-18.3 years, the average being 15.5 years of work experience. The length of the participants' work experience with other than the current employer was on average seven years. Just over half of the participants had studied project work.

### Use of time and staff resources in healthcare projects

71.3% of the participants took part in project work in addition to their day jobs. 13.1% and 6.6% of the participants had been relieved of their own duties on a part-time or full-time basis respectively in order to participate in the project work, while working in projects was part of the regular work duties of 4.9% of the participants. In addition, 4.2% of the participants reported taking part in project work in some other way. When looking at the average time spent on project work per week, 60.0% spent less than three hours a week on project work.

### Project planning, providing information and project implementation

More than half of the projects were initiated after a suggestion by an employee or group of employees. Managers prioritized the projects initiated by employees in order to allocate project funding. About one in five projects were launched following a suggestion by a manager. Nine participants could not specify on whose initiative the project had been launched.

54.1% of the participants stated that the project had a planning group. 6.0% reported that there was an evaluation plan, while 25.5% did not know whether an evaluation plan had been drawn up for the project. In 65% of the projects, dissemination of information within the project was the responsibility of the project manager; no agreements had been made about providing information on the project outside the project group. 31.1% of the participants felt that the amount of information about the project they received during meetings was sufficient. 49% of the participants felt that they had received a sufficient amount of information about matters related to the project during meetings.

Half of the participants (47.9%) were familiar with the hospital strategy. About 75.0% of the participants felt that their knowledge about the aims of the project was wholly or partly sufficient. Three participants felt that they had no knowledge of the aims of the project. The aims set for the projects had been achieved or partly achieved in the opinion of 23.3% and 45.0% of the participants, respectively, while two participants considered that no aims had been achieved. 73.1% of the participants thought that the project proceeded as planned or nearly as planned, where as three participants thought it had not proceeded at all according to the plan. They

thought that the project duration was too short in proportion to project objectives or project outcomes were not aligned with the project objectives.

The information received about the projects was perceived as fully or partly useful by more than 80.0% of the participants. When evaluating how necessary the project was, 61.2% of the participants considered the project to be fully necessary. Four participants thought that they had not gained any benefit from the project. They participated only because they were nominated in the project although they saw that the subject of the project did not benefit their work.

The majority of the participants (92.5%) felt that the project had been completely or partly successful; 66.4% said they would consider taking part in project work again. Of the participants 42.0% were wholly satisfied with their project training, 31.0% were partly satisfied, 25.0% partly dissatisfied, 2.0% wholly dissatisfied, while 17.0% were unable to assess their satisfaction to the project training they had received.

### **Human resources affecting project outcomes**

84.5% of project participants felt that the group's expertise had been sufficient or fairly sufficient. Two participants felt that their participation to the project was not valued, while 20 participants were unable to assess this. 43.2% thought that the project team's commitment to the project was sufficient. Nearly 11% were unable to describe the team's degree of commitment. Four felt that the project group's commitment to project work was not sufficient. Internal collaboration within the project team was considered sufficient by 46.8%.

The expertise of the project managers from the viewpoint of individual group members was perceived as wholly or partly sufficient by 84.0% of the participants. The support given by project managers was sufficient or partly sufficient by 82.7%. According to 33.3%, collaboration between project managers and project teams was sufficient, while 53.3% considered it partially sufficient.

When participants were asked to state whether they saw a conflict between their own work and the project work, 56.4% of participants saw that there was a conflict between their daily work and project work 18.8% perceived a partial conflict, while 7.7% could not say whether they had experienced any conflict. The work done in projects by the participants was discussed in 22.2% of the parent organizations. 21.4% of the participants felt some envy toward project work within the parent organization. Encouragement from the parent organization was perceived as wholly or partly sufficient by 51.7%, and as wholly insufficient by 7.8%. A number of participants (4.3%) felt that they had received no support at all from the work community. Nearly 25.0% felt that they received sufficient encouragement for the project work from their immediate superior.

### **Eagerness for development and smoothness of operation promoted project outcomes**

The project participants described their eagerness for develop-

ment and for smooth running project operations through the continuous development of operations, utilization of results, ease of implementation, resourcing and dedicated funding. Continuous development of operation referred to an active effort in healthcare units to develop operations and to encourage their staff to work in projects. Many were willing to take part in project work, as shown by the following quote from the original data:

*"There had been a clear need for this type of activity for a long time, which is why there was a real push to get on board."*

However, there was also concern that development of the new ideas generated in the project would not make any progress. Participants considered possibilities for further active development and plans important in terms of continuity. Some of the participants felt that the project had remained unfinished and wondered whether projects aimed at further development could have been launched:

*"The duration of R&D projects is too short; some sort of system should be set up to continue projects."*

Utilization of project results was seen as challenging. For example, the adoption of new modes of operation as part of daily routines was hampered by the unsuitability of project aims for today's world, resistance change on the part of employees in the organization and the notion that the mode of operation in question cannot be adopted in the hospital district area as a whole. The adoption of a new mode of operation as part of daily work was also hindered by the fact that adoption of the results of the project had not been planned or managed or that no decisions about follow-up and evaluation had been made during the project:

*"At the moment I see it as a drawback that once the project comes to an end, the adoption into practice of the new mode of operation is no longer monitored. No parties have been assigned responsibility for this."*

Project implementation was perceived as challenging due to the project guidelines in use. The guidelines were seen as a rigid, bureaucratic system and were considered obscure and complex. Cost monitoring was perceived as particularly challenging. According to the participants, project guidelines should be short and concise, which would make projects easy to conduct and ensure successful integration of the project as part of daily work:

*"The selection process and guidelines feel quite out of date, they are very cumbersome - both could do with some trimming."*

The importance of resourcing and dedicated funding was

emphasized in terms of achieving the project aims. A sufficient length of the period of project funding was also seen as important to ensure the significance of the project results and for good return for the money invested. The participants were in favor of allocating funds to projects supporting the hospital district strategy, which would ensure that the results would benefit the entire region comprehensively:

*"In terms of developing operation from a strategy point of view, giving more money to fewer actors works well."*

Relieving those taking part in project work from their daily duties was seen as important since working in projects in addition to carrying out daily duties often led to conflicts between regular daily work and project work. The participants also pointed out that doing project work in addition to regular daily work did not improve the success of project work:

*"Clinical work fills the day to such an extent that there is no time to take any ideas for developing operations any further than discussing them during lunch."*

## Discussion and conclusions

The aim of the study was to analyze healthcare projects from the viewpoint of the planning, implementation and evaluation of the projects. The purpose was to generate knowledge about the work done in projects that can be utilized in healthcare management. The project teams were multiprofessional. Physicians made up the largest professional group, followed by nurses. Collaboration with the project team was perceived as being smooth and effective. In previous studies, multiprofessional collaboration has been observed to promote the development of operations, even though the collaboration between various professional groups poses its own challenges [29,33]. The participants felt that the projects had succeeded in meeting the objectives set, meaning that the operation of the multiprofessional teams of participants had yielded results. The fact that most of the participants considered their own project training to be sufficient may also have affected their evaluation of outcome success. The context and substance competence of the members of the multiprofessional healthcare projects [13] may also have strengthened the participants' perception of successful progress of the project.

The majority of those involved in projects were working in managerial positions with a great deal of experience in healthcare, but had relatively little previous experience of project work. From the viewpoint of project management, project training seems to be important for persons in managerial positions in healthcare as they are usually in charge of projects. About half of the participants had received training in project work prior to the start of the project.

Project work was mostly carried out in addition to regular daily work. This diverted the participants' attention from their project work, and could in some cases blur the interface

between regular daily work and the aims of the project. The finding of this study on project work resourcing supports previous findings [e.g., 1,20] that healthcare projects are carried out with relatively modest resources or indeed without any extra resources. Together with the finding on the small amount of weekly working time spent on projects, the participants' perception of project success gave an indication that project resources were optimal. However, the participants did not perceive the resources as sufficient, since a significant proportion felt that there was a conflict between their own work and the project work. The same conflict has also been observed in previous studies on healthcare projects [15].

Besides resource allocation, another factor causing dissatisfaction according to the results of this study was participation in project planning. For example, participation in defining the aims of the project was seen as being insufficient. In addition, only about half of the participants were familiar with the project planning group. According to the findings, some participants were not quite aware of who had actually planned the project.

Projects were launched as a result of a jointly felt development needs or a suggestion from an individual employee or work unit manager. This reflects a work community-driven development approach and a positive attitude on the part of the healthcare experts towards the development of their own work [1,21]. However, the association with the hospital strategy remained unclear for many. From the viewpoint of project management, putting the strategy into practice among staff in a sufficiently efficient manner might improve the utilization potential of the results achieved in projects. In this study, making the project team members aware of the hospital strategy increased the participants' sense of the usefulness of the project. An interesting feature of the findings is that even though the majority of the participants worked in managerial positions, the integration of project activities into the hospital district strategy was still insufficient. The participants who worked in managerial positions were often also project managers, who had the greatest responsibility for the project [4]. Their knowledge of the parent organization is of primary importance for the success of long-term and systematic development work through projects.

The study also explored the utilization of project results in the work unit and more extensively in the hospital. Publicity of the projects and publication of a final report in accordance with hospital guidelines seems to promote the adoption of the results of a project in the daily routines in the work unit. However, there was uncertainty among the participants as to whether the project results had been adopted on a larger scale. From a project management perspective, it is important to plan and implement the follow-up of the results and their impact. It is also crucial to provide information and disseminate the results in a more systematic manner. If there is a general feeling that the work done in projects does not lead to permanent new ways of working, the project may not be

considered wholly successful [20]. Arrangements concerning informing those outside the project group should also be agreed on as it contributes to adoption of the project in daily routines. In this study, the participants who discussed the project within their own work units were clearly in the minority. It is important for project participants to take a more active role in this because they have a key role in disseminating project-related information [2]. Improving the leadership skills of project managers through education is important in order to promote dissemination of information and utilization of project results.

The operation of individual project team members' work units also seems to impact the work done in projects through encouragement and discussion conducted among staff members. Support given by an immediate superior in practical matters and encouragement for project work are associated with good project outcomes [22,23]. According to the results of the present study, the work community supported working in projects to some degree, and there was no significant envy towards project work. Acceptance of project work and commitment on the part of the work community and immediate superiors contributes to encouraging those working in the project group. This may also decrease the perception of conflict between one's own work and project work. In turn this helps individuals to be motivated and work towards the joint objectives of the project team [7].

The work done in projects was characterized by an eagerness to develop activities in a future-oriented manner despite the constant uncertainty of funding and the heavy bureaucracy that guides projects. However, based on the findings of this study, projects cannot be directly regarded as a means to implement hospital strategy, as the link between project and overall strategy seemed loose. The work done in projects was also over shadowed by a fear of the short-term nature of development through project work caused by the perceived lack of resources. In addition, criticism was directed at project guidelines and the bureaucratic administration of project funding. From the viewpoint of project management, drawing up guidelines that are as clear as possible and adhering to them would encourage well-motivated healthcare professionals to work in projects despite the perceived conflict between their own work and project work.

One interesting finding was that some participants (38 persons) could not say in what kind of project they had been involved and who it was financed by. This indicates rather loose participation and commitment to projects: some persons assigned to a project may be involved in name only, never actually taking part in the project. On the other hand, the finding may be an indication of challenges associated with the dissemination of information and communication if some of those working in a project are not aware of their own project involvement. From the viewpoint of this finding, the importance of both internal and external communication while the project is ongoing cannot be over emphasized [26,28]. Project

work training is particularly important for those working in projects from this perspective as well.

### **Utilization of results and challenges for further research**

The results of this study may be utilized in the planning, development and management of work done in healthcare projects. In the future, it would be important to study further utilization of project results and factors associated with it. Another important challenge for further study is to explore, for example by using interview data, the significance of the amount of encouragement and practical support from the work community and immediate superiors on the perceived conflict between one's own work and project duties and the effect on project commitment.

### **Ethical considerations**

Permission for the study was obtained from the hospital district's management [34] and the principle of informed consent was followed in the collection of all study data [31]. Only researchers had access to the survey responses. The data was destroyed once the research process was completed. Reporting the study was conducted with due respect towards the subjects and the study organization, and individual participants cannot be identified [31].

### **Reliability of the study**

The aim of this study was to analyze project work and in one university hospital, not to generalize the findings.

### **Reliability of the questionnaire**

No previously tested reliable questionnaire was available for the collection of data, which is why a questionnaire was developed to cover the phenomenon under study as extensively as possible [31,35]. Previous studies focusing on projects, as well as two experts from the university and two from the university hospital were consulted in drawing up the questionnaire. When drafting the questionnaire, besides content, special attention was given to ensuring that the questions were logical and easy to understand. Because health care projects have been studied only a little, open questions help to provide a rich picture of project work and the staff views on it. With structured questions the participants were able to describe their views more specifically in an empty space following the question. The significance of the results was strengthened by providing clear instructions to the participants. Eight experts took part in the pretesting: five persons who had previously worked in projects and three experienced employees from the hospital's research and development unit. After pretesting some amendments were made to the wordings and sentence structures used in the questionnaire to make them more precise. The order of the questions was modified and overlapping questions were deleted. These measures strengthened the content validity of the questionnaire [31].

The content validity of the questionnaire is strengthened by the fact that the questions were drawn up based on previous studies and in collaboration with a team of experts on university and workplace matters [31,32,36]. The literature review was limited to studies no older than ten years [35]. The ability of the instrument to measure the phenomenon under study was carefully pretested twice with experienced project experts and researchers. After pretesting and amendments, content validity was strengthened and the understandability of the questions improved. According to the assessment of the experts, the ability of the questionnaire to measure the phenomenon under study was comprehensive and the questions were easy to understand.

### **Reliability of quantitative data**

The study was based on stratified sampling (n=397) in one hospital district area. The aim of using a sample that was to provide an extensive and representative data set as possible and to increase the validity of the findings. The findings were derived from a relatively large geographical area. In our opinion, this supports the generalizability of the findings in the area of a single university hospital. Wider generalizability would require extending the sampling to other hospitals. The findings were considered from the viewpoints of instrument coverage, the conclusion being that the findings were in keeping with expectations and the frame work. Hardly any research findings about the phenomenon under study have been published, which is why compatibility of the results with previous findings could not be measured. Special attention was focused on careful and reliable reporting of data analysis and the findings were assessed based on the theme of study, the significance of the indicators and the generalizability of the findings [31]. Answering individual questions was not defined as compulsory in the questionnaire; participants could choose to respond only to questions they wanted to answer. This may also have partly affected the generalizability of the study.

An attempt was made to reduce the dropout rate by emphasizing the importance of the study and by repeating the survey [31]. The low response rate was considered to result from the high number of web surveys in the hospital district, the low impact of surveys and the participants' perception of the usefulness of the projects. In addition, the response rate was thought to have been affected by the fast pace of work, non-participation in projects and difficulty in obtaining participants' contact information. In our opinion and according to the feedback obtained from pretesting, the answering instructions were clear and consistent and easy to follow. The subjects' good knowledge of the phenomenon under study, their opinions of their current experience and their relatively wide age distribution may have impacted the answers [31].

### **Trustworthiness of qualitative data**

We ensured the trustworthiness of this study by paying attention to truth value, applicability, consistency and neutrality [36].

We confirmed the truth value of this study by analyzing data as it emerged based on the open question responses and by including quotes from the original data. In this study, our main objective was not transferability of research results, but describing the project work and the views of staff in one health district. The reader can judge the applicability of the results case-specifically. A larger number of open-ended questions, as well as questions that more widely give participants the opportunity to express their views, would have improved the trustworthiness of the study. When considering this study from the viewpoint of consistency, we have described the research process so that it can be repeated if necessary. This allows the reader to understand the limitations of the data collection and analysis process. We have confirmed neutrality in our study by reflecting on our interpretations of the original data. When considering the trustworthiness of our study, interviews with project workers and managers might also have been a useful data collection method when aiming for a more detailed and in depth description of staff views.

### **Competing interests**

The authors declare that they have no competing interests.

### **Authors' contributions**

Authors' contributions	TP	MS	KM	RM
Research concept and design	✓	✓	✓	✓
Collection and/or assembly of data	✓	✓	✓	--
Data analysis and interpretation	✓	✓	✓	✓
Writing the article	✓	✓	--	✓
Critical revision of the article	✓	✓	--	✓
Final approval of article	--	✓	--	--
Statistical analysis	✓	--	--	✓

### **Acknowledgement**

The Hospital District of Helsinki and Uusimaa, Finland.  
Gary Attwood, AAC Global. Medical Research Center Oulu.

### **Publication history**

Editor: Pamela gail Hawranik, Athabasca University, Canada.  
Received: 12-Nov-2015 Final Revised: 10-Dec-2015  
Accepted: 29-Dec-2015 Published: 06-Jan-2016

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**Citation:**

Pohjola T, Suhonen M, Mattila K and Meretoja R. **The work done in healthcare projects**. *J Nurs*. 2016; **3**:1.  
<http://dx.doi.org/10.7243/2056-9157-3-1>