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Action Research in Implementation and Evaluation

Outline of a Study of a Training Programme for Kidney Transplant Recipients

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Introduction

The claim of evidence-based practice is strong today within all sectors of society. There is general consensus that routine practice and decision making within fields such as education, social work and health care should be informed by the best available research evidence. However, there is a need for more systematic knowledge of how to implement research in practice. We need rigorous methods for putting the research into use and evaluating the process and results of implementation.

This article provides an outline of the methods and analytical approaches used in the implementation of a research-based patient-training programme for kidney or renal transplant recipients. The project is cross-disciplinary, borrowing from health science, comparative literature, philosophy and education, and the methods developed are expected to be applicable in research- and professional disciplines such as medicine, education, special needs education and psychology. While the article describes implementation strategy and cooperation between professionals and researchers, its main focus is on research methodology.

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Background

Each year, approximately 300 kidney or renal transplantations are performed in Norway, all at a national centre at Oslo University Hospital (OUS). To reduce the risk of rejection of the new kidney, it is essential to ensure that the patient understands the importance of maintaining life-long immunosuppressive treatment. This includes the awareness that their medication must be taken at fixed hours both morning and night, and measures need to be taken if these patients are prevented from taking their medication. It is equally important for the patients to be able to recognize the signs of rejection and what they can do to reduce the long-term effects of medication in terms of diet, exercise and other lifestyle changes (Murphy, 2007; Transplant Work Group, 2009).

Individually adapted or customized patient education has shown to increase the learning outcome for patients with chronic diseases (Noar, Benac & Harris, 2007; Rimer et al., 1999; van der Maulen et al., 2008). Recently, this has also been shown in a study of renal transplant recipients in Norway (Urstad et al, 2012). In a randomized controlled study undertaken at OUS, a newly developed, customized training programme was compared to a standard programme ("Veien Videre" ["The Road Ahead"]) for renal transplant recipients. It showed that patients who had undergone the customized programme had better knowledge about transplantation as well as higher levels of compliance and life quality, and they also coped better than those who had undergone the standard programme. The customized programme is based on educational theory and has been devised on the basis of previous research on training programmes for patients, knowledge about transplantation and clinical experience (Urstad et al., 2012). The programme starts during the first week after patients have been discharged from the ward and runs over the initial 6–7 weeks after the renal transplantation. The programme consists of five weekly individual training sessions. To ensure individual adaptation, the principles of "academic detailing" are used (Kim et al., 2004; Soumari, 1998; Soumari & Avorn, 1990). These include identification of baseline knowledge and needs (measured by a knowledge test), definition of evident training areas, a skilled instructor, encouragement of active participation, repetition and elucidation of key areas as well as feedback on any behavioural changes. The main difference between current training practices and the customized programme consists in the method of knowledge transfer, timing of the start date, number of training sessions, user co-determination and individual adaptation.

The division management and transplantation experts at OUS wish to improve current training practices by implementing the new training programme in routine practice. In order to do this in a qualified manner and also accumulate scientific information about this type of implementation process, we have designed an implementation study based on the FORECAST framework for programme implementation and evaluation (Katz et. al., 2013). The aim of FORECAST is to ensure "*… that programs are successfully planned, implemented, and evaluated so that they may produce the desired outcomes*" (Katz et al., 2013: 44). The model ensures broad participation involving different stakeholders as well as the opportunity to investigate and develop new insight into the importance of knowledge transfer from a research context to an applied setting. Thus, studying how implementation processes are planned, facilitated, undertaken and monitored can generate valuable insights into knowledge transfer between research and practice. Systematic methods for implementation and evaluation of implementation processes might reinforce the basis for evidence-based practice in patient education as well as in education in general.

Objectives and research questions

The main objective of this study is to understand and appraise processes involved in the implementation of patient-training programmes that are developed and tested through research and for research purposes in applied practice – in this context referring to renal transplantation. The study seeks to elucidate the following research questions:

- What motivates initiation of the intervention in applied practice, and how can the intervention help mitigate the challenges involved?
- How are the drivers and barriers for the introduction of a new method of patient training perceived?
- How are the outcome objectives of patient training described and understood in applied practice, what preconditions need to be fulfilled and how can they be achieved? How do these objectives concur with the outcome objectives used in the study of the training programme?
- How is the new training programme adapted to and situated in applied practice?
- Is the training programme functioning as planned in applied practice, and does it achieve the objectives that are considered important?

- What proves to be the key factors for knowledge transfer between research and applied practice in an implementation setting related to patient training?

Theoretical framework

As mentioned, the study is inspired by the FORECAST framework for programme implementation and evaluation developed by Goodman & Wandersman (1994). Implementation research is an expanding field based on the recognition that the introduction of new knowledge and services in applied practice involves a complex social process that requires careful planning and monitoring. A number of models have been developed to describe multi-stage implementation processes (Marshall, Pronvost & Dixon-woods, 2013; Rogers, 2003). The framework for this study differs from alternative approaches in placing more emphasis on user participation at the planning stage and by allowing for adjustments and improvements as the process unfolds. Hence, the study involves elements of action research design. However, it also differs from the latter by distinguishing between an implementation team responsible for the planning and organisation of the training programme, and a research team responsible for the evaluation (McNiff & Whitehead, 2011).

The FORECAST framework consists of three main stages: 1) planning, 2) implementation and 3) impacts. During the two first stages, implementation and evaluation are integrated in such a way that the evaluation results will have an impact on further implementation. It is also based on close collaboration between the evaluation and implementation teams.

During the planning stage the evaluation team uses the collected data to develop 1) a problem model summarizing the main challenges for successful implementation and 2) a solution model summarizing the expected outcome as well as drivers and barriers for implementation. The implementation stage is introduced by the implementation and evaluation teams in collaboration operationalizing the problem and solution models into "markers", "measures" and "meanings" that will guide the further process. Markers designate the expected outcomes, measures consist of the timeline according to which the markers are assessed, and meanings are the qualitative standards or criteria of a successful result. The completion of the implementation stage is followed by an impact stage, where results are measured.

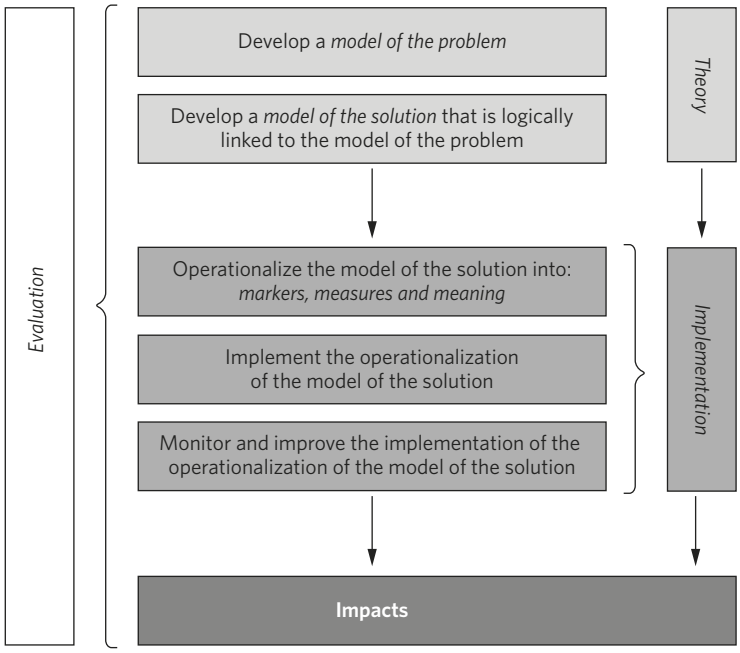

Figure 1 FORECAST logic model.

Research design

Our study of the implementation process has a prospective, dynamic mixed-methods design. It is prospective in following a real time implementation process and mixed by drawing on qualitative and quantitative methods to elucidate the same overall objectives.

Research method

In light of the FORECAST framework, the planning stage of our study focuses on how to adapt the training programme to practice. The implementation stage partly consists of a training phase for health personnel and partly of a phase during which the training programme itself is applied with patients. The impact stage includes monitoring and evaluation of the training programme's results, as well as development of guidelines for programme application and patient counselling. An executive group will be established at OUS to be charged with

the practical implementation, as well as a research group at UiO, Institute of Health and Society, in collaboration with OUS and the University of Stavanger. The head of the executive group at OUS will have a dual role in serving as a liaison between clinic and researchers, acting as a kind of "knowledge broker" while being part of both groups (Ward, House & Hamar, 2009). The stages of the FORECAST framework (planning, implementation and impacts) are broken down into six activities for implementation, monitoring and evaluation. Each of these activities includes practical implementation elements with appurtenant research activities. In the following description, the main focus is placed on the research activities.

Phase 1: Planning and implementation

This phase includes three activities: identification and analysis of the current situation, development of an implementation plan and training and competence enhancement for health personnel. The research activity seeks to elucidate how preparations for the introduction of new measures are made, especially with regard to facilitators and barriers.

Research activity 1: Identification and analysis of the current situation: This activity includes focus-group interviews with stakeholders in the implementation process (health professionals, patients, supervisors and researchers involved in the reference study). A total of four groups are involved, each consisting of eight participants. The evaluation team encourages the participants to reflect on two sets of questions: 1) Which challenges related to the current situation have motivated the initiation of the intervention, and how can the intervention mitigate these challenges? 2) How do they foresee that the expected outcomes can be achieved, and what preconditions need to be present in order to succeed?

Transcriptions from the focus-group interviews form the basis for elaboration of problem and solution models (Figure 1 FORECAST logic model taken from Goodman & Wandersman, 1994). In the efforts to develop these two models, data are analysed in light of two main approaches: First, the data will be reviewed with a focus on *what* kinds of knowledge the participants focus on (the knowledge objects), *how* they express their knowledge (knowledge forms) and *who/what interests* they are speaking on behalf of (the knowledge position) (Lillehagen et. al., 2013). Thereafter, we seek to identify the participants' perceptions of 1) who are awarded active and passive roles respectively in the implementation of the intervention (subject/object), 2) who will deliver it and who

is intended to benefit from it (sender/recipient) and 3) what can be expected to promote success (facilitators/barriers) (Greimas, 1973). The analytical tools used here are innovative in combining the FORECAST framework with concepts from disciplines such as comparative literature and sociology of science.

One of the researchers in the team develops an initial analysis memo which is discussed in the interdisciplinary research team before the analysis is summarized in a problem model and a solution model in accordance with the FORECAST framework. The two models that follow from this analytical process will then be submitted to the members of the implementation team, who develop an implementation plan.

Activity 2: Development of an implementation plan: A key research question related to this activity is how an implementation plan is established and the factors that characterize such a process. This is an element in obtaining knowledge of how the new training programme is being adapted to and situated in clinical practice. As part of Activity 2, the executive group at the hospital is responsible for establishing a shared understanding of "the situation" and preparing an implementation plan based on Activity 1, including milestones, measures and meanings, with a clarification of necessary and available resources, roles and progress schedules. Researchers at UiO monitor this process through participant observation in planning sessions and other activities. The head of the executive group writes reflection memos from this process, and these are combined with the memos from the participant observers to form the basis for the analysis of the material as described in Activity 1.

Activity 3: Training and competence development for health personnel: This activity involves training and competence development for those who will deliver the new training programme. A key research question in this context is how knowledge transfer is achieved in the programme and what factors are conducive or unfavourable to this process. Approximately 100 nurses are employed at the department. They will all undergo the training component, and they will all be asked to participate in the related research activity. Observations of the training sessions, pre- and post-training questionnaires and interviews of the participants during the process are used to monitor and appraise the training process. The questionnaires mainly focus on job satisfaction, expectations for coping, competence development and knowledge transfer. The interviews concentrate on knowledge transfer in particular. We seek to uncover the cognitional process that the participants undergo from their first encounter with the new knowledge (the patient training programme) via intellectual process-

ing to a possible adjustment of behaviour/practice. The conceptual framework for analysing this process of obtaining knowledge is taken from the philosopher Bernard Lonergan (1992), who regards knowledge acquisition as a process consisting of a number of different activities. Questionnaire data are analysed using the statistics program SPSS, version 20, and descriptive and interpretative analyses are undertaken to uncover trends and characteristics related to the main focus described above.

Phase 2: Delivery of the implementation and appraisal of the process

Activity 4: Process implementation of the programme. Following Activities 1–3, the implementation of the new programme goes live. This phase includes process evaluation and concurrent monitoring of the implementation. The researchers interview different participants, such as health professionals, patients and division managers. In addition, selected cases are observed by monitoring of randomly selected "patient situations" throughout their entire pathway with regard to patient training. In addition to the interviews and observations, the project seeks to monitor patients through the aid of questionnaires that measure knowledge, expectations for coping, and quality of life. Text data from Activity 4 will be analysed according to the same principles as during Phase 1, seeking to reveal whether the actual implementation corresponds to the plans. Moreover, there will be a focus on the participants' cognitive process, as in Activity 3. The questionnaire data are also analysed as described in Activity 3. If the implementation process appears to deviate from the planned markers, measures and meanings, necessary adjustments are made as the process unfolds. When this phase is completed and the new programme is established in the clinic, Phase 3 is initiated.

Phase 3: Implementation – appraisal of impacts

Activity 5: Evaluation and monitoring of the implemented programme and related issues: An impact appraisal of the new training programme is undertaken on the basis of Activities 1–4. Here, the research focuses on whether the programme functions as foreseen (as in the research study) and in concurrence with the objectives established in Phase 2. An appraisal of impacts associated with the introduction of the new programme is planned and implemented in collaboration between the executive group in the clinic and the researchers at

UiO. Both quantitative and qualitative research methods are used. We measure the patients' development of knowledge, degree of coping, ability to comply and quality of life before and after the completion of the training programme. These results are compared to those of the reference study and historic figures on rejection of organs from the period preceding the introduction of the new programme. In addition, we investigate user satisfaction among patients, job satisfaction among the health professionals and management satisfaction among managers. Questionnaires (patients and health professionals), focus groups (health professionals) and individual interviews (patients) are here used and analysed through statistical analysis and content analysis, collating general features from the various data analyses.

Phase 4: Development of guidelines for implementation of patient training programmes

Activity 6: Development of guidelines: Today, no guidelines for evidence-based implementation of training programmes in clinical settings are available. Relevant research and knowledge on the development of guidelines in general as well as research findings from Activities 1–5 will be able to form the basis for elaboration of guidelines for implementation, monitoring and appraisal of this type of intervention. The planning and development of this activity is undertaken by the researchers at UiO in collaboration with the implementation group at OUS. They use the consensus method referred to as the nominal group technique, which is a recognized method for the development of guidelines.

Concluding discussion

If the project is successful, it is expected to provide a method for systematic implementation and evaluation of training programmes which may have relevance far beyond the domain of health care and patient education. This type of method is important for promoting evidence-based practice. The evidence-based practice movement has developed tools to help practitioners to access and make use of research knowledge. Within evidence-based medicine, systematic reviews and clinical guidelines are key instruments. The Cochrane Collaboration has provided methods for systematic reviews of clinical trials as well as frameworks to distinguish between different kinds of research evidence and to evaluate the quality of the studies. However, a weakness of evidence-based

practice both within medicine and elsewhere is the lack of guidance on how to implement the research knowledge. Research has to be combined with experience and preferences of both practitioners and users (Engebretsen et. al., 2014). The FORECAST-framework provides an instrument for putting knowledge into practice in a systematic way, paying attention to the expertise of practitioners and users. In addition, it provides a method for monitoring and evaluating interventions in a real world setting.

FORECAST is also a tool for promoting user involvement, which is currently an ideal in most human research activities. However, this ideal is often difficult to operationalize. FORECAST provides a method for integrating user preferences in all parts of the implementation process, from planning to evaluation.

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