The development of a nurse-led self-management support intervention for kidney transplant recipients using intervention mapping: the ZENN-study

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Submitted

ABSTRACT

This study describes the development of a self-management support intervention for kidney transplant recipients using Intervention Mapping. Needs were assessed by reviewing the literature and conducting qualitative research among nurses and patients. Change objectives were formulated based upon these needs and theories of behaviour change. Evidence-based methods to achieve these objectives were translated into implementation strategies. The intervention protocol describes how nurses support patients in assessing challenges using the Self-Management Web, setting goals, making action plans, and developing problem-solving skills. The Intervention Mapping protocol proved useful for systematically developing a nursing intervention that integrates needs, evidence-based methods and theories.

INTRODUCTION

Kidney transplantation is the best option for end stage renal decease (ESRD). However, kidney transplant recipients need to adhere to a lifelong medication regimen and optimal self-management is essential for patient and graft survival, reducing comorbidity and healthcare costs while improving quality of life (Agarwal et al., 2011; Butler, Roderick, Mullee, Mason, & Peveler, 2004; Denhaerynck et al., 2005; Hoogeveen et al., 2011; Hurst et al., 2011; Weng, Dai, Huang, & Chiang, 2010). This has led to an increasing interest in optimizing patients' self-management skills (Bodenheimer, Lorig, Holman, & Grumbach, 2002).

Self-management can be defined as the ability of the individual, in conjunction with family, community, and healthcare professionals, to manage symptoms, treatments, lifestyle changes, psychosocial, cultural, and spiritual consequences of health conditions to maintain a satisfactory quality of life (Barlow, Wright, Sheasby, Turner, & Hainsworth, 2002). Despite the importance of optimal self-management after transplantation, non-adherence to immunosuppressive medication, diet and exercise has been reported to be relatively high, (20 - 35%) (Dew et al., 2007; Massey et al., 2013; Nevins, Robiner, & Thomas, 2014). Recipients themselves also report self-management tasks to be challenging, such as adhering to immunosuppressive medication, monitoring symptoms and managing side-effects, lifestyle changes and coping with psychological consequences (Schmid-Mohler, Schafer-Keller, Frei, Fehr, & Spirig, 2014) and report the need for improved self-management support (SMS) from healthcare professionals (Elissen et al., 2013; Udlis, 2011; van Houtum, Rijken, Heijmans, & Groenewegen, 2013; Wagner et al., 2001). Studies have revealed that SMS can lead to higher patient wellbeing and quality of life, improved health and a decrease in care consumption (Heijmans, Waverijn, Rademakers, van der Vaart, & Rijken, 2015; Jamieson et al., 2015; Weng et al., 2010).

Interventions aimed at optimizing kidney transplant recipients' self-management are, however, scarce. Furthermore, the existing interventions have a number of limitations (De Bleser, Matteson, Dobbels, Russell, & De Geest, 2009; Low, Williams, Manias, & Crawford, 2015): 1) a focus on medication adherence without sufficiently integrating psychosocial and behavioural challenges, (2) insufficient tailoring to individual patient needs and (3) lack of theoretical framework and use of evidence-based behavioural change techniques. There is therefore a need for the development and testing of better-quality interventions which improve upon these short-comings.

An important consideration when developing an intervention is the choice of healthcare professional providing SMS. Traditionally, professionals had a paternalistic approach typified by a directive style rather than shared decision making, and a main focus on medical issues (Teutsch, 2003). This approach may be less effective in establishing a relationship of trust and behaviour change (Gallagher & Updegraff, 2012; Teutsch,

2003). Nurse practitioners (NPs) are often key actors in psychosocial support and are in an excellent position to create an environment in which patients feel confident to talk about their concerns (Alleyne et al., 2011; Allen, 2004). A self-management support intervention delivered by NPs may therefore help increase effectiveness. However, little is known about current SMS practices, attitudes towards SMS among nurses and their needs to help improve the support offered.

The aim of this study was to develop a nurse-led SMS intervention in which the needs of kidney transplant recipients and NPs as well as theory and evidence-based methods are taken into account. To ensure that these components were incorporated, the Intervention Mapping (IM) protocol was used (Bartholomew, Parcel, & Kok, 2011).

Method

Intervention Mapping

The IM protocol (Kok, Schaalsma, & Ruiter et al., 2004) distinguishes six steps with corresponding tasks. Here, we present the first five steps of the IM protocol (Figure 1). In total, the development and implementation of the intervention took two years (2015-2017).

Step 1 Needs assessment

The first step is the needs assessment; a comprehensive exploration of the health problem and the needs of the targeted population. To ensure that important issues for both the patients and NPs were addressed throughout the process, a steering group consisting of NPs, nephrologists, nurse scientists (experts in self-management) and psychologists and a patient advisory committee were established.

The needs of kidney transplant patients and NPs regarding self-management (support) were explored in several studies including a literature review of qualitative studies, interviews and observations.

Assessment of patients' needs

Firstly, we reviewed the qualitative literature on patient needs and preferences for SMS (Dwarswaard, Bakker, van Staa, & Boeije, 2016. This review revealed that it is important to patients that SMS is tailored to their individual needs. Furthermore, they need not only 'information', but also instrumental, psychosocial and relational support. Patients often reported that these needs were unmet as professionals focus on informational and instrumental support alone (Dwarswaard et al., 2016). Developing a collaborative partnership with shared decision-making is key to improving SMS (Dwarswaard et al., 2016).

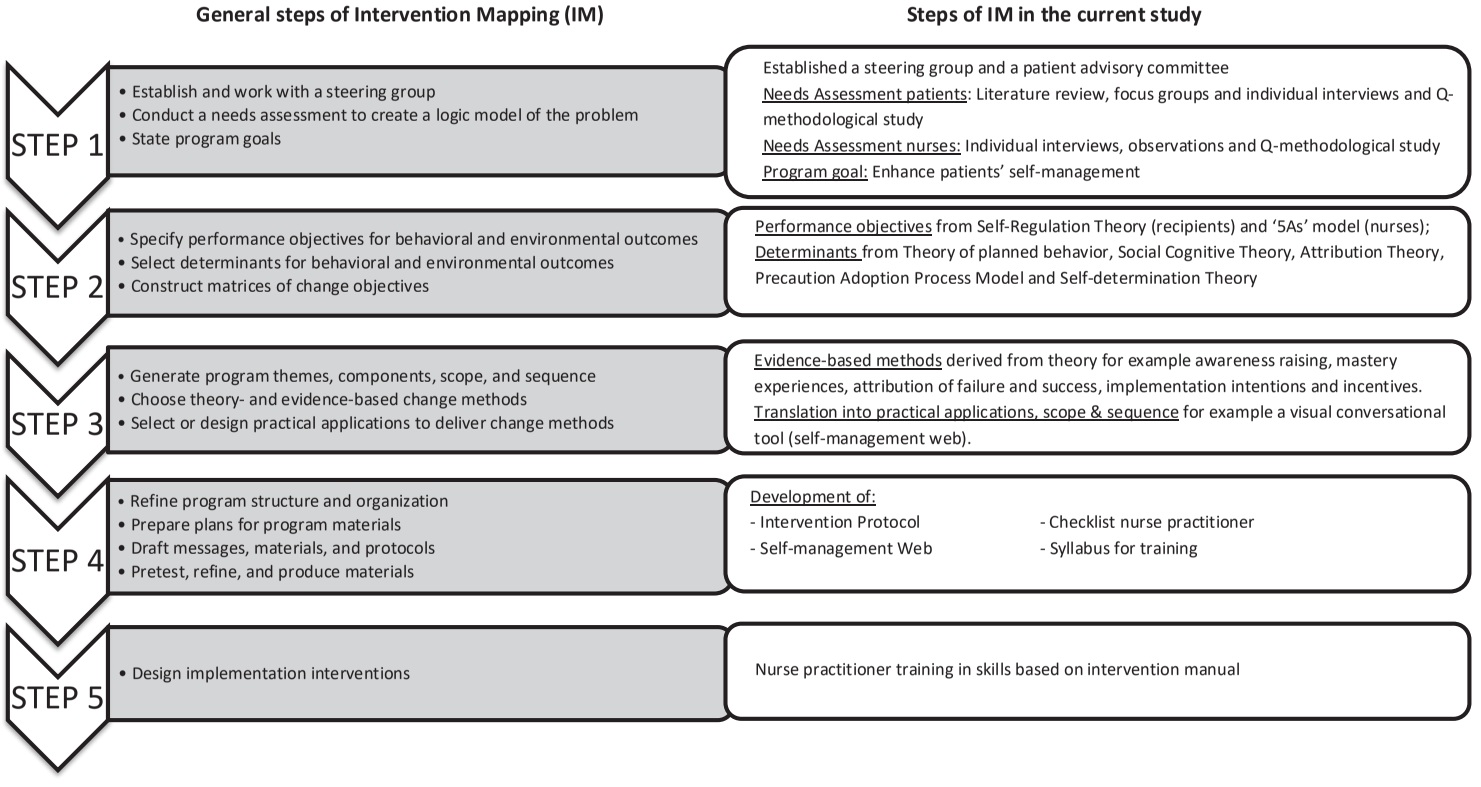

Figure 1 The Five steps of the IM protocol

This encouraged us to further assess the specific needs, preferences and challenges with regard to SMS of kidney transplant recipients through focus groups and individual interviews (n=32) (Been-Dahmen et al., *2018*). Results indicated a need for a holistic approach after kidney transplantation. While patients were satisfied with the medical care received, psychosocial support focusing on emotional challenges of living with a transplant was often lacking. Patients wanted to participate in shared decision-making and be collaborators in the process. To achieve this a relationship of trusts was an essential basis. This type of support was particularly important in the first year after transplantation. However, one size does not fit all and SMS should be adapted to individual needs and circumstances. This was confirmed in a Q-methodological study which found differing attitudes towards self-management support (Grijpma et al., 2015).

Assessment of nurses' needs

To explore nurses' perceptions, attitudes and potential needs, interviews and observations were used. Individual semi-structured interviews with nurses and NPs were held (n=27) to investigate nurses' views on the concept of self-management in general and how these views relate to the self-management interventions they use in clinical practice (Been-Dahmen, Dwarswaard, Hazes, van Staa, & Ista, 2015). Results showed three distinct views on SMS: adhering to a medical regimen, monitoring symptoms and integrating illness into daily life. Only the last viewpoint reflected a holistic approach with the nurse focusing on coaching. Medical management was the focus of SMS for many nurses. The lack of attention for psychosocial aspects may be due to a lack of confidence, skills needed to address psychosocial issues or available tools/interventions which limits them in offering psychosocial support. Providing training or practical interventions protocols or tools for holistic SMS could partially resolve this problem by giving nurses resources to effectively support to self-management.

In order to more objectively assess NPs' roles in outpatient consultations and how this compares to their perception of their responsibilities for patients with chronic conditions, NPs (n=5) were observed during daily practice (Ter Maten-Speksnijder, Dwarswaard, Meurs, & Van Staa, 2016). While NPs reported they considered building a relationship with their patients of utmost importance, their consultations were mostly based on a conventional medical model of medical history taking. Little attention was paid to the social, psychological and behavioural dimensions of illness. Finally, a realist review of the literature was conducted to assess the mechanisms by which nursing interventions successfully promote self-management. Interventions focusing on intrinsic processes were found to be the most effective, as opposed to focusing solely on psycho-education (van Hooft, Been-Dahmen, Ista, van Staa, & Boeije, 2016). Box 1 outlined the main findings from the needs assessment.

Box 1. Summary of findings from the needs assessment

Patients' Needs Assessment	*Nurses' Needs Assessment*
- Medical and psychosocial issues should both be addressed; attention to psychosocial needs often lacking - Tailoring of support to specific needs and preferences is important to patients - SMS most needed first year post-transplant - Shared-decision making is preferred	- Nurses place an emphasis on medical management to the detriment of psychosocial management - Nurses focus on education rather than on patient empowerment and coaching - Nursing interventions focusing on intrinsic process are more successful in promoting self-management

Program goals

Based on the needs assessment described above, we developed a nurse-led SMS intervention that included the following key elements: (1) a general, open structure that leaves room for individual preferences and tailoring of support, (2) a holistic approach encompassing medical, emotional and social self-management challenges, (3) promoting shared-decision making between nurse and patient, and (4) patient empowerment through supporting self-efficacy and intrinsic motivation. The overall goal of the intervention is for patients to enhance their self-management skills in order to integrate their treatment- and life goals and subsequently optimize their quality of life and health-related outcomes. In addition, we aimed to improve NPs' skills to optimize self-management support.

Step 2 Matrices of change objectives: Patients

The second step of IM links the overall goals of the intervention to concrete actions by stating change objectives (COs); the most detailed and proximal goals that will be addressed in the intervention. The COs specify who and what will change because of the intervention. In order to generate COs, performance objectives (POs) are generated and determinants of these behaviours are sought. POs and the relevant determinants are combined into a matrix in order to generate COs. Over 50 change objectives were formulated and integrated in the intervention.

Performance objectives

The overall program goal was translated into performance objectives (POs) that specify the behavioural actions the target groups need to perform in order to successfully change behaviour. The target groups were kidney transplant recipients and NPs. Optimizing self-management after kidney transplantation requires intrinsic processes (e.g. motivation and self-efficacy) (Lorig & Holman, 2003) and long-term skills to establish and maintain behaviour change, but also abilities to adapt behaviour when circumstances change. Well-developed self-regulation skills are supportive in performing these tasks. Therefore, the specific behavioural actions that contribute to the overall goal of the

intervention were specified in POs based on the principles of self-regulation theories (Maes & Karoly, 2005). Studies in other chronic illnesses showed that interventions based on self-regulation theories were able to improve behavioural outcomes (Clark et al., 2007; Janssen, De Gucht, van Exel, & Maes, 2013; Knittle, Maes, & de Gucht, 2010). Eight POs were defined, which include goal setting, planning, self-monitoring, feedback and relapse prevention, see Box 2.

Box 2. Performance objectives for patients and nurses

Patients	*Nurses*
1) Patients decide to improve their self-management on medical or emotional tasks they perceive as challenging	1) The NPs carry out the intervention during their consultations with patients included in the study
2) Patients set at least one SMART-goal	1a) The NPs assess whether patients perceive medical, social or emotional tasks as challenging
3) Patients make an action plan to actively pursue and attain their chosen goal, taking into account possible facilitators, barriers and resources	1b) When patients indicate that there is a problem in a specific life area, the NPs stimulate and guide the patients to set a SMART goal to solve the problem and agrees with the patient on the goal
4) Patients carry out their goal-attainment action plan at home	1c) The NPs stimulate and assist patients to make and implement action plans for attaining their goals
5) Patients monitor their goal-pursuit behaviour in daily life	1d) The NPs encourage patients to monitor and evaluate their progress towards goal attainment
6) Patients evaluate their progress with NPs	1e) The NPs stimulate patients to maintain goal pursuit or adapt goals or action plans
6a) If successful, patients maintain their new behaviour or set a new goal	1f) The NPs help patients to anticipate relapse and discuss relapse prevention
6b) If unsuccessful, patients adjust their goal, action plan, or outcome expectations	1g) The NPs help patients to generalize learned techniques to new problems and goals
7) Patients are able to cope with relapse and re-initiate goal pursuit	2) The NPs focus on the positive desired outcomes rather than on the negative aspects of living with the kidney transplant
8) Patients are able to generalize learned self-management skills to new goals	

Determinants

After the definition of POs, we explored which determinants were associated with the performance of the desired behaviour as stated in the POs. The determinants were selected from the following health behaviour change theories: Self-Regulation Theory (Maes & Karoly, 2005), Theory of Planned Behaviour (Ajzen, 1991), Social Cognitive Theory (Bandura, 1991), Attribution Theory (Weiner, 1982), Relapse Prevention Theory (Marlatt & Gordon, 1985), Precaution Adoption Process Model (Weinstein & Sandman, 1992) and Self-Determination Theory (Deci & Ryan, 1985). The most important determinants for the first four performance objectives are specified in Table 1.

Table 1: Examples of Change Objectives for Patients derived from combining the Performance Objectives and determinants

Performance objective	*Behavioural determinants*						
	Awareness	Attitude	Self-efficacy	Autonomous motivation	Social support	Commitment	Skills
1. Patients decide to improve an aspect of their life	Acknowledge improvement is possible in one or more areas in their life Are aware of discrepancy between desired and current situation	Have stronger positive feelings towards improving self-management than negative	Feel able to improve aspect of their life	Are intrinsically motivated to improve aspect of life			
2. Patients set at least one SMART-goal	Are aware of the desired outcome	Have positive feelings towards goal	Formulate a change/goal that they feel self-efficacious about				Are capable of setting a SMART-goal
3. Patients make an action plan to attain and actively pursue their chosen goal.	Are aware of possible habits, facilitators, barriers and resources	Have positive feelings towards the action plan	Draw up an action plan they feel able to carry out		Consider possible social support when making action plan		Are capable of making an action plan in which facilitators, barriers, habits and resources are considered
4. Patients carry out their goal-attainment action plan at home		Have stronger positive feelings towards carrying out the plan than negative	Feel able/self-efficacious about performing the action plan	Are intrinsically motivated to carry out action plan	Use their social resources according to plan	Show commitment to pursuing the behavior in daily life	

Table 2: Examples of Change Objectives for Nurses derived from combining the Performance Objectives and determinants

Performance objective	*Behavioral determinants*					
	Awareness	Knowledge	Skills	Self-efficacy	Attitude	Professional role and identity
1. NPs carry out the intervention during their consultations with patients who have been included in the study	Are aware of benefits using the intervention protocol	Know how to use intervention protocol and when to use which techniques	Have skills (i.e. conversational and motivational techniques) to carry out the intervention	Feel self-efficacious to carry-out intervention	Have stronger positive feeling towards carrying out the intervention than negative	Deem SMS and carrying out the intervention as part of their professional role
1a. NPs assess if patients experience challenges or problems in several areas of life	Become aware of problems in patients' life on other than medical domains and the benefits of assessing psychosocial areas		Have skills to assess and discuss psychosocial and medical aspects	Feel self-efficacious about assessing and discussing psychosocial and medical aspects	Have stronger positive feelings about assessing psychosocial and medical aspects than solely assessing medical aspects	
1b. When the patient indicates that there is a problem in a specific life area, NPs stimulate the patients to set a SMART goal and agree with the patient on the goal		Know how to set a SMART-goal together with the patient		Feel self-efficacious about assisting patient in setting a SMART-goal		
1c. NPs assist and stimulate patients to make and implement action plans for attaining their goals		Know how to make an action plan which is achievable for the patients		Feel self-efficacious about assisting patient in making an action plan		

Step 2 Matrices of change objectives: Nurse practitioners

Performance objectives

The POs for the NPs were also guided by Self-Regulation Theory. Additionally, three components of the Five A's model of behaviour counseling (Glasgow, Davis, Funnell, & Beck, 2003; Whitlock, Orleans, Pender, & Allan, 2002) were incorporated namely *assessing* behaviour, beliefs and motivation, *agreeing* with the patient on realistic goals and *assisting* to anticipate barriers and develop a specific action plan. Two components of the 5A's model (*advising* and *arranging*) were not integrated in the intervention, because they are less in line with the focus on patient empowerment. In order to achieve the overall program goal and taking the needs assessment into consideration, two POs for the NPs were formulated, see Box 2.

Determinants

The determinants deemed most pertinent in predicting these performance objectives for the NPs were: knowledge, skills, social/professional role and identity, self-efficacy, attitude, and outcome expectations. Table 2 shows examples of the COs derived from combining the POs and determinants. The full change objectives matrices are available on request (DB or EKM).

Step 3 Theory-Based Methods and Practical strategies

The aim of Step 3 is to identify and select theory-based methods and translate these into practical strategies to influence each determinant in order to achieve the change objective. For example, modeling (method) can be used to influence self-efficacy (determinant) by showing videotaped demonstrations of other patients performing self-management tasks (practical application). Methods and practical applications were reviewed and discussed with the steering group and patient advisory committee. From the methods identified, we selected applications for inclusion in the intervention based on feasibility and the needs identified in Step 1. Techniques from Motivational Interviewing (MI) (Dekker, Kanter, & Rueb, 2015) were used to promote motivation. Principles of Solution Focused Brief Therapy (SFBT) (Ratner, George, & Iveson, 2012) were used for the goal and action oriented change objectives. SFBT is goal-directed, future-focused and addresses solutions rather than problems. These key concepts make SFBT particularly useful to actively involve patients during nursing consultations. Furthermore, the social cognitive theories from which determinants of POs were selected were also the source of behaviour change methods. The methods were translated into practical applications or strategies which were integrated in the intervention protocol. Table 3 shows examples of the theoretical methods and practical applications incorporated into the intervention.

Table 3: Examples of the theoretical methods and practical applications incorporated into the intervention

Change objectives	Determinant	Theoretical method	Practical application/ strategy
Patient becomes aware of and acknowledges problems in various areas of life *NPs become aware of problems in patients' life on other than medical domains and the benefits of assessing psychosocial areas*	Awareness (PAPM/TPB)	Awareness raising providing feedback using visualization	Patients evaluate their life based on the Self-Management Web. *Self-Management Web* *NPs assesses patients' life based on the self-management web*
Patients belief in their own capabilities to optimize self-management behaviour *NPs feel self-efficacious about carrying out intervention*	Self-efficacy (SCT)	Mastery experiences Attribution of failure and success *Modelling*	Patients are asked to evaluate and appoint successes to stable, internal factors and failure to external, unstable factors. When the patient experiences success, the NP will emphasize the role of the patient in the success. *NPs received training in which role-plays took place as an example*
Patients implement new actions to reach goals and break through habits	Habits (TAB)	Implementation intentions	Patients need to specify if-then, when, where, how, what and where they are going to perform goal related actions

*PAPM: Precaution Adoption Process Model; TPB: Theory of Planned Behaviour; SCT: Social Cognitive Theory; TAB: Theory of Automatic Behaviour

Step 4 Program Production

In Step 4, the actual program was developed. This step contains the determination of program components, the creation of the program scope and sequence, and the development of program materials. Representatives of the steering group and patient committee were presented the concept program and their feedback guided final adjustments.

Intervention Scope

The main theme of the program is optimizing self-management based on the principles of self-regulation theories: evaluating areas of life, establishing and setting goals, planning/preparing strategies for achieving the personal goals and actively pursuing goals,

monitoring and evaluating goal progress and preparing strategies for relapse prevention. Throughout the intervention, these steps are combined with principles of SFBT to stimulate patients to generate solutions rather than focusing on their problems. The final intervention was called ZENN, an acronym derived from the Dutch translation of Self-Management After Kidney Transplantation (ZElfmanagement Na Niertransplantatie).

Intervention Sequence

The final program consists of four 15-minute sessions with a NP combined with regular appointments in the outpatient clinic. The frequency of intervention sessions is determined by the frequency of consultations within standard care. Therefore, the period between the sessions can range from two weeks to several months. If the time period between session 1 and 2 is over one month, a telephone consultation with the NP is scheduled. During the first session, the emphasis is on assessment: raising awareness, evaluating areas of life, goal setting and preliminary preparation of an action plan. Also, motivation and self-efficacy are discussed using visual analogue scales ranging from 0 to 10. The second and third session are used to monitor and evaluate the progression on goal attainment during the past weeks and discuss outcome expectations. Throughout the second and third session, the action plan is further customized, self-efficacy is positively encouraged and outcome expectations are discussed. During the fourth session, goal progress, relapse prevention and generalization of learned skills to other challenges are discussed (see Figure 2).

Self-Management Web

A visual communication aid called the Self-Management Web (Figure 3) was developed to facilitate achievement of the first change objective. The Self-Management Web is used to standardize the assessment of fourteen life areas and offer a visual overview to guide the conversation between professional and patient. This tool ensures a holistic view, since multiple areas of life are represented in the Web and it enhances intrinsic motivation as patients determine the area they prefer to focus on. The discussion about goals results in shared-decision making between nurse and patient.

During the first session, NPs encourage the patients to evaluate their life domains and assess if they are doing well (1-green), neither good /nor bad (2-orange) or bad (3-red) on each domain. The patient marks the answer on the web to visualize domains with difficulties, which contributes to awareness. When patients report a 2 or 3 the NP asks open questions to clarify the problem. When multiple areas are rated as 'bad', the NP invites the patient to prioritize and select the area of life he/she wants to work on after which the other steps of the intervention are carried out.

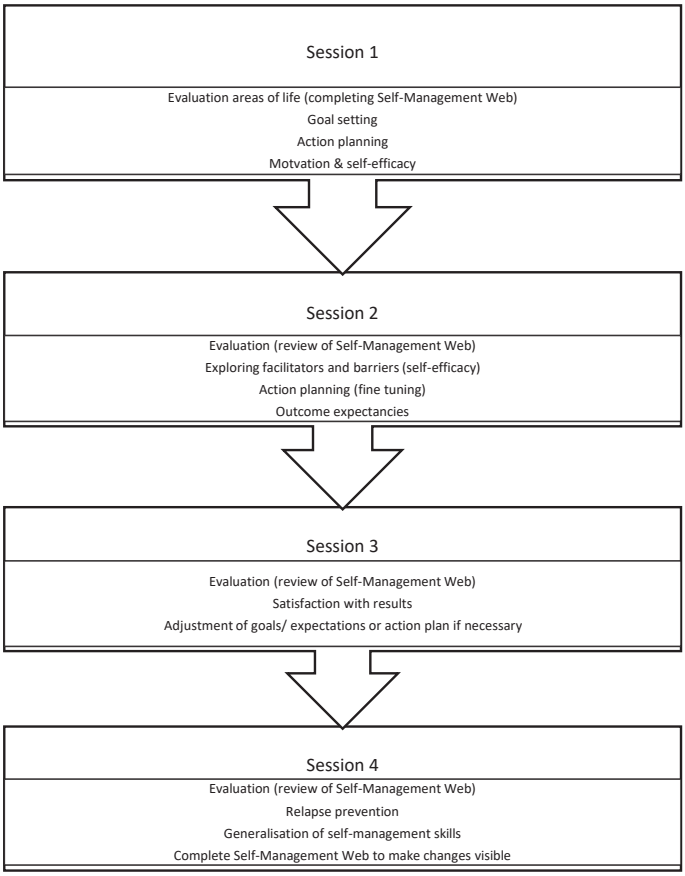

Figure 2 The key components of each session in the intervention

Intervention materials

An intervention protocol was written for the NPs, containing specific guidelines per session on how to approach the patients and which topics to discuss together with suggestions about how to phrase specific questions. To support implementation and adherence to the protocol, a checklist was developed for NPs to report on the steps executed per session per patient. Prior to beginning the intervention, nurses were trained in the delivery. A syllabus was developed which the NPs received in advance of a training regarding the intervention.

Step 5 Adoption and implementation

The effectiveness of an intervention is partially attributable to the quality of the implementation. To promote implementation and ensure fidelity to the intervention, NPs received two training sessions before the implementation of the intervention. During

Can you tell me how it is going in the following areas:

Choose your answer by checking:

1 = Well

2 = Neither good nor bad

3 = Bad

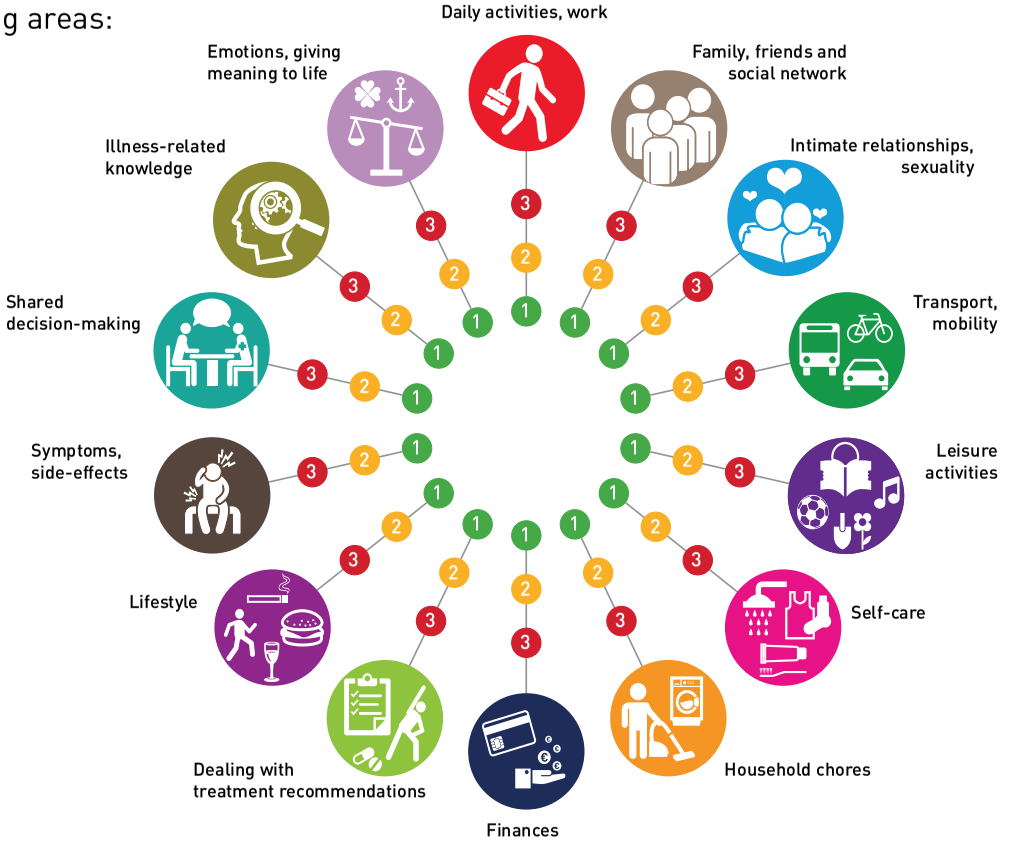

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Figure 3. Self-Management Web

the implementation of the intervention the NPs received booster sessions. The training was provided by an experienced psychotherapist (AvtS) and a psychologist (DB).

The training had a dual-purpose; on the one hand it comprised an explanation on how to carry out the intervention protocol, on the other hand NPs were trained in using techniques from SFBT and MI. The training was divided over two 3-hour sessions. After explaining the theories upon which the intervention was based and techniques to be employed during consultations, trainers performed a role play to show the steps (modeling). Subsequently, NPs were invited to participate in role plays with the trainers (mastery experiences). Anticipated problems were thoroughly discussed. At the end of the training, the topics discussed were summarised and the training was evaluated.

Throughout the implementation period, the NPs received booster sessions during which problems encountered could be discussed and techniques practiced. Furthermore, video recordings were made as part of the evaluation of the intervention. NPs received feedback based on the video recordings.

Step 6

In a mixed-methods design, feasibility and preliminary effects of this intervention are currently being assessed. The outcomes of this step fall outside the scope of this article.

DISCUSSION

The development of the current intervention responds to the need for practical and effective interventions to optimise SMS after transplantation, in which tailoring, a holistic approach, shared-decision making, and patient empowerment are incorporated. Additionally, this intervention is in line with the vision of the WHO which stipulates that the healthcare system should be addressed when improving SMS (Sabate, 2003) and with recommendations regarding enhancing self-regulation skills among kidney transplant recipients for optimizing psychological wellbeing (de Vries et al., 2017).

Although findings indicate the importance of anticipating the individual needs of each patient to enhance effectiveness, most current interventions fail to do so (De Bleser et al., 2009; De Geest, Dobbels, Fluri, Paris, & Troosters, 2005; Low et al., 2015). It has been suggested that variance in effectiveness of SMS could be due to the mismatch between the individual's needs and the offered intervention (Trappenburg et al., 2013). To improve the fit, the Self-Management Web was used to assess in which areas of post-transplant life the recipient was experiencing challenges. This ensured standardization of the assessment but allowed room for a personalised approach. To improve the fit, the Self-Management Web was used to assess in which areas of post-transplant life the

recipient was experiencing challenges. This ensured standardization of the assessment but allowed room for a personalised approach.

Our intervention also responded to the tendency for SMS interventions to focus mainly on medical management to the detriment of psychological and social aspects. This emerged from the needs assessment wherein recipients reported the need for psychosocial support in addition to medical guidance, while nurses/NPs acknowledged the shortcomings of their current approach. Studies have shown that psychosocial (e.g. depression, anxiety) and behavioural factors could negatively affect self-management and are therefore important targets for SMS interventions (De Bleser et al., 2009; De Geest et al., 2005; Lorig & Holman, 2003; Low et al., 2015).

Additionally, it has been suggested that interventions should be developed based on theory and evidence-based methods (Bartholomew et al., 2011; De Bleser et al., 2009; Low et al., 2015; Sabate, 2003). There is an increasing emphasis on reporting specific behaviour change techniques used in interventions to increase quality and replicability (Michie et al., 2015). The IM protocol helped to integrate theory and evidence-based methods as well as the needs of the kidney recipients and nurses into the intervention. Behavioural science offers several useful theories and strategies that enhance the effectiveness of interventions used in health behaviours (Sabate, 2003). A realist review demonstrated that self-management support interventions focusing on intrinsic processes were most successful in behaviour change (van Hooft et al., 2016). This emulates earlier authors who have emphasised that education alone it insufficient for health behaviour change Examples of these processes were self-efficacy and (intrinsic) motivation, which were in the backbone of the current intervention. The Self-Management Web provides the basis upon which important personal goals can be set which ensures intrinsic motivation. Self-determination theory (Deci & Ryan, 2000) stipulates that intrinsic motivation is an important factor for effective behaviour change (Maes & Karoly, 2005). The intervention protocol encourages motivation during the intervention, but also emphasises increasing self-efficacy. Studies among kidney transplant recipients have stipulated the importance of promoting self-efficacy when supporting self-management in kidney transplant recipients (Jamieson et al., 2015; Weng et al., 2010). In summary, the strengths of the intervention include tailoring, a holistic approach, focus on intrinsic processes and promotion of shared-decision making.

Limitations

Although the intervention is based on health behaviour change theories and the methods incorporated are evidence-based, this does not guarantee effectiveness in the context of kidney transplantation. The association with health (outcomes) and all life areas addressed in the Self-Management Web may not be clear for patients and professionals alike. Goals attained in the intervention maybe too far removed from the

health domain to directly relate to positive health outcomes. In contrast, one could also argue that problems in life areas other than health, often do impact health and thus self-management due to the stress they generate. Effectiveness of the intervention is currently under investigation and results will be presented and discussed elsewhere.

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