

Chapter 7

Summary

This chapter provides a summary of the separate studies that are described in this thesis, which aimed to provide new insights in understanding, measuring, and treating HRQoL and the problems dialysis patients prioritize for improvement.

PREDICTORS OF QUALITY OF LIFE

In **Chapter 2**, we examined several potential predictors of health-related quality of life (HRQoL) in dialysis patients using a prospective study design in which 175 patients participated at baseline and 130 patients at 6 months follow-up. In addition to demographic and clinical characteristics, we included cognitive-behavioral and social factors. Of the cognitive-behavioral factors that involve general ways patients perceive and think about their disease, we examined helplessness, acceptance, worrying, and self-efficacy. Of the social factors, we examined perceived social support and interpersonal sensitivity. We found HRQoL to be relatively stable over time, with baseline HRQoL being the strongest predictor of HRQoL six months later. Helplessness was found to be the strongest predictor of negative changes in both the physical and mental aspects of HRQoL, on top of demographic and clinical characteristics. Worrying and less perceived social support were additionally associated with worse mental HRQoL six months later. These findings indicate that factors related to having negative outcome expectancies—feeling a lack of control in handling disease leading to feelings of helplessness and being worried about the future—are important markers for HRQoL. To improve HRQoL, it is advised to try to change these negative outcome expectancies into more adaptive and realistic expectations. Additionally, the findings on social support indicate the importance of building strong social support networks and a good patient-clinician relationship.

PATIENT PRIORITIES AND NORM SCORES

In **Chapter 3**, we identified patients' most prominent problems for improvement and calculated disease-specific norm scores for questionnaires that measure these problems based on a sample of 175 dialysis patients. Patients reported severe fatigue. In line with these high scores, fatigue was listed as patients' number one priority, irrespective of patients' sex, age, and dialysis type. Regarding other domains of functioning, numerous differences in patient characteristics were observed, which was reflected both in priorities and functioning. Compared to male patients, female patients reported worse physical and mental health and more difficulties regarding social functioning and daily activities. Both sexes listed fatigue and mobility as their most prominent problems. In comparison to female patients, male patients placed more importance on hobbies and itch, while female patients placed

more importance on housework. We found younger patients—despite better physical functioning—to report more sleeping problems and a poorer mental health compared to patients aged 65 years or older. In accordance with these findings, sleeping problems were regarded as a higher priority in younger patients. Additionally, older patients placed more importance on mobility and less importance on work compared to younger patients. With respect to dialysis type, patients receiving in-center dialysis reported worse physical functioning and emotional well-being compared to patients receiving dialysis at home. Additionally, in-center dialysis patients regarded dependency as a major priority, while home dialysis patients placed more importance on hobbies and work. To increase the recognition of these individual differences, adequate assessment is key. Therefore, we calculated disease-specific cut-off scores for questionnaires measuring common problems in physical, mental, social, and daily functioning. Additionally, we added corrections to these norms to adjust for sex, age, and dialysis type that help identifying which aspects of an individual patient's functioning require extra attention. These disease-specific norm scores and patient priorities can be incorporated in short regular screenings to keep track of patients' functioning and, when necessary, to timely intervene.

PERSONALIZED PRIORITY AND PROGRESS QUESTIONNAIRE

In **Chapter 4**, we developed and validated a brief personalized instrument that (1) defines patients' priorities for improvement, (2) measures progress in prioritized quality of life (QoL) and self-management outcomes, and (3) is applicable in both clinical practice and clinical trials. The questionnaire was developed based on literature on personalized assessment and patient priorities (including the results of **Chapter 3's** study), feedback by clinicians, and cognitive interviews with patients. The resulting questionnaire, the Personalized Priority and Progress Questionnaire (PPPQ), contains 8 items on QoL (fatigue, pain, itch, anxiety, depression, social environment, daily activities, and dependency) and 5 items on self-management (medication adherence, healthy diet, physical activity, weight maintenance, and non-smoking). The baseline measurement includes items assessing current functioning and one item on which patients select the QoL and self-management topics they prioritize for improvement (i.e., patient priorities). The follow-up measurement includes progress items assessing perceived change in QoL and self-management over time. Subsequently, a personalized progress score can be calculated that indicates the amount of change on the QoL and/or self-management topics that are prioritized by the individual patient. Feasibility and psychometric properties of the PPPQ were evaluated among patients with chronic kidney disease not on dialysis (n=121) and patients with kidney failure treated with dialysis (n=22). The PPPQ proved to be a valid questionnaire to assess priorities and meaningful outcomes, which patients can easily complete without needing assistance. The PPPQ is a suitable instrument to evaluate personalized interventions

in which patients work on different treatment goals. In clinical settings, the PPPQ could be used as a quick and easy tool to evaluate patients' priorities and to monitor functioning over time.

STUDY PROTOCOL INTERNET-BASED COGNITIVE-BEHAVIORAL THERAPY

In **Chapter 5**, we describe the study design of a multicenter randomized controlled trial evaluating the effectiveness of the E-HEalth treatment in Long-term Dialysis (E-HELD) intervention. This therapist-guided personalized Internet-based cognitive-behavioral therapy (ICBT) intervention was based on a previously evaluated ICBT treatment for patients with somatic conditions and was adapted to fit the myriad of problems that dialysis patients experience and prioritize. The trial starts with a screening on relevant adjustment problems, based on the study described in **Chapter 3**, using an innovative online screening tool that visualizes patients' scores in a Personal Profile Chart (PPC). By visualizing the severity of problems in traffic light colors (green, orange, red) and text boxes with additional explanations, the PPC aids the interpretation of the results. Additionally, this easy overview of scores can aid patients and clinicians in discussing priorities and functioning. Subsequently, patients reporting moderate to severe adjustment problems are randomized to care as usual (control group) or added-on ICBT treatment (intervention group). The intervention starts with a face-to-face or videoconferencing intake to determine patients' priorities for improvement. Subsequently, patients work on the ICBT modules that match their treatment goals for 3 to 4 months. The intervention includes modules on coping with physical disabilities, fatigue, pain, itch, negative mood, social relations, and lifestyle, and a closing module that focuses on long-term goals and relapse prevention. Assessment takes place at baseline, post-treatment (6 months follow-up for the control group), and 6 months post-treatment (12 months follow-up for the control group). Patients complete questionnaires on distress (primary outcome measure), personalized outcomes (PPPQ, see **Chapter 4**), several domains of functioning (e.g., physical, psychological, social), potential predictors and mediators of treatment success, and the cost-effectiveness of the intervention. When personalized ICBT proves to be a feasible and effective intervention, the screening procedure and the subsequent ICBT intervention could be implemented in routine care to detect, support, and treat patients struggling with adjustment problems and a low HRQoL.

RESULTS INTERNET-BASED COGNITIVE-BEHAVIORAL THERAPY

In **Chapter 6**, we describe the results of the multicenter randomized controlled trial on the effectiveness and feasibility of a personalized, guided ICBT intervention in dialysis patients. Due to

COVID-19, the fact that less than expected patients met the inclusion criteria, and patients' high disease burden, the intended sample size proved to be not feasible within an acceptable time frame. Of the 523 screened patients, we were able to randomize 34 patients to the control or intervention group. A substantial part of the patients dropped out during the trial, leaving 14 control and 8 intervention patients for analysis. Therefore, we supplemented the trial with semi-structured interviews with patients, ICBT therapists, and nephrologists to gain in-depth knowledge on their experience with the intervention and the trial. No differences in generically-assessed domains of functioning were found between the intervention and control group. Regarding the personalized outcome measure, which was particularly directed at fatigue, the intervention group showed significantly larger improvements on prioritized areas compared to the control group. This improvement was also reflected in patients' fatigue scores, with fatigue decreasing in the intervention group while such an effect was not observed in the control group. In general, the intervention was positively evaluated, although results varied highly between patients. The interviews demonstrated that patients improved their coping skills and valued the support offered by the therapist, but they struggled with the online format, informational texts, and (cognitive) exercises. These findings suggest a need for revisions to ensure the ICBT intervention matches this patient group's needs and abilities. We suggest examining whether a digital format is the best choice for this patient group, considering patients' preference for personal contact. We also recommend to simplify the exercises and informational texts and to reduce the intensity of treatment in accordance with patients' high disease burden. These recommendations will help future intervention studies to find the right fit and support patients in improving their QoL. Overall, this thesis provided new insights in understanding, measuring, and treating HRQoL and the problems patients prioritize for improvement.