

Psychosocial interventions to improve outcomes among dialysis patients

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Abstract

Patients with end-stage renal disease (ESRD) report high levels of emotional problems and poor compliance with treatment and quality of life. Nevertheless, there are not many studies which examine the effectiveness of different psychosocial interventions in ameliorating these poor outcomes. Theories have been helpful in identifying targets for interventions to improve compliance with treatment, adjustment, and quality of life. However, their effects have been mixed. In particular, interventions incorporating beliefs are promising in improving these outcomes. Moreover, relaxation and imagery techniques have reduced symptoms and have been effective improving adjustment and compliance. Future randomized controlled studies are needed to compare the effects of theory-based and patient-derived interventions on compliance with treatment and adjustment.

1 | INTRODUCTION

End-stage renal disease (ESRD) necessitates numerous changes in a patient's way of life, especially those related to the stringent dietary restrictions. Emotional problems and poor compliance with treatment are common issues.¹ It is consistently shown that depression is common in this patient group² with the prevalence ranging from 15 to 61%.²⁻⁴ Similarly, dialysis patients report high levels of anxiety which have been estimated to range from 13 to 87%.^{2,4-6} Furthermore, multiple studies show that levels of quality of life are low in dialysis patients.^{6,7}

Compliance with treatment is also poor among ESRD patients. However, the rate of compliance varies across studies and aspects of treatment. Reviews or studies have estimated the levels of non-compliance as ranging from 20 to 80% for different dimensions of treatment including medication and dietary and fluid restrictions.⁸⁻¹² Overall, in these studies, compliance has been measured using different biomedical indices including interdialytic weight gain, serum potassium, and blood urea levels, and ratings based on information in medical charts. One might anticipate that such widespread and important problems potentially amenable to psychosocial interventions might have prompted numerous studies addressing these issues. They have not; there are not many studies which examine the effectiveness of interventions in ameliorating these poor outcomes. This article aims to provide a review of this topic.

A comprehensive search strategy was employed to identify all studies relevant to the amelioration of adjustment and compliance with treatment in patients with ESRD. A number of databases beginning from 1990 to 2017 such as Medline, Embase, PsycInfo, PsycArticles, and the Cochrane Library were searched. Studies that compared any psychosocial or psychological intervention with a control intervention (active control) or no intervention (passive control) in patients with ESRD were selected. A number of key words such as "hemodialysis," "dialysis," "ESRD," "education," "self-care," "management," "therapy," "intervention," "adjustment," "quality of life," "anxiety," "depression," "emotional well-being," "adherence," and "compliance" were used. In addition, references were also searched in review articles.

In controlled, randomized controlled and quasi-experimental studies, targets of interventions offered to ESRD patients have been varied. In terms of adjustment, targets have included emotional difficulties (such as depression, anxiety, and fear of hemodialysis),¹³⁻²² psychosocial adjustment,²³ and quality of life.^{19,24,25} In terms of compliance, interventions have targeted compliance with treatment,²⁶ fluid restrictions,^{13,24,27-32} dietary restrictions,²⁴ hygiene of the fistula,³³ and lifestyle recommendations including following a physical activity regimen.³⁴

See Appendix for definitions of Psychosocial Interventions and Models.

Types of intervention strategies to target adjustment difficulties and poor compliance with treatment have been mostly guided by

psychological theory. One of the main types of interventions included education or therapeutic patient education. A number of studies have shown the effectiveness of this intervention in improving such outcomes.^{18-20,24} Similarly, in randomized controlled studies therapeutic patient education (TPE) programs improved levels of quality of life and decreased levels of emotional problems including anxiety and depression.^{19,35-39} However, other studies showed that TPE was not effective in improving quality of life or decreasing levels of emotional problems.^{19,40-42} Similarly, a controlled study⁴³ also found no effect of TBE on these outcomes. In terms of compliance with treatment, an educational intervention which was based on the Transtheoretical Model had also no effect on compliance with fluid restrictions.⁴⁴

Another main type of intervention was based on the techniques of cognitive behavioral therapy or other behavioral therapy techniques such as behavior modification. A significant number of studies have shown their effectiveness in improving adjustment including depression,^{15,16,19,23} quality of life,^{15,16,19} self-care behaviors,¹⁹ compliance with vascular cleansing,³³ and fluid and dietary restrictions^{15,27,29-31,45-48} in randomized controlled studies,^{15,16,19,46-48} controlled studies,^{27,29,45} and quasi-experimental case studies.^{28,30} In contrast, another study⁴⁹ found no effect of cognitive behavioral therapy on adjustment or compliance as measured by interdialytic fluid gain.

Less but yet significant number of studies have examined the effect of interventions based on the Health Beliefs Model^{29,49,50} and the Social Cognitive Theory^{48,51} and the findings have shown that the intervention based on these theories improved compliance with fluid restrictions. However, a randomized control study⁵² found that an intervention guided by the Health Belief Model combined with behavior modification did not lead to a change in health beliefs and improvement in compliance with fluid restrictions. Similarly, one quasi-experimental study²⁷ found that an intervention based on the Self-Regulation Model had no effect on compliance with fluid restrictions.

Some studies have shown the effectiveness of other interventions. These included nutritional counselling,²⁵ exercise therapy,^{53,54} psychosocial techniques,⁵⁵ strategic self-presentation,⁵⁶ technology-enabled peer-mentoring program,²⁶ music therapy,²¹ supportive individual or group therapy,^{13,19,23,57} insight therapy,²² motivational interviewing,²⁸ and mindfulness meditation.¹⁷ Most of these investigations have been controlled studies. There have been a small number of randomized controlled studies⁵⁴⁻⁵⁶ but arguably these may not be randomized controlled studies in their real sense as in these studies the intervention and control procedures were administered to all patients on dialysis rather than to all patients on dialysis who were depressed.

Nevertheless, other studies have shown that these interventions have no effect on outcomes. For example, a study¹⁷ showed no effect of a group mindfulness meditation on quality of life. It was also found that exercise therapy improved quality of life but not depressive symptoms.⁵⁴ A controlled study showed that nutritional education had no effect on compliance with potassium restrictions.⁵⁸

Few studies have examined and compared the effects of different interventions offered to ESRD patients. Evidence suggests that behavioral techniques have led to more favorable findings in terms of compliance with treatment than education^{31,33} and an intervention based on the Health Beliefs Model.²⁹ In these studies, a number of behavioral techniques such as reinforcement and behavioral contracts were used in these studies. A randomized controlled study⁵⁹ which compared the effect of quality of life therapy (QOLT) and supportive therapy (ST) on quality of life and emotional well-being post-treatment and at follow-up found that QOLT patients had higher quality of life than ST and control patients at both posttreatment and at follow-up. Both QOLT and ST patients had better emotional well-being than control patients at posttreatment. However, QOLT patients but not ST patients also showed better emotional well-being compared to control patients at follow-up. Another randomized controlled study⁴⁸ found that an intervention based on the construct of self-efficacy which was combined with education and techniques to manage stress improved compliance with fluid restrictions both post-treatment and at 6 month follow-up. Another randomized controlled study¹⁹ reported similar findings.

Other behavioral techniques include relaxation and imagery techniques. A very limited number of studies have examined the effects of these techniques on adjustment or compliance with treatment among patients with ESRD. A controlled study⁶⁰ reported that progressive muscular relaxation training reduced anxiety levels among hemodialysis patients compared to a control group. A randomized controlled study⁶¹ found that intercessory prayer and positive visualization improved depressive symptoms. However, arguably this study may not be a randomized controlled study in its real sense as the intervention and control procedures were administered to all patients on dialysis rather than to all patients on dialysis who were depressed. Two additional studies highlighted the potential utility of relaxation and imagery techniques among hemodialysis patients.^{62,63} However, the sole effect of these techniques on the patients' well-being could not be evaluated because of the use of other additional techniques in these studies. These studies used relaxation and imagery techniques as parts of a comprehensive intervention program including behavioral techniques, communication exercises, assertiveness training and Rational Emotive Therapy.

Moreover, case studies have indicated the beneficial effects of these techniques. Although one study did not collect baseline information,⁶⁴ these procedures increased compliance with dietary and fluid restrictions,^{64,65} reduced emotional problems including depression^{64,66} promoted better pain control, sleep and breathing,^{65,67} increased blood flow during dialysis treatment, physical comfort, control and coping,^{64,65} and reduced physical symptoms such as insomnia and nausea.^{64,66} Techniques that were used included standard eye fixation,^{64,65} progressive muscular relaxation,^{66,67} imagery such as imagining being in peaceful scenes^{64,65,67} and suggestions such as those aiming at strengthening self-esteem.⁶⁶

Other case studies have applied behavioral techniques that included progressive muscular relaxation to reduce fear and vomiting related to hemodialysis treatment.^{68,69} However, they did not collect

baseline information. Other behavioral techniques used in these studies included systematic desensitization, reinforcement delivered by the medical staff, conditioning procedures, and setting appropriate goals.

Theories have helped to identify targets for interventions to improve compliance with treatment and adjustment but their effects have been mixed. In particular, interventions incorporating beliefs are promising in improving these outcomes. Moreover, relaxation and imagery techniques have reduced symptoms and have been effective in improving adjustment and compliance with treatment among patients with ESRD.

It is necessary to examine whether patient-derived psychosocial interventions can lead to more favorable findings than theory-based interventions in promoting compliance with treatment and adjustment among patients with ESRD. Relaxation and imagery techniques provide an avenue for the development of patient-derived interventions. These techniques offer a unique opportunity for patients to use their own images during psychological treatment.^{70,71} Consistent with this argument, it would be expected that these techniques will be flexible enough to incorporate patients' views in the form of images and they therefore will help toward developing interventions grounded in patients' own views. Moreover, these techniques can be easily implemented while patients are actually receiving dialysis and do not require extra time given the fact that these patients especially those on hemodialysis spend considerable time for their treatment. Indeed, a randomized controlled study⁷² examined the effect of a hemodialysis specific imagery technique on emotional well-being and quality of life among hemodialysis patients. This specific imagery technique was developed on the basis of the findings of a qualitative study among hemodialysis patients⁷³ which examined the beliefs of patients about their illness and its treatment including hemodialysis and dietary and fluid restrictions. Control procedures included relaxation techniques combined with general (nonspecific) imagery techniques and a no-intervention control. The intervention did have no effect on these outcomes. However, the findings indicated that patients complied moderately with the interventions and were satisfied with them. Further research is necessary to examine the effect of patient-derived interventions on these outcomes. Future randomized controlled studies are also needed to compare the effects of theory-based and patient-derived interventions on compliance with treatment and adjustment.

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APPENDIX

DEFINITIONS OF PSYCHOSOCIAL INTERVENTIONS/ MODELS

Therapeutic patient education

Therapeutic patient education (TPE) is a type of education which aims to help patients with a chronic illness acquire the skills necessary to manage their life following the diagnosis of their illness in general and improve compliance with treatment and quality of life in particular. The topics covered include psychosocial support, hospital system, medical procedures, and health- and illness-related behaviors such as compliance with treatment.

Transtheoretical model

This model is also referred to as stages of change (SoC) model. This model postulates that individuals go through a number of stages before they engage in any behavior change such as quitting smoking. In that each stage represents a different level of motivation. These stages include precontemplation, contemplation, preparation, action, and maintenance. The rationale behind this model is that as the individuals at the same stage face similar barriers in relation to engaging in a specific behavior, they can be helped by the same type of intervention. Under this model, movement from one stage to another involves two fundamental factors including self-efficacy and decisional balance. Self-efficacy refers to the extent to which an individual perceives oneself confident in relation to engaging in a given health-related behavior such as quitting smoking. Decisional balance refers to the outcome of an individual's assessment of the advantages and disadvantages of a given health-related behavior.

Cognitive behavioral therapy

Cognitive behavioral therapy (CBT) is a psychological intervention which is based on the premise that individuals develop

psychological problems and these problems are maintained because of unhelpful cognitions including thoughts, beliefs, and attitudes, and maladaptive behaviors. Therefore, a CBT therapist help the individuals develop new ways of processing information and new coping strategies. It was originally developed for reducing the symptoms of depression but it is now used for other mental health problems.

Behavior modification

This is a psychological intervention whereby a behavior is modified by the use of reinforcement contingencies. The aim is to increase desirable behavior or to reduce undesirable behavior.

Health beliefs model

The Health beliefs model (HBM) aims to predict health-related behaviors such as compliance with treatment and postulates five factors: perceived susceptibility to illness; perceived severity of illness; perceived benefits of treatment; perceived barriers to treatment; and cues to action. Accordingly, patients tend to comply with treatment more if they perceive that their illness is serious, if they feel susceptible to it, if they think that there are a high number of benefits of treatment and low barriers of treatment. Perceived benefits refer to perceptions about potential benefits or efficacy of a given treatment and perceived barriers refer to perceptions about potential costs of a given treatment. Cues to action refer to internal or external stimuli that motivate people to engage in a given health-related behavior.

Social cognitive theory

This theory postulates that a given behavior is the result of a self-regulatory process which is characterized by the reciprocal interaction of environmental factors with three cognitive factors. These include situation outcome expectancy; outcome expectancy and self-efficacy. Situation outcome expectancy refers to the belief that a behavior is dangerous. Outcome expectancy refers to the belief that a behavior will lead to some positive outcomes. Self-efficacy refers to the belief of one's confidence in obtaining positive outcomes.

Self-regulation model

This model postulates that a patient evaluates his/her illness across a number of dimensions. These include identity, cause, consequences, time line, and cure or controllability of his/her illness. Identity refers to the label of the illness or the nature of the illness including its signs and symptoms. Cause refers to factors that lead to the illness. Consequences refer to perceptions about long- and short-term physical, economic, social, and emotional effects of the illness. Time line refers to whether an illness is perceived as acute, episodic or chronic. Cure or controllability refers to beliefs about the ways in which patients manage their illness.

Strategic self-presentation

During this intervention, patients are asked to present themselves as successful copers, ostensibly as part of a project which aim to develop a videotape for new dialysis patients. In that they are asked to generate positive coping skills that they appraise as helpful by focusing on their strengths rather than their weaknesses. This intervention is based on the postulation that public self portrayals such as independence, emotional stability, sociability influence actual appraisals of self. This in turn influences future behaviors.

Technology-enabled peer-mentoring program

This is a peer-mentoring program to support young adults who are receiving dialysis treatment and the renal staff providing treatment for them. This consists of two DVDs of interviews carried with peer mentors and renal staff who have considerable professional experience of young adults on dialysis treatment. The DVD covered information on the ways in which end-stage renal disease affects patients' lives including their relationships, body image, sexuality, education, and careers.

Music therapy

Music Therapy is one of the expressive therapies involving a music therapist using music to help individuals improve their physical and mental health. To achieve this, a music therapist uses a number of music experiences such as free improvisation, singing, and listening to and discussing music.

Supportive group therapy

During this form of psychological therapy, the therapist uses a number of techniques such as active listening techniques. This can be offered in individual or group format. The supportive therapist deals more with the individuals' daily events and appeals to the individuals' conscious mind.

Insight therapy

During this form of psychological therapy, the therapist aims to interpret the unconscious of the individuals and uses a number of techniques such as dream analysis, interpretation of transference (such as transferring of emotions to the therapist) and interpretation of defense mechanisms.

Motivational interviewing

This is a technique which is based on the premise that any individual has the potential for positive change, and aims to elicit motivational statements and behavioral change. This is achieved by creating a discrepancy in a given individual's life to increase motivation for positive change.

Mindfulness meditation

This aims to help individuals to develop a nonjudgmental, moment-to-moment awareness of their experience. This nonjudgmental awareness is postulated to help the individuals to notice, understand, and integrate their perceptions of self and environment to bring insight into their cognitions both positive or negative, and to observe rather than react to or change their thoughts and emotions.

Intercessory prayer

This involves religious groups praying for individuals who are struggling with physical and psychological problems.

Assertiveness training

The fundamental aim of this training is to help individuals effectively express their thoughts and emotions, improve their assertiveness and in turn, improve self-confidence. This mainly focuses on difficult interactions in daily life such as refusals, requests, and expressions of thoughts. Common techniques may include demonstration, role-playing, feedback, and homework.

Rational emotive therapy

This form of psychological therapy is based on the notion that situations themselves do not determine the ways in which people feel and behave, and emotions and behaviors are the result of ways of thinking. This therefore aims to help individuals to modify their ways of thinking to achieve more positive emotions and behaviors.

Standard eye fixation

This is one of the most commonly used hypnotic induction. During this process, the hypnotist instructs a given individual to leave his/her eyes wide open, to fix his/her attention on a spot for example, on the ceiling, and keep his/her attention focused on that spot. This suggestion is followed by the suggestion that the muscles in the eyelids are getting tired, heavier and heavier or that the eyelids are so heavy that the individual wants to close them. This sets the individual for other hypnotic procedures.

Progressive muscular relaxation

This is a technique which helps the individuals to relax. There are two types of progressive muscular relaxation. First one consists of progressive muscle relaxation by suggestions of warmth, comfort and relaxation while at the same time encouraging a given individual to imagine himself/herself saying the word "relax" under his/her breath, each time he/she breathes out. Second one involves tensing and relaxation cycles. The training usually starts with legs, proceeds to the muscles of the back, shoulders, neck, head, forehead, and ends with concentrating on the whole body.

Imagery techniques

These techniques are also referred to as positive visualization. They consist of a number of techniques such as special place imagery, descent imagery, and counting. Special place imagery usually consists of suggestions for helping the individuals to build a mental picture of a pleasant, safe, peaceful, and relaxing place such as a garden or a beach. Descent imagery usually consists of suggestions for helping the

individuals to build a mental picture of a set of steps to go to the other side of the pleasant, safe, and relaxing place. Counting usually consists of counting from 1 to 5 together with suggestions of deep relaxation. Imagery techniques can also target specific symptoms such as pain or medical procedures (e.g., dialysis treatment), and involve suggestions to improve coping with symptoms and medical procedures.