

## **The Role of Group Supportive Psychotherapy on Quality of Life and Its Relationship to Heart Rate Variability and Serum Serotonin Levels in End-Stage Renal Disease (ESRD) Patients undergoing Chronic Hemodialysis**

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### **KEYWORDS**

end stage renal disease, heart rate variability, quality of life, serotonin, group supportive psychotherapy

### **ABSTRACT:**

**Introduction:** End-stage renal disease (ESRD) significantly impacts patients' physical and psychological health, marked by diminished quality of life, decreased heart rate variability (HRV), and reduced serum serotonin levels. ESRD patients undergoing chronic hemodialysis experience heightened autonomic dysfunction, increased sympathetic tone, and multiple systemic complications, leading to profound emotional and social challenges.

**Objectives:** This review explores the role of group supportive psychotherapy in addressing these challenges by assessing its impact on quality of life, HRV, and serotonin levels in ESRD patients.

**Methods:** A comprehensive analysis of existing literature was conducted to evaluate the psychosocial and physiological effects of supportive psychotherapy on ESRD patients undergoing hemodialysis. Factors examined included quality of life metrics, HRV as an indicator of autonomic function, and serotonin regulation.

**Results:** Group supportive psychotherapy has been shown to offer significant benefits for ESRD patients. It fosters emotional resilience, improves coping mechanisms, and provides communal support, leading to better stress management and enhanced quality of life. Psychotherapy interventions positively influence HRV by modulating autonomic balance and reducing sympathetic overactivity. Additionally, addressing psychological well-being can aid in stabilizing serotonin levels, mitigating mood disturbances commonly observed in these patients.

**Conclusions:** Group supportive psychotherapy is a valuable, non-pharmacological intervention that enhances the overall well-being of ESRD patients undergoing hemodialysis. By providing holistic emotional and psychological care, it can improve HRV, elevate quality of life, and contribute to better mood regulation through serotonin balance. Implementing supportive psychotherapy as part of a comprehensive care strategy is recommended to address the multifaceted needs of this patient population.

### **1. Introduction**

End-Stage Renal Disease (ESRD) is defined as a significant decline in kidney function, characterized by a glomerular filtration rate (GFR) of less than 15 mL/min/1.73 m<sup>2</sup>, persisting for at least three months.<sup>1-3</sup> Recent advancements in therapeutic strategies for ESRD have been remarkable. However, patients with ESRD generally have a significantly lower life expectancy compared to the general population, with a median survival of approximately 4-5 years.<sup>4,5</sup> In Indonesia, the data indicate a twofold increase in both new and active ESRD patients over the course of one year: 66,433 new patients and 132,142 active patients in 2018, compared to 30,831 new patients and 77,892 active patients in 2017.<sup>6,7</sup>

As the disease progresses, ESRD patients frequently experience both physical and psychological issues, which impact heart rate variability (HRV), overall quality of life, and serotonin levels. These symptoms become more pronounced as the severity of ESRD increases.<sup>4,8</sup> Physical and psychological complications in ESRD patients can affect the autonomic nervous system, which can be assessed through HRV.<sup>9,10</sup> Heart rate variability, in a physiological sense, reflects the activation of cardiovascular vasoconstrictor and vasodilatory

center in the brain and indicates the regularity of heartbeats. A greater regularity of heart rate corresponds with lower HRV, and vice versa, indicating a reduced ability of the autonomic nervous system to regulate stressors.<sup>11,12</sup> Several studies suggest that individuals with ESRD exhibit lower HRV compared to individuals without ESRD.<sup>13–15</sup>

Patients with ESRD undergoing chronic hemodialysis exhibit markedly lower quality of life, both in terms of physical health and overall well-being. There is a decline in physical functioning, vitality, and social activity, alongside progressively worsening pain across all stages of ESRD.<sup>16,17</sup> The clinical course of ESRD patients is also influenced by serotonin, which contributes to mood disturbances, anxiety, and depression. Serotonin impacts various psychological functions, including mood regulation and cognitive processes associated with anxiety.<sup>18</sup> Some studies indicate a reduction in plasma serotonin levels in ESRD patients.<sup>19,20</sup> This is likely attributed to factors such as inflammation and uremia.

Given the complex interplay between chronic disease burden and the effects of chronic hemodialysis, holistic care is essential for ESRD patients. As part of a comprehensive palliative care approach aimed at improving the quality of life for ESRD patients undergoing hemodialysis, psychological therapy is crucial. Supportive psychotherapy, characterized by empathetic, patient-centered approaches, can be beneficial in the management of ESRD patients.<sup>8,21</sup>

Therefore, supportive psychotherapy is anticipated to improve both physical and psychological symptoms in ESRD patients, potentially through the psychoneuroimmunoendocrine (PNIE) pathway, which can be assessed by evaluating HRV, quality of life, and serotonin levels.

## **2. Objectives**

This review explores the role of group supportive psychotherapy in addressing these challenges by assessing its impact on HRV, quality of life, and serotonin levels in ESRD patients.

## **3. Methods**

A comprehensive analysis of existing literature was conducted to evaluate the psychosocial and physiological effects of supportive psychotherapy on ESRD patients undergoing hemodialysis. Factors examined included HRV as an indicator of autonomic function, quality of life metrics, and serotonin regulation.

## **4. Results**

Patients with ESRD require renal replacement therapy when kidney function declines to a GFR of less than 15 mL/min/1.73 m<sup>2</sup>. At this stage, kidney function has deteriorated significantly, leading to toxin accumulation in the body, known as uremia. This condition necessitates renal replacement therapy to assume the kidney's role in eliminating toxins and preventing more severe symptoms.<sup>22</sup>

The Kidney Disease Outcome Quality Initiative (KDOQI) guidelines recommend considering the benefits and risks of initiating renal replacement therapy in patients with stage 5 ESRD and a GFR of less than 15 mL/min/1.73 m<sup>2</sup>.<sup>23,24</sup> Hemodialysis is one such therapy, utilizing a specialized machine to alleviate symptoms and signs associated with low GFR, thereby improving patient survival.<sup>25</sup>

Chronic kidney disease (CKD) is characterized by parenchymal damage to the kidneys, leading to a decline in GFR. The most common etiologies include hypertension and diabetes mellitus.<sup>3</sup> Additionally, factors such as glomerulonephritis, ureteral obstruction, genetic mutations, medications, and autoimmune diseases may trigger ESRD.<sup>1</sup>

Inflammation plays a key role in kidney tissue damage. The pathogenesis of ESRD involves the infiltration of extrinsic inflammatory cells in the kidney, activation, proliferation, and loss of intrinsic kidney cells through apoptosis, necrosis, mesangiolysis, and podocyte depletion, leading to structural kidney damage. Furthermore, the activation, proliferation, and deposition of extracellular matrix-producing cells such as myofibroblasts and fibroblasts cause alterations in the normal architecture of the kidney, resulting in significant functional impairment.<sup>26</sup>

Chronic and progressive nephropathy can lead to fibrosis and disruption of normal kidney architecture. This can histologically manifest as glomerulosclerosis, tubulointerstitial fibrosis, and vascular sclerosis. The cascade of events leading to scarring and fibrosis is a complex, overlapping, and continuous process.<sup>1</sup>

Progressive kidney damage is exacerbated by a series of complex processes. These begin with a reduction in the number of nephrons, leading to adaptive hyperfiltration in the remaining nephrons. This refers to an

increase in the GFR in the surviving nephrons. However, persistent glomerular hyperfiltration ultimately damages these nephrons, accelerating the progression of ESRD.<sup>27,28</sup>

Sustained glomerular hyperfiltration triggers glomerular hypertrophy, where glomerular cells enlarge or undergo hypertrophy in an attempt to increase the filtration surface area. However, persistent glomerular hypertrophy can lead to structural and functional damage to the glomeruli. Excessive enlargement of the glomeruli may worsen kidney damage due to increased filtration of proteins and macromolecules, exacerbating conditions such as proteinuria and inflammation or nephrotoxic remodeling.<sup>27-29</sup>

In addition to glomerular damage, ESRD can also cause damage to the renal tubules. This process occurs through various mechanisms related to the kidney's adaptive response to sustained hyperfiltration. Glomerular hyperfiltration increases blood flow to the tubules connected to the hyper-filtered nephrons, raising the risk of ischemia in the renal tubules, which leads to tubule cell damage. Moreover, there is increased production of free radicals and oxidative stress within the renal tubules, impairing their normal function. Ultimately, activation of the renin-angiotensin-aldosterone system increases blood pressure, contributing to vascular damage in the renal tubules. Elevated blood pressure in the renal vasculature further damages the glomeruli and impairs overall kidney function.<sup>27-30</sup>

These complex processes ultimately lead to a reduction in GFR, accompanied by decreased urine output and various systemic complications. In the advanced stages of ESRD, the kidneys lose their ability to maintain acid-base balance, resulting in increased blood acidity and metabolic acidosis. The kidneys also lose their ability to regulate sodium and water balance effectively, leading to excessive sodium and water retention, causing edema and hypertension. Additionally, the kidneys lose their ability to excrete potassium efficiently, resulting in hyperkalemia.<sup>29,31,32</sup> Erythropoietin production also decreases in the later stages of ESRD, leading to anemia. Furthermore, the activation of vitamin D is disrupted, causing a decline in blood calcium levels and metabolic bone disorders.<sup>29,31-33</sup> In end-stage chronic kidney disease, kidney function is severely compromised, and renal replacement therapy is necessary to sustain patient life.<sup>22,26,29</sup>

Clinical manifestations of ESRD can be systemic. Uremic symptoms include anorexia, nausea, vomiting, pericarditis, peripheral neuropathy, and central nervous system abnormalities, ranging from concentration loss to seizures and coma.<sup>1</sup>

### **Quality of Life in ESRD Patients Undergoing Chronic Hemodialysis**

#### **Definition of quality of life**

The World Health Organization (WHO) initially defined quality of life in 1947 as "a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity." In 1995, this definition expanded to reflect a broader perspective: "an individual's perception of their position in life in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards, and concerns." This more inclusive definition incorporates a wide range of factors, including physical health, psychological state, independence, social relationships, self-esteem, and environmental interactions.<sup>34</sup>

Currently, a more specific concept, "health-related quality of life" (HR-QoL), has emerged, which focuses on how an individual's physical, psychological, and social well-being is impacted by their health status. HR-QoL is thus viewed as the interaction and balance between an individual's internal (health-related) and external (social, environmental) conditions.<sup>34</sup>

#### **Assessment tools for quality of life in ESRD patients undergoing chronic hemodialysis**

Several studies have indicated that ESRD patients undergoing chronic hemodialysis experience significantly reduced quality of life, particularly in terms of physical health and overall well-being. Key domains affected include physical function, vitality, social interaction, and the progression of pain across all stages of ESRD.<sup>10,11</sup>

Given the evolution of quality of life definitions and the growing interest in assessing patient well-being in clinical settings, accurate measurement tools have become essential. A variety of tools have been developed, some for general populations and others specifically for patients with particular medical conditions, such as ESRD.<sup>34</sup>

Validated instruments commonly used to assess the quality of life in ESRD patients undergoing hemodialysis include the SF-36, KDQOL-SF, and KDQOL-36, each with distinct advantages and limitations. The SF-36 is

considered an excellent tool for measuring health outcomes across a wide range of diseases. It has been translated into over 120 languages and validated in more than 40 countries. The SF-36 includes 36 items, which are classified into eight domains: physical functioning, limitations due to physical and emotional problems, social functioning, mental health, pain, vitality, general health perception, and health status compared to one year ago.<sup>5,6</sup>

The KDQOL-SF is composed of 80 items, incorporating 36 items from the SF-36 alongside 43 items specifically addressing kidney disease. These disease-specific items encompass a range of dimensions including symptomatology, the impact of kidney disease on daily activities, disease burden, occupational status, cognitive functioning, social interaction quality, sexual functioning, sleep patterns, social support assessment, dialysis team encouragement, and patient satisfaction measures. Additionally, the instrument includes an evaluation of overall health status.<sup>5,6</sup>

The KDQOL-SF was later simplified into a more concise assessment tool, known as the KDQOL-36. This quality of life instrument incorporates the Medical Outcomes Study's 12-item Short-Form Health Survey (SF-12) as the core of the questionnaire, supplemented by 24 items specific to kidney disease. The SF-12 items are summarized into two key scores: the Physical Component Summary (PCS) and the Mental Component Summary (MCS), with a scoring range of 2-6. The kidney disease-specific section comprises three scales: symptoms and physical problems (12 items), kidney disease burden (4 items), and the effects of kidney disease (8 items). Each item includes five response options. The scoring of the KDQOL-36 questionnaire (PCS, MCS, symptoms and physical problems, kidney disease burden, and effects of kidney disease) is transformed to a 0-100 scale, where higher scores indicate better quality of life.<sup>12</sup>

The KDQOL-36 has been translated into Indonesian and has undergone content validity and internal consistency reliability testing. The Indonesian version of the KDQOL-36 has been proven to be a valid and reliable instrument for assessing the quality of life in patients with chronic kidney disease, with a Cronbach's alpha coefficient of  $\geq 0.7$ .<sup>13</sup>

#### **Factors influencing quality of life in ESRD patients undergoing chronic hemodialysis**

Several studies employing quality of life assessment tools such as the SF-36, KDQOL-SF, and KDQOL-36 have identified various factors that can influence the quality of life of patients with chronic kidney disease undergoing long-term hemodialysis. The quality of life in ESRD patients undergoing chronic hemodialysis is influenced by a complex interplay of factors that can be broadly categorized into physical, psychological, social, and economic domains.<sup>35-37</sup>

- **Physical health:** Physical health is the primary factor influencing the quality of life in ESRD patients undergoing hemodialysis. Fatigue, pain, and other physical symptoms significantly impair patient comfort and well-being. Additionally, complications related to hemodialysis, such as blood pressure fluctuations, muscle cramps, and nausea, exacerbate the decline in quality of life. The presence of comorbidities such as diabetes, cardiovascular disease, and stroke further diminishes quality of life.<sup>11,14,15</sup>
- **Psychological factors:** Anxiety and depression are prevalent in ESRD patients undergoing hemodialysis and play a major role in reducing quality of life. The chronic nature of hemodialysis and the associated discomfort, coupled with uncertainty about the future, contribute to heightened emotional distress. Furthermore, the polypharmacy associated with dialysis treatment (e.g., taking more than five medications) can exacerbate depressive symptoms and reduce treatment adherence.<sup>11,14,15</sup>
- **Social and interpersonal relationships:** The support provided by family members and social networks plays a crucial role in the management of ESRD and the hemodialysis process. Family involvement helps mitigate social isolation and offers emotional reassurance, enhancing patient compliance with treatment and improving overall quality of life.<sup>11,14,15</sup>
- **Economic factors:** Financial strain is another significant contributor to reduced quality of life in these patients. Chronic hemodialysis is costly, especially for patients without adequate insurance coverage. In addition, the costs associated with transportation to dialysis sessions and regular medical appointments add to the financial burden. Further challenges, such as low educational attainment and unemployment, exacerbate the economic impact on patients.<sup>11,14,15</sup>



### **Heart Rate Variability in ESRD Patients Undergoing Chronic Hemodialysis**

Under normal conditions, a healthy heart demonstrates minimal variability in heart rate (R-R interval), meaning there is slight variation in the time between each heartbeat. This irregularity in heart rhythm is influenced by various factors, primarily the vagal nerve. The R-R interval variability reflects the complex interaction of several factors, particularly the balance of the autonomic nervous system. The balance between the sympathetic and parasympathetic nervous systems is affected by physical, emotional, and pharmacological factors.<sup>31</sup>

Heart rate variability physiologically corresponds to the activation of cardiovascular vasoconstriction and vasodilation center in the brain. Normally, fluctuations in HRV are due to factors such as blood pressure changes (baroreflex), respiration, thermoregulation, and circadian rhythms. All of these factors can influence the R-R interval length. HRV reflects heart rate regularity, where greater regularity corresponds to lower HRV, and vice versa.<sup>11</sup>

A reduction in HRV signifies a monotonous heart rate pattern, indicating a decreased ability of the autonomic nervous system to regulate stressors. A meta-analysis by Wang et al. demonstrated that individuals with anxiety, panic disorders, and depression exhibit significantly lower HRV compared to the general population.<sup>11</sup> HRV assessment is an indirect approach to monitor autonomic nervous system activity, with a quantitative method using linear measures such as SDNN (standard deviation of normal-to-normal intervals), expressed in milliseconds (ms).<sup>32</sup>

In anxiety, there is an increased activation of the sympathetic nervous system and decreased parasympathetic control, leading to a reduction in HRV. Consistent with autonomic imbalance, studies have shown reduced HRV in various anxiety disorders, including panic disorder, generalized anxiety disorder, social phobia, and obsessive-compulsive disorder.<sup>33</sup>

In depression, there is a decreased parasympathetic innervation, although the relationship between the autonomic nervous system and disease severity is highly complex. This condition also manifests as a reduction in HRV. The reduced parasympathetic innervation exposes the heart to sympathetic stimuli without inhibition. Both anxiety and depression are associated with lower HRV.<sup>38</sup>

- End-stage renal disease is also associated with increased sympathetic tone and cardiac autonomic neuropathy.<sup>39,40</sup> Several studies indicate that individuals with ESRD exhibit lower HRV compared to those without ESRD. Low HRV is also linked to poor outcomes during follow-up, including an increased risk of coronary artery disease, cardiovascular mortality, all-cause mortality, and renal failure.<sup>13-15</sup> Although the underlying mechanisms remain under investigation, several studies have associated low HRV, a marker of sympathetic activation, with its contribution to worsened atherosclerosis, vasoconstriction, arrhythmias, sodium retention, renin release, and elevated blood pressure.<sup>40</sup>
- A 2024 study by Jhen et al. revealed that ESRD patients experience a reduction in HRV due to autonomic dysfunction. ESRD induces dysfunction in the autonomic nervous system, characterized by overactivity of sympathetic tone and decreased parasympathetic tone, resulting in reduced SDNN.<sup>41</sup> Similarly, Chang et al. (2020) conducted a cohort study where the majority of ESRD patients undergoing chronic hemodialysis exhibited decreased HRV.<sup>42</sup> Kida et al. (2017) also found similar results, observing a decline in HRV in ESRD patients undergoing hemodialysis from the onset of their diagnosis. This reduction was characterized by SDNN showing no difference in heart rate between day and night, suggesting a state of sympathetic hyperactivity.<sup>43</sup>

### **Serum Serotonin Levels in ESRD Patients Undergoing Chronic Hemodialysis**

The clinical trajectory of ESRD patients undergoing chronic hemodialysis is also influenced by serotonin, a neurotransmitter that plays a key role in regulating mood, cognition, and autonomic function. Serotonin is primarily distributed throughout the central nervous system, where it affects emotional control, cognitive processes, and various physiological functions. Serotonin receptors are concentrated in the hippocampus, which is involved in emotional and cognitive regulation, making serotonin critical in both the clinical and psychological aspects of ESRD management.<sup>44</sup>

The dynamics of serotonin in blood platelets, which share similarities with serotonergic neurons, have led researchers to use platelets as a model for studying serotonin uptake, storage, and release. Studies have shown that serum serotonin levels are lower in ESRD patients, likely due to altered serotonin synthesis in the

gastrointestinal tract and kidneys. Additionally, plasma tryptophan, a precursor to serotonin, is frequently found to be deficient in these patients, resulting from metabolic disturbances and loss during hemodialysis, impairing serotonin production.<sup>45-47</sup>

In ESRD patients undergoing chronic hemodialysis, impaired serotonin uptake by platelets and platelet dysfunction—referred to as thrombocytopathy—further contribute to serotonin depletion. This condition leads to abnormal serotonin storage, platelet activation, and aggregation, which in turn increases the number of older platelets with lower serotonin content. Hemodialysis also induces oxidative stress and inflammation, which can negatively affect serotonin synthesis and metabolism. The process of hemodialysis alters electrolyte and fluid balance, which in turn impacts central nervous system function and neurotransmitter regulation. Hemodialysis-related reductions in plasma proteins (e.g., albumin) further decrease tryptophan availability, hindering serotonin production. Furthermore, the psychological stress associated with the dialysis process can lead to elevated cortisol levels, further disrupting serotonin function.<sup>45-47</sup>

Traditionally, serotonin levels are most accurately measured using cerebrospinal fluid, although this method is invasive. A study by Audhya et al. (2012) demonstrated a significant correlation between serotonin levels in plasma and cerebrospinal fluid, suggesting that plasma-based assessments can provide reliable, non-invasive estimates of serotonin levels comparable to cerebrospinal fluid analysis.<sup>48</sup>

### **Psychotherapy**

Etymologically, the word "psychotherapy" comes from the Ancient Greek words *psyche*, meaning soul, and *therapeia*, meaning care. Although many definitions have been proposed by experts, psychotherapy can generally be defined as psychological treatment through verbal and non-verbal communication with patients. It involves a set of psychological techniques used to address disorders or conditions associated with mental health issues. The process involves collaboration between the doctor and the patient through verbal and non-verbal communication aimed at stabilizing emotions, enhancing psychological coping mechanisms, and improving thought patterns and behavior. Psychotherapy can strengthen and reshape neural connections, supporting neuronal growth and interactions, which, in turn, can enhance psychological well-being and quality of life.<sup>49,50</sup>

### **Supportive Psychotherapy**

Over the years, there have been many attempts to define supportive psychotherapy, reflecting the evolving understanding of this approach. Supportive psychotherapy, derived from classical psychoanalysis, has undergone various modifications. It is defined as a psychological intervention designed to provide emotional support, bolster psychological resilience, and assist patients in coping with stress or challenges in their lives. This approach emphasizes offering support, understanding, and guidance to help patients manage and adapt to their symptoms or conditions. The primary aim of supportive psychotherapy is holistic: to stabilize and organize the patient's functional status. This can help patients adapt more effectively to challenges and live more comfortably with their psychological conditions. The therapy not only focuses on symptom reduction but also on enhancing the patient's ability to face life's challenges.<sup>54,55</sup>

To restore the condition of disorganized and fragile patients to a relatively balance state, supportive psychotherapy is expected to provide emotional support, build psychological resilience, manage stress and crises, improve coping skills, promote emotional well-being, facilitate healthy social connections, enable life adjustments, foster patient independence, and improve overall quality of life.<sup>54,55</sup>

#### *Characteristics of supportive psychotherapy*

Supportive psychotherapy has several distinct characteristics compared to other therapeutic approaches. Key elements include emotional support, practical problem-solving, and understanding the patient's life context. Below are the main features of supportive psychotherapy:

Table 1. Main features of supportive psychotherapy<sup>54,55</sup>

No.	Feature	Description
1	Session frequency	Varies based on patient needs, initially once a week, then biweekly or less as stability is achieved.
2	Session duration	Approximately 30-60 minutes per session.
3	Treatment duration	Varies based on patient needs; brief during crises or longer for complex, chronic issues.
4	Patient conditions	Patients with chronic illness, undergoing complex medical treatments, mild-to-moderate psychological issues, terminal conditions, or significant life changes.
5	Doctor's role	Emotional support, stress identification and management, practical problem-solving, flexible techniques, attention to comprehensive psychological health, understanding life context, preventive measures.
6	Patient involvement	Active participation in decision-making, goal formulation, and taking positive action steps.
7	Core techniques	Empathetic therapeutic relationship, active listening, validation of feelings and experiences, psychoeducation on emotional responses, coping strategies, emotional exploration, spiritual intervention (if needed), quality-of-life focus.

#### *Indications for supportive psychotherapy*

Supportive psychotherapy is intended for patients who are not suitable for classical psychoanalysis or insight-oriented psychoanalytic psychotherapy. The patients who may benefit from supportive psychotherapy include:<sup>54,55</sup>

1. Patients facing emotional crises, such as significant loss, trauma, or difficult life events.
2. Patients with chronic illness or medical conditions that require lifestyle changes, specialized care, and stress related to these conditions.
3. Patients with anxiety and depression to help manage worries, tension, and provide support and understanding.
4. Patients experiencing stress related to work, education, or significant life changes.
5. Patients struggling with interpersonal relationship issues.
6. Patients experiencing adjustment problems and conflicts within family dynamics.

Supportive psychotherapy can be provided to most patients, as support is an inherent part of all psychotherapy modalities. However, there are some conditions in which supportive psychotherapy may be less beneficial, such as:<sup>54,55</sup>

1. Patients with acute organic disorders or impaired consciousness.
2. Patients with severe mental disorders, such as schizophrenia, who require more specific therapeutic approaches.
3. Patients with a strong desire to explore and solve life problems in depth, necessitating a more focused analysis.
4. Patients who require very specific interventions, such as cognitive-behavioral therapy for phobias or obsessive-compulsive disorder.
5. Patients with low motivation to actively participate in the therapeutic process.

#### *Method:*

The methods and techniques used include guidance, environmental manipulation, managing and directing interests, reassurance, pressure and coercion, desensitization, emotional catharsis, suggestion, and group therapy (inspiration group therapy).<sup>56</sup>

#### *Therapy Process:*

##### a. Building a therapeutic alliance<sup>56</sup>

- Expressing interest

- Expressing empathy
- Expressing understanding
- Providing comments to maintain the flow of conversation
- Conversational style
- Repairing misalliances
- b. Building self-esteem<sup>56</sup>
  - Offering praise
  - Providing reassurance
  - Normalizing
  - Universalizing
  - Providing encouragement
  - Exhorting
- c. Building skills to form adaptive behavior<sup>56</sup>
  - Offering advice and teaching
  - Training skills to recognize potential obstacles and form more adaptive strategies (anticipatory guidance)
- d. Reducing and preventing anxiety<sup>56</sup>
  - Sharing the agenda
  - Providing verbal "padding"
  - Naming the problem
  - Reframing
  - Paraphrasing
- e. Expanding awareness<sup>56</sup>
  - Clarification
  - Confrontation
  - Interpretation

### **Group Supportive Psychotherapy**

A supportive group is a collection of individuals who plan, organize, and respond directly to specific issues and stresses, as well as adverse situations. The initial goal of this group is to provide support and resolve the personal health experiences of each member. According to Heller et al. (1997), research suggests that peer support is associated with improvements in psychological functioning and patient burden. Mutual support is a process of participation where activities like sharing experiences, situations, and problems are focused on the principles of giving and receiving, applying self-help skills, and knowledge development.<sup>57,58</sup>

The goal of group supportive psychotherapy is to provide support for patients, enabling them to resolve the crisis they are facing by building a supportive relationship between the patient and the doctor, increasing the patient's strength, improving coping skills, enhancing the ability to use coping resources, increasing patient autonomy in treatment decisions, improving the ability to achieve optimal independence, and enhancing the ability to reduce subjective distress and maladaptive coping responses.<sup>59,60</sup>

*Several Principles to Consider in Providing Group Supportive Psychotherapy:*<sup>60</sup>

1. Establishing a trusting relationship.
2. Contemplating ideas and alternatives to solve problems.
3. Discussing taboo areas (exchanging experiences about secrets and internal conflicts).
4. Valuing shared situations and acting together.
5. Having a support system to assist (mutual support and assistance).
6. Individual problem-solving.

*Characteristics of Group Supportive Psychotherapy:*<sup>60</sup>

1. Small groups, typically 6-12 members.
2. Homogeneous membership.
3. Full participation and autonomy of members.
4. Collective leadership.



5. Voluntary, non-political membership.
6. Mutual assistance among members, with the possibility of meetings outside of sessions.

### **Biopsychosocial and Spiritual Issues in ESRD Patients Undergoing Chronic Hemodialysis**

Various factors have been identified that can lead to biopsychosocial and spiritual problems in the course of ESRD, from the struggle to cope with the illness, exacerbations, managing the challenges of hemodialysis, cultivating a positive outlook, to preparing for the end of life. These factors are interconnected with the experiences and feelings of patients undergoing hemodialysis, even approaching the end of their lives.<sup>51,52</sup>

This phase begins with the experience of receiving the diagnosis, which can evoke several negative feelings, such as feeling trapped, denial, fear, sadness, and feeling punished by God. Hemodialysis may be seen as a life-sustaining treatment that induces dependency, and some patients may even view dialysis as harmful to their bodies. Subsequently, patients face deterioration in their condition, which makes it difficult to sustain life due to various changes that occur. Patients may experience changes in functional status, emotional status, and social status. Physical changes could affect respiratory function, fluid and electrolyte balance, and nutrition. Symptoms such as fatigue, shortness of breath, pain, insomnia, nausea, and vomiting may occur. Emotional changes could include heightened sensitivity when facing illness, which impacts their quality of life, with patients tending to experience sadness and depression. Social changes may drastically alter relationships with family, friends, and work due to declines in functional and emotional status. Some patients may lose their jobs, have limited time with friends, lose relationships with partners, face sexual relationship disruptions, and become dependent on family.<sup>51,52</sup>

The main challenges faced by patients undergoing hemodialysis are the high burden of the treatment process, numerous treatment needs, and the impact of treatment on quality of life. These challenges persist from the initiation of treatment to the end of life. Patients and families may face difficulties in determining the appropriate management plan to meet the patient's needs. Changes resulting from the illness can affect the patient's daily life, limiting their activities. Financial problems may also arise due to treatment costs, transportation, medications, and medical fees. Overcoming these challenges is crucial to continuing care and sustaining the patient's life.<sup>51,52</sup>

The disease journey ultimately leads to a better perspective on finding a positive meaning in the ESRD suffered by the patient. Increased spirituality, accepting the current situation, and preparing to make the best effort for the future can enhance the patient's value of life and lead to a more positive view of the illness. Acceptance of the diagnosis is key to preparing for end-of-life care through further information about the patient's life expectancy, awareness of death, and discussions about end-of-life issues such as advanced care planning.<sup>51,52</sup>

### **5. Discussion**

ESRD patients require comprehensive care in the form of palliative care. Renal Palliative Care is an interdisciplinary medical model centered on the patient, aimed at optimizing the quality of life and maintaining patient dignity. This can be achieved through strategies such as effective communication with patients and families, shared decision-making, future treatment planning, pain management, and addressing biopsychosocial and spiritual issues, including grief and appropriate end-of-life care.<sup>53</sup>

The connection between biopsychosocial impacts and the quality of life in ESRD patients requires a holistic and integrated approach to provide optimal management. One of the biopsychosocial interventions that can be offered to ESRD patients is group supportive psychotherapy. This form of psychotherapy is one of the most affordable and accessible methods for patients facing a variety of challenges, including issues with coping methods and lifestyle behavior changes.<sup>8,52</sup>

To date, no specific protocol or guidelines for group supportive psychotherapy have been developed for ESRD patients, particularly those undergoing hemodialysis. Group supportive psychotherapy can be provided once the acute phase has passed. The sooner group supportive psychotherapy is offered to ESRD patients undergoing chronic hemodialysis, the better they will be able to address their psychological problems. Broadly, group supportive psychotherapy offers emotional support, helps manage stress, and improves patients' coping mechanisms. An initial evaluation can be conducted to identify psychological, emotional, and social issues that the patient may face, such as anxiety, depression, social isolation, or stress related to care.

Subsequently, the doctor needs to gain a deep understanding of the patient's physical health status, the patient's understanding of chronic illness, and how this condition affects their daily life.<sup>54,61</sup>

Doctors must build a positive, trusting therapeutic relationship with the patient. They also need to provide emotional support, acceptance, and understanding of the patient's experiences. This can be achieved through active listening and showing empathy. Active listening allows the patient to speak openly, enabling the doctor to understand the patient's feelings, concerns, and experiences. Meanwhile, empathy allows the doctor to understand the patient's perspective and validate their emotions. Exploring the coping strategies used by patients and the social support they receive is also vital. These aspects help patients deal with stress. It is also essential to educate patients about the role of supportive psychotherapy in improving emotional well-being, managing stress, and providing support.<sup>54,61</sup>

Spiritual interventions should also be considered by discussing the patient's beliefs and values, which can provide comfort and meaning. Cooperation between the doctor and patient is necessary to establish shared goals related to positive behavior changes, including coping with hemodialysis, improving quality of life, and developing a healthy daily routine. Further discussions can be made regarding stress management, mental health maintenance, and preparation for potential health condition changes.<sup>54,61</sup> Research shows that psychotherapy and non-pharmacological interventions benefit ESRD patients by enhancing life meaning, creating life goals, and improving quality of life. Group supportive psychotherapy can enhance life quality more effectively, reduce psychological stress, improve coping skills, and alleviate symptoms and pain in ESRD patients.<sup>8</sup>

For patients who are new to hemodialysis, group supportive psychotherapy is expected to provide comprehensive education on ESRD, potentially delaying disease progression, reducing acute hospital admissions, and increasing patient compliance with hemodialysis. For patients already undergoing hemodialysis, this psychotherapy is expected to offer education and support to both the patient and family, as well as facilitate communication regarding various quality-of-life concerns.<sup>62</sup>

Group supportive psychotherapy can help patients manage emotional stress, enhance positive coping, increase social support, manage uncertainty, improve life quality, accept treatment, and manage self-image. By providing holistic support for biopsychosocial and spiritual aspects, group supportive psychotherapy can bring about positive changes in the perception, coping, and quality of life of ESRD patients undergoing chronic hemodialysis.<sup>56</sup>

Further, group supportive psychotherapy has many benefits, especially in chronic disease conditions. An article by Drum et al. (2011) highlights that group psychotherapy is most successful when the motivation to change is present, internal resistance to change is minimal, the desired change is clear, ample social and environmental support is available, and there is an information gap.<sup>63</sup> In patients undergoing chronic hemodialysis, the hemodialysis sessions serve as an opportunity to meet others with similar challenges, as these groups will continue to meet 2-3 times per week. Thus, group supportive psychotherapy in hemodialysis patients can also function as a self-help group, providing mutual support and strengthening each other. This aligns with research by Lii et al. (2007), which indicates that during group psychotherapy sessions, patients observe others in similar situations, and when they see someone successfully adopting self-care behaviors, they are likely to think, "I can do it too." Therefore, group supportive psychotherapy for ESRD patients is a supportive psychotherapy approach provided to two or more patients with ESRD, clarifying the issues they face so that patients can utilize their support systems and express their thoughts and feelings through verbal expression.<sup>64</sup>

## **6. Conclusion**

Group supportive psychotherapy is an effective, non-pharmacological intervention that holistically improves the well-being of ESRD patients undergoing hemodialysis. By enhancing HRV, boosting quality of life, and supporting serotonin regulation, this psychotherapy can address the multifaceted psychological and physiological challenges faced by patients. Integrating supportive psychotherapy into comprehensive care plans is strongly recommended to optimize patient outcomes and improve overall life satisfaction.

## **References**

1. Webster AC, Nagler E V., Morton RL, Masson P. Chronic Kidney Disease. *The Lancet*. 2017;389(10075):1238-1252. doi:10.1016/S0140-6736(16)32064-5.

2. Hill NR, Fatoba ST, Oke JL, et al. Global prevalence of chronic kidney disease - A systematic review and meta-analysis. *PLoS One*. 2016;11(7). doi:10.1371/journal.pone.0158765.
3. Kidney Disease Improving Global Outcomes. Chapter 1: Definition and classification of CKD. *Kidney Int Suppl* (2011). 2013;3(1):19-62. doi:10.1038/kisup.2012.64.
4. Lam DY, Scherer JS, Brown M, Grubbs V, Schell JO. A conceptual framework of palliative care across the continuum of advanced kidney disease. *Clinical Journal of the American Society of Nephrology*. 2019;14(4):635-641. doi:10.2215/CJN.09330818.
5. Lanini I, Samoni S, Husain-Syed F, et al. Palliative Care for Patients with Kidney Disease. *J Clin Med*. 2022;11(13). doi:10.3390/jcm11133923.
6. Sturgill D, Bear A. *Unique Palliative Care Needs of Patients with Advanced Chronic Kidney Disease-the Scope of the Problem and Several Solutions*. Vol 17.; 2017. www.usrds.org/adr.aspx.
7. *1th Report Of Indonesian Renal Registry 2018*.
8. Mansouri S, Jalali A, Rahmati M, Salari N. Educational supportive group therapy and the quality of life of hemodialysis patients. *Biopsychosoc Med*. 2020;14(1). doi:10.1186/s13030-020-00200-z.
9. Thio CHL, Van Roon AM, Lefrandt JD, Gansevoort RT, Snieder H. Heart rate variability and its relation to chronic kidney disease: Results from the PREVEND study. *Psychosom Med*. 2018;80(3):307-316. doi:10.1097/PSY.0000000000000556.
10. Hering D, Esler MD, Schlaich MP. Chronic kidney disease: Role of sympathetic nervous system activation and potential benefits of renal denervation. *EuroIntervention*. 2013;9:R127-R135. doi:10.4244/EIJV9SRA22.
11. Wang Z, Luo Y, Zhang Y, et al. Heart rate variability in generalized anxiety disorder, major depressive disorder and panic disorder: A network meta-analysis and systematic review. *J Affect Disord*. 2023;330:259-266. doi:https://doi.org/10.1016/j.jad.2023.03.018.
12. Osataphan N, Wongcharoen W, Phrommintikul A, Putchagarn P, Noppakun K. Predictive value of heart rate variability on long-term mortality in end-stage kidney disease on hemodialysis. *PLoS One*. 2023;18(2 February). doi:10.1371/journal.pone.0282344.
13. Chandra P, Sands RL, Gillespie BW, et al. Predictors of heart rate variability and its prognostic significance in chronic kidney disease. *Nephrology Dialysis Transplantation*. 2012;27(2):700-709. doi:10.1093/ndt/gfr340.
14. Drawz PE, Babineau DC, Brecklin C, et al. Heart rate variability is a predictor of mortality in chronic kidney disease: A report from the CRIC study: CRIC study investigators. *Am J Nephrol*. 2014;38(6):517-528. doi:10.1159/000357200.
15. Chandra P, Sands RL, Gillespie BW, et al. Relationship between heart rate variability and pulse wave velocity and their association with patient outcomes in chronic kidney disease. *Clin Nephrol*. 2014;81(1):9-19. doi:10.5414/cn108020.
16. Cruz MC, Andrade C, Urrutia M, Draibe S, Nogueira-Martins LA, Sesso R de CC. Quality of life in patients with chronic kidney disease. *Clinics*. 2011;66(6):991-995. doi:10.1590/S1807-59322011000600012.
17. Kefale B, Alebachew M, Tadesse Y, Engidawork E. Quality of life and its predictors among patients with chronic kidney disease: A hospital-based cross sectional study. *PLoS One*. 2019;14(2). doi:10.1371/journal.pone.0212184.
18. Dale E, Pehrson AL, Jeyarajah T, et al. Effects of serotonin in the hippocampus: How SSRIs and multimodal antidepressants might regulate pyramidal cell function. *CNS Spectr*. 2016;21(2):143-161. doi:10.1017/S1092852915000425.
19. Edmonston D, Isakova T, Wolf M. Plasma Serotonin and Cardiovascular Outcomes in Chronic Kidney Disease. *J Am Heart Assoc*. 2023;12(17). doi:10.1161/JAHA.123.029785.
20. Hara K, Hirowatari Y, Shimura Y, Takahashi H. Serotonin levels in platelet-poor plasma and whole blood in people with type 2 diabetes with chronic kidney disease. *Diabetes Res Clin Pract*. 2011;94(2):167-171. doi:10.1016/j.diabres.2011.06.020.
21. Taylor F, Taylor C, Baharani J, Nicholas J, Combes G. Integrating emotional and psychological support into the end-stage renal disease pathway: A protocol for mixed methods research to identify patients'

- lower-level support needs and how these can most effectively be addressed. *BMC Nephrol.* 2016;17(1). doi:10.1186/s12882-016-0327-2.
22. Perhimpunan Nefrologi Indonesia. *Konsensus Dialisis PERNEFRI*. I. PERNEFRI (Perhimpunan Nefrologi Indonesia); 2003.
  23. Zasra R, Harun H, Azmi S. *Indikasi Dan Persiapan Hemodialis Pada Penyakit Ginjal Kronis*. Vol 7.; 2018. <http://jurnal.fk.unand.ac.id>.
  24. Rocco M, Daugirdas JT, Depner TA, et al. KDOQI Clinical Practice Guideline for Hemodialysis Adequacy: 2015 Update. *American Journal of Kidney Diseases.* 2015;66(5):884-930. doi:10.1053/j.ajkd.2015.07.015.
  25. Ulya L, Krisbiantoro P, Hartinah D, Karyati S. Hubungan Durasi Hemodialisa dengan Tekanan Darah Pasien Gagal Ginjal Kronik di Ruang Hemodialisis RSI Pati. *Indonesia Jurnal Perawat.* 2020;(1).
  26. Vaidya SR, Aeddula NR. Chronic Kidney Disease. StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing. October 22, 2022. Accessed May 7, 2024. <https://www.ncbi.nlm.nih.gov/books/NBK535404/>.
  27. López-Novoa JM, Martínez-Salgado C, Rodríguez-Peña AB, Hernández FJL. Common pathophysiological mechanisms of chronic kidney disease: Therapeutic perspectives. *Pharmacol Ther.* 2010;128(1):61-81. doi:10.1016/j.pharmthera.2010.05.006.
  28. Panizo S, Martínez-Arias L, Alonso-Montes C, et al. Fibrosis in chronic kidney disease: Pathogenesis and consequences. *Int J Mol Sci.* 2021;22(1):1-19. doi:10.3390/ijms22010408.
  29. Martínez-Hernández SL, Muñoz-Ortega MH, Ávila-Blanco ME, Medina-Pizaño MY, Ventura-Juárez J. Novel Approaches in Chronic Renal Failure without Renal Replacement Therapy: A Review. *Biomedicines.* 2023;11(10). doi:10.3390/biomedicines11102828.
  30. Yang L, Humphreys BD, Bonventre J V. Pathophysiology of Acute Kidney Injury to Chronic Kidney Disease: Maladaptive Repair. In: C. Ronco, J-L. Vincent, JA. Kellum, eds. *Controversies in Acute Kidney Injury*. Vol 174. KARGER; 2011:149-155. doi:<https://doi.org/10.1159/isbn.978-3-8055-9811-8>.
  31. Greenfield RH, Rindfleisch JA. Heart rate variability and arrhythmias. U.S. Departement of Veterans Affairs. 2020. Accessed June 4, 2024. <https://www.va.gov/WHOLEHEALTHLIBRARY/docs/Heart-Rate-Variability-and-Arrhythmias.pdf>.
  32. Pham T, Lau ZJ, Chen SHA, Makowski D. Heart rate variability in psychology: A review of hrv indices and an analysis tutorial. *Sensors.* 2021;21(12). doi:10.3390/s21123998.
  33. Garrett L, Trümbach D, Spielmann N, et al. A rationale for considering heart/brain axis control in neuropsychiatric disease. *Mammalian Genome.* 2023;34(2):331-350. doi:10.1007/s00335-022-09974-9.
  34. Thio CHL, Van Roon AM, Lefrandt JD, Gansevoort RT, Snieder H. Heart rate variability and its relation to chronic kidney disease: Results from the PREVEND study. *Psychosom Med.* 2018;80(3):307-316. doi:10.1097/PSY.0000000000000556.
  35. Kefale B, Alebachew M, Tadesse Y, Engidawork E. Quality of life and its predictors among patients with chronic kidney disease: A hospital-based cross sectional study. *PLoS One.* 2019;14(2). doi:10.1371/journal.pone.0212184.
  36. Kim JY, Kim B, Park KS, et al. Health-related quality of life with KDQOL-36 and its association with self-efficacy and treatment satisfaction in Korean dialysis patients. *Quality of Life Research.* 2013;22(4):753-758. doi:10.1007/s11136-012-0203-x.
  37. Mahato SKS, Apidechkul T, Sriwongpan P, et al. Factors associated with quality of life among chronic kidney disease patients in Nepal: A cross-sectional study. *Health Qual Life Outcomes.* 2020;18(1). doi:10.1186/s12955-020-01458-1.
  38. Gorman JM, Sloan RP. Heart rate variability in depressive and anxiety disorders. *Am Heart J.* 2000;140(4 SUPPL.). doi:10.1067/mhj.2000.109981.
  39. Burger AJ, D'Elia JA, Weinrauch LA, Lerman O, Gaur A. Marked abnormalities in heart rate variability are associated with progressive deterioration of renal function in type I diabetic patients with overt nephropathy. *Int J Cardiol.* 2002;86(2-3):281-287.
  40. Schlaich MP, Socratous F, Hennebry S, et al. Sympathetic activation in chronic renal failure. *Journal of the American Society of Nephrology.* 2009;20(5):933-939. doi:10.1681/ASN.2008040402.



41. Jhen RN, Wang PC, Chang YM, Kao JL, Wu ECH, Shiao CC. The Clinical Significance and Application of Heart Rate Variability in Dialysis Patients: A Narrative Review. *Biomedicines*. 2024;12(7):1547. doi:10.3390/biomedicines12071547.
42. Chang YM, Huang YT, Chen IL, et al. Heart rate variability as an independent predictor for 8-year mortality among chronic hemodialysis patients. *Sci Rep*. 2020;10(1). doi:10.1038/s41598-020-57792-3.
43. Kida N, Tsubakihara Y, Kida H, et al. Usefulness of measurement of heart rate variability by holter ECG in hemodialysis patients. *BMC Nephrol*. 2017;18(1). doi:10.1186/s12882-016-0423-3.
44. Femenía T, Gómez-Galán M, Lindskog M, Magara S. Dysfunctional hippocampal activity affects emotion and cognition in mood disorders. *Brain Res*. 2012;1476:58-70. doi:10.1016/j.brainres.2012.03.053.
45. Hurtado K, Scholpa NE, Schnellmann JG, Schnellmann RG. Serotonin regulation of mitochondria in kidney diseases. *Pharmacol Res*. 2024;203. doi:10.1016/j.phrs.2024.107154.
46. Karu N, McKercher C, Nichols DS, et al. Tryptophan metabolism, its relation to inflammation and stress markers and association with psychological and cognitive functioning: Tasmanian Chronic Kidney Disease pilot study. *BMC Nephrol*. 2016;17(1):1-13. doi:10.1186/s12882-016-0387-3.
47. Barišić I, Pivac N, Mück-Šeler D, Jakovljević M, Šagud M. Comorbid depression and platelet serotonin in hemodialysis patients. *Nephron Clin Pract*. 2004;96(1). doi:10.1159/000075566.
48. Audhya T, Adams JB, Johansen L. Correlation of serotonin levels in CSF, platelets, plasma, and urine. *Biochim Biophys Acta Gen Subj*. 2012;1820(10):1496-1501. doi:10.1016/j.bbagen.2012.05.012.
49. Gabbard GO. *Textbook of Psychotherapeutic Treatments*. American Psychiatric Publishing; 2008. doi:10.1176/appi.books.9781585623648.
50. Appelbaum H. Supportive Psychotherapy. *FOCUS - The Journal of Lifelong Learning in Psychiatry*. 2005;3(3):438-439. doi:10.1176/foc.3.3.438.
51. Imamah NF, Lin HR. Palliative care in patients with end-stage renal disease: A meta synthesis. *Int J Environ Res Public Health*. 2021;18(20). doi:10.3390/ijerph182010651.
52. Han E, Shiraz F, Haldane V, et al. Biopsychosocial experiences and coping strategies of elderly ESRD patients: A qualitative study to inform the development of more holistic and person-centred health services in Singapore. *BMC Public Health*. 2019;19(1). doi:10.1186/s12889-019-7433-6.
53. Pereira A, Tavares S, Gomes C, et al. Kidney supportive care: an update of the current state of the art of palliative care in CKD patients. *Braz J Nephrol*. 2021;43(1):74-87. doi:10.1590/2175-8239.
54. Grover S, Avasthi A, Jagiwal M. Clinical practice guidelines for practice of supportive psychotherapy. *Indian J Psychiatry*. 2020;62(Suppl 2):S173-S182.
55. Karasu TB, Karasu SR. Psychoanalysis and psychoanalytic psychotherapy. *Comprehensive textbook of psychiatry*. 1995;2:1767-1788.
56. Lukman PR, Mulyantini Y, Presetyaningtyas MD, Almasyhur AF, Desmiarti, Saputra A. Panduan layanan psikoterapi bagi dokter dan dokter spesialis kedokteran jiwa. Seksi Psikoterapi, PDSKJI; 2021.
57. Sulistyowati ET, Murti B, Dewi YLR. The Effect of Self Help Group on Knowledge and Attitude in Decision Making Among Household Head of Patients with Depression in Yogyakarta. *Journal of Health Promotion and Behavior*. 2016;01(04):223-227. doi:10.26911/thejhp.2016.01.04.01.
58. Heller T, Roccoforte JA, Hsieh K, Cook JA, Pickett SA. Benefits of support groups for families of adults with severe mental illness. *American Journal of Orthopsychiatry*. 1997;67(2):187-198. doi:10.1037/h0080222.
59. Cook JA, Heller T, Pickett-Schenk SA. *The Effect of Support Group Participation on Caregiver Burden among Parents of Adult Offspring with Severe Mental Illness*. Vol 48.; 1999. [http://www.jstor.orgURL:http://www.jstor.org/stable/585248http://www.jstor.org/stable/585248?seq=1&cid=pdf-reference#references\\_tab\\_contents](http://www.jstor.orgURL:http://www.jstor.org/stable/585248http://www.jstor.org/stable/585248?seq=1&cid=pdf-reference#references_tab_contents).
60. Chien WT, Chan SWC, Thompson DR. Effects of a mutual support group for families of Chinese people with schizophrenia: 18-Month follow-up. *British Journal of Psychiatry*. 2006;189(JULY):41-49. doi:10.1192/bjp.bp.105.008375.
61. Rothe EM, Psychiatry D. Supportive Psychotherapy in Everyday Clinical Practice: It's Like Riding a Bicycle. In: ; 2017. <https://api.semanticscholar.org/CorpusID:151143453>.

62. Perry E, Gumban J, Kelly G. A multidisciplinary approach to end-of-life care. *Supportive care for the renal patient*. Published online 2004:238-265.
63. Drum D, Swanbrow Becker M, Hess E. Expanding the Application of Group Interventions: Emergence of Groups in Health Care Settings. *Journal for Specialists in Group Work*. 2011;36(4):247-263. doi:10.1080/01933922.2011.613902.
64. Lii YC, Tsay SL, Wang TJ. Group intervention to improve quality of life in haemodialysis patients. *J Clin Nurs*. 2007;16(11C):268-275. doi:10.1111/j.1365-2702.2007.01963.