

## Logo Cognitive Behavior Therapy (LCBT) Digital Application for Reducing Anxiety in Hemodialysis Patients at RSUD Prembun in May 2024: A Pilot Study

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### KEYWORDS ABSTRACT:

Hemodialysis, Anxiety, LCBT, Digital Therapy, HARS, Chronic Kidney Disease, Treatment Adherence, Quality of Life

**Background:** Hemodialysis patients face significant anxiety due to the chronic nature of kidney disease and the stress of frequent treatments. The repeated hospital visits, invasiveness of the procedure, and uncertainty about prognosis contribute to elevated anxiety levels, which can impair overall quality of life and clinical outcomes. Anxiety can also hinder treatment adherence, leading to poorer health outcomes and complicating disease management.

**Objective:** This study evaluates the feasibility and preliminary efficacy of a Logo Cognitive Behavior Therapy (LCBT) digital application for reducing anxiety among hemodialysis patients at RSUD Prembun.

**Methods:** In this randomized controlled pilot trial, 30 hemodialysis patients were divided into LCBT (n=15) and control (n=15) groups. The LCBT group used the application for 30 minutes daily over eight weeks. Anxiety levels were measured using the Hamilton Anxiety Rating Scale (HARS) before and after the intervention. Statistical analysis involved paired t-tests and independent t-tests.

**Results:** The LCBT group exhibited a significant reduction in anxiety (mean score decreased from  $20.3 \pm 4.2$  to  $10.1 \pm 3.4$ ) compared to the control group (reduction from  $19.7 \pm 4.1$  to  $15.8 \pm 4.2$ ) ( $p < 0.01$ ). Improvements were noted across all anxiety subscales.

**Conclusion:** The LCBT digital application effectively reduces anxiety in hemodialysis patients. Further research with larger samples and extended follow-up is needed to confirm these findings.

### Introduction

Chronic kidney disease (CKD) often necessitates hemodialysis, a life-sustaining treatment associated with significant anxiety due to the repetitive nature of the treatment and related health complications (Goss et al., 2022). Anxiety can negatively impact quality of life, clinical outcomes, and treatment adherence (Lee et al., 2019).

Logo Cognitive Behavior Therapy (LCBT) combines cognitive behavioral therapy (CBT) techniques with logotherapy principles. CBT focuses on modifying maladaptive thoughts and behaviors, while logotherapy emphasizes finding meaning in life, particularly in the face of suffering (Frankl, 2019). The integration of these approaches in LCBT aims to address both cognitive distortions and existential concerns, potentially providing a comprehensive approach to anxiety management (Wong, 2021).

Digital health technologies have facilitated the development of applications that deliver therapeutic interventions, enhancing accessibility and adherence to therapy (Harrell et al., 2021). This pilot study evaluates the feasibility and preliminary efficacy of the LCBT digital application for reducing anxiety among hemodialysis patients at RSUD Prembun. The goal is to provide initial insights into its potential benefits and inform future research (Meyer et al., 2023).

### Method

#### Study Design

This randomized controlled pilot trial was conducted at RSUD Prembun. The protocol received Institutional Review Board approval, and all participants provided written informed consent (DeVellis, 2022).

#### Participants

Thirty hemodialysis patients were recruited and randomly assigned to the LCBT digital application group (n=15) or the control group (n=15). Inclusion criteria were: (1) age 18 years or older, (2) undergoing hemodialysis for at least three months, (3) ability to use a smartphone or tablet, and (4) no severe cognitive impairments. Exclusion criteria included severe psychiatric conditions or inability to use the digital application (Eysenck, 2020).

### **Intervention**

The LCBT digital application, developed for this study, included interactive content based on LCBT principles: guided cognitive restructuring, meaning-oriented reflections, and anxiety management techniques. Participants used the application for 30 minutes daily over eight weeks. The control group received standard care, including routine clinical support but no additional psychological intervention (Cummings et al., 2023).

### **Outcome Measures**

The primary outcome measure was anxiety, assessed using the Hamilton Anxiety Rating Scale (HARS), a validated tool for measuring anxiety severity (Furlanetto et al., 2017; Leichsenring et al., 2018). The HARS was administered pre- and post-intervention to evaluate anxiety level changes. Secondary outcomes included patient satisfaction with the application and adherence rates, assessed through self-report surveys and in-app analytics (Gonzalez et al., 2020).

### **Statistical Analysis**

Descriptive statistics summarized participant demographics. Baseline differences between groups were assessed with independent t-tests. Changes in anxiety scores were analyzed using paired t-tests within each group and independent t-tests between groups. Statistical significance was set at  $p < 0.05$  (Beck, 2023).

## **Results**

### **Participant Characteristics**

Table 1 details participant demographics. The average age was  $57.4 \pm 10.2$  years, with no significant differences between groups in age, gender, or dialysis duration ( $p > 0.05$ ) (Smith et al., 2022).

### **Anxiety Outcomes**

The LCBT group showed a significant reduction in anxiety levels compared to the control group, as indicated by the HARS scores. The mean anxiety score decreased from  $20.3 \pm 4.2$  to  $10.1 \pm 3.4$  in the LCBT group, compared to a reduction from  $19.7 \pm 4.1$  to  $15.8 \pm 4.2$  in the control group ( $p < 0.01$ ) (Furlanetto et al., 2017; Leichsenring et al., 2018). Improvements were observed in all anxiety subscales, including generalized anxiety, worry, and physical symptoms (Gonzalez et al., 2020; Malgorzata et al., 2020).

### **Adherence and Satisfaction**

Adherence to the application was high, with an average of 85% of the recommended sessions completed. User feedback indicated high satisfaction, with 80% of participants finding the content helpful and user-friendly (Parsons, 2021).

### **Discussion**

The pilot study demonstrates that the LCBT digital application effectively alleviates anxiety among hemodialysis patients, highlighting its success in addressing both cognitive and existential dimensions of their distress. The significant reduction in anxiety scores indicates that the application adeptly targets maladaptive thought patterns and behaviors while also confronting existential concerns, such as finding meaning in life amidst chronic illness. This aligns with existing literature that underscores the efficacy of Cognitive-Behavioral Therapy (CBT) in managing anxiety within chronic illness populations (Fong et al., 2020; Goss et al., 2022). CBT's structured approach to modifying negative thought patterns and behaviors is well-supported, enhancing its credibility in treating anxiety related to hemodialysis.

Incorporating logotherapy principles into the digital intervention likely contributed to its effectiveness by addressing the existential challenges associated with chronic illness. Logotherapy, with its focus on finding meaning in suffering, provides a valuable framework for patients grappling with the profound psychological impacts of long-term hemodialysis. By helping patients discover a

sense of purpose amidst their suffering, the application not only improves emotional resilience but also enriches overall mental well-being (Wong, 2021). Furthermore, the digital format of the LCBT application offers notable advantages, such as increased accessibility and ease of use. This format makes it an attractive alternative for patients who may encounter barriers to traditional face-to-face therapy, such as geographical limitations or mobility issues, thus broadening its potential impact (Lee et al., 2019).

### **Strengths of the Study**

The study's primary strength lies in its innovative approach, integrating CBT with logotherapy principles in a digital format, which enhances both accessibility and adherence. The use of a digital application offers flexibility and convenience, potentially reaching a broader audience and addressing common barriers to traditional therapy, such as transportation and scheduling challenges. Additionally, the application's focus on both cognitive and existential dimensions provides a comprehensive approach to managing anxiety, addressing the multifaceted nature of the patients' distress.

### **Limitations and Areas for Improvement**

Despite these strengths, the study has notable limitations. The small sample size of thirty patients may limit the generalizability of the findings and the ability to detect subtle effects. Moreover, the short duration of the study might not capture the long-term benefits or potential drawbacks of using the digital application over extended periods. Future research should aim to include larger, more diverse samples and extend the follow-up period to better assess the application's efficacy and sustainability. Additionally, evaluating the impact of the application on other aspects of patient well-being, such as physical health and social functioning, would provide a more comprehensive understanding of its benefits and highlight areas for further development (Rabbinowitz et al., 2022; Meyer et al., 2023).

### **Conclusion**

The LCBT digital application shows promise in reducing anxiety in hemodialysis patients, providing an accessible and effective intervention. Further research is necessary to validate these findings and explore the long-term benefits of digital LCBT interventions in chronic illness management (Cummings et al., 2023).

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