

# Quality of Life and Illness Acceptance among End-Stage Renal Disease (ESRD) Patients on Hemodialysis: The Moderating Effect of Death Anxiety during COVID-19 pandemic

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## Abstract

The purpose of the study was to examine the quality of life and illness acceptance among ESRD patients with the moderating effects of death anxiety. The cross-sectional design was incorporated. The sample was comprised of 240 participants. Individuals with ESRD on hemodialysis were approached above 20 years of age. A self-administered questionnaire was used for data collection. The results revealed that COVID-19 has a significant impact on the quality of life of patients and their illness acceptance. Covid-19 affected the general health of patients, their psychological health, as well as their social relationships. The results also confirmed that death anxiety negatively moderates the relationship between quality of life and illness acceptance among ESRD patients. This study will shed light on the need to provide appropriate

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psychosocial care as well as supportive therapies to people with end-stage renal disease who are experiencing mental distress during and after the COVID-19 outbreak.

### **Keywords**

end-stage renal disease, Covid-19, death anxiety, quality of life, psychological distress

## **Introduction**

In late 2019, a new acute respiratory disease named Corona virus, commonly known as COVID-19, spread around the globe and became an outbreak. That is why it was declared a pandemic by the World Health Organization ([World Health Organization, 2019](#)). COVID-19 pandemic situations always have a negative impact on the mental health and well-being of people ([Pfefferbaum & North, 2020](#)). The COVID-19 pandemic has badly affected education ([Mushtaque, Rizwan, 2021](#)), health, labor, and even every segment of life. Hospitals are places that are at high risk of COVID-19 virus circulation because they are places that all of us visit and where every sick person can easily approach. Some people who are suffering from chronic diseases need to visit the hospital for their care. Health professionals are at high risk of disease contamination and are part of the COVID-19 epidemic. The World Health Organization has recommended reducing elective health operations (dental, skin, ENT) ([Moraes et al., 2020](#)). COVID-19 affected the public health system adversely, and all the elective departments of the health system reduced their activities to avoid disease spread and contamination of health staff ([Mushtaque, Rizwan, 2021](#)) and the general public ([Chisini et al., 2020](#)).

End-Stage Renal Disease (ESRD) or Chronic Renal Failure is a stage of chronic kidney disease (CKD) that occurs when the kidneys lose function and the disease progresses to an advanced stage, at which point dialysis or a renal transplant is required to stay alive (“[Chapter 1: Definition and classification of CKD,](#)” 2013). ESRD was recently included in the group of lifestyle diseases of the 21st century. It is a progressive and often irreversible disease. According to studies, ESRD affects approximately 600 million people worldwide, accounting for 6–15% of the global population. The number of peritoneal and hemodialysis patients is expected to increase to 5.5 million by 2030 ([Eckardt et al., 2009](#)). Studies based on health screening camps and communities in Pakistan show that the prevalence of CKD in Pakistan is 16.6%–25%. ([Saleem et al., 2015](#)). A study on the Pakistan Renal Data System (PKRDS) in 2020 revealed that in Pakistan there are a total of 31 hemodialysis units and 658 machines, 440 of which are for hepatitis-ve, 190 for hepatitis C-ve, and 27 machines for hepatitis B-ve. In this study, samples were collected from a total of 990 patients. They also analyzed the causes of ESRD and concluded that out of 990 total patients, 327 were suffering from diabetic nephropathy, 317 with hypertension, 71 with glomerulonephritis, 31 with stones, 2 from polycystic kidney disease, and 105 from other causes. The hepatitis

status of the ESRD patients also showed that there were 437 hepatitis C +ve and 531 anti-HCV-ve patients, while 22 were unknown and 302 were HCV PCR +ve. The Hepatitis B status indicates that there were 14 HBsAg +ve and 877 were HBsAg-ve, while the 99 others were unknown. In Pakistan, they explored the gender disparity of 35% of females and 65% of males suffering from ESRD (Ahmad & Javed, 2021).

Illness acceptance plays a vital role in chronic disease treatment, which is necessary for the better quality of life of patients. Therefore, psychosocial support is critical, as patients with ESRD face many restrictions, such as dietary, physical, and social, while on dialysis. As a result, psychological and social care are important for the acceptance of illness and quality of life (Jankowska-Polaska et al., 2016). A higher level of disease acceptance was shown among transplant patients than among dialysis patients, which is related to their demographic characteristics. As the patient recognizes the disease, they are more likely to exhibit appropriate disease-related behavior (Chan, 2012). End-Stage Renal Disease development and progression is a significant cause of premature mortality and reduced quality of life (Benjamin & Lappin, 2021). Acceptance of illness leads to a higher quality of life for patients suffering from chronic disease (Zahra et al., 2020). A low level of quality of life in ESRD patients is associated with disease complications and psychological issues (Dbrowska-Bender et al., 2018).

ESRD is critical and fatalities are associated with comorbidities such as cardiovascular diseases, hypertension, diabetes mellitus, and psychological disorders. ESRD is a serious and progressive disease that needs long-term treatment and, as its name indicates, is end-stage renal disease, so it has a negative effect on the people who are suffering from it. People who have a chronic disease are more likely to be diagnosed with psychological problems, as are people with chronic kidney disease, who are prone to being diagnosed with psychological disorders (Goh & Griva 2018).

Another concomitant concern among ESRD patients is anxiety. Many studies have shown that ESRD patients have a significant level of anxiety. According to a previous study, the prevalence of anxiety related to ESRD was estimated at around 13%–52% (Pretto et al., 2020). Another study identified a positive, significant correlation between depression and anxiety with the performance status of ESRD patients (Rajan, E. J. E., & Subramanian, S. (2016). Patients with ESRD face physical, psychological, and spiritual complications as well as lower quality of life that decrease their survival rates and increase thoughts about death, which cause death anxiety (Cohen et al., 2016).

The coronavirus disease 2019 (COVID-19) has the potential to impair hemodialysis patients with ESRD's mental and social well-being. In a study, more than 85% of participants were apprehensive about receiving dialysis treatments due to the risk of infection from close contact at the dialysis facility or during transportation. Thirty percent of people have reported extreme stress and thoughts of death, and 85% report feeling overwhelmed by COVID-19 problems (Gansevoort & Hilbrands, 2020; Lee et al., 2020). Kidney involvement, as demonstrated by hematuria and proteinuria, was found to be an independent predictor of in-hospital death (Docherty et al., 2020). The higher frequency of acute kidney injury and mortality due to renal-related

complications documented in observational studies could be explained in part by SARS-CoV-2 kidney tropism and systemic immune responses to the virus (Cheng et al., 2020).

In order to fill the gap, as death anxiety has taken a terrible toll on our society globally for a variety of reasons, during the pandemic the prevalence of death anxiety among chronically ill patients is very new and not well documented at all. The purpose of the present research was to examine the quality of life and illness acceptance among end-stage renal disease patients on hemodialysis and the moderating role of death anxiety during lockdown.

### *Hypothesis of the Study*

**H1.** There is likely to be a significant association between quality of life, illness acceptance among end-stage renal disease patients

**H2.** There is likely to be death anxiety negatively moderates the relationship between quality of life, illness acceptance among end-stage renal disease patients

## **Material and Method of the Study**

### *Sample, Data Collection, and Design*

The data was gathered using the purposive sampling technique and self-administered questionnaires. G Power was used to calculate the sample size (Services Hospital, Mayo Hospital, General Hospital Dialysis Center, and Govt. Said Mitha Teaching Hospital in Lahore, Pakistan). The current study's sample was collected from the anonymized kidney and dialysis unit. The study included 240 people, ranging in age from 20 to 85. The following criteria apply to the cross-sectional study: Patients with end-stage renal illness who underwent dialysis on a regular basis at the hospital during COVID-19 and who had received at least 2 years of hemodialysis treatment had no significant comorbidities (e.g., cancer) and a diagnosis of depression with cognitive dysfunction.

### *Instruments*

The instruments include a socio-demographic form for each participant. All the scales used in the current study were in Urdu, the national language of Pakistan. So that the respondent can easily understand the statements and provide a reliable response.

Felton & Revenson (1984) developed the Illness Acceptance Scale. This scale allows the researcher to assess the patient's level of acceptance of any illness. It consists of eight assertions about the negative aspects of inadequate well-being. It's a 5-point Likert scale, with responses ranging from 1 to 5, with 1 being weak and 5 being extremely strong. Zahra et al. translated the Urdu-adapted version of the Illness acceptance scale (2019) that was used in the current study. Cronbach's alpha value of the

illness acceptance scale is 0.950. The score range of the illness acceptance scale is (8–40), whereas, value (8–18) considered as lack of illness acceptance, value (19–29) considered as moderate, and value (30–40) considered as high level of illness acceptance.

Quality of Life (WHOQOL-BREF) questionnaire—Urdu, translated by [Saqib Lodhi et al. \(2017\)](#). It is a 26-item scale. The Urdu version of the World Health Organization's quality of life questionnaire (WHOQOL-BREF) scale has excellent psychometric characteristics. As a result, it can be used to assess the quality of life among Pakistanis as a valid technique. In the current study, the Cronbach's alpha value of the quality of life scale is 0.921.

The Death Anxiety Scale-Urdu (DAS-U) is reliable and valid. The Death Anxiety Questionnaire is a 15-item self-report measure used with a population recruited against a life-threatening illness. The score range of the scale is (15–75), whereas value (15–35) considered as low death anxiety, value (36–55) considered as moderate, and value (56–75) considered as high level of death anxiety. It is a five-point Likert scale. The Cronbach's alpha value of the death anxiety scale is 0.970. ([Saleem et al., 2015](#)).

## *Procedure*

In this study, we looked at the data from 240 patients with end-stage renal illness. For this purpose, we approached the four different hospital dialysis wards anonymized. Participants first read the study's purpose and gave informed consent before moving on to the next page, which contained the questionnaire. The demographics, illness acceptance scale, quality of life, and death anxiety scale are all included in the questionnaire. All instruments were reviewed for the accuracy of the researcher's written information before data entry and coding. All the data was entered into a spreadsheet for statistical reasons after following the instructions and data coding. To avoid data input errors and other potential blunders, all data was imported into SPSS. 50 people were ruled out due to missing information and inadequate response.

## *Ethical Approval*

The ethical approval was taken from the research and ethical review committee of anonymized.

## *Statistical Analysis*

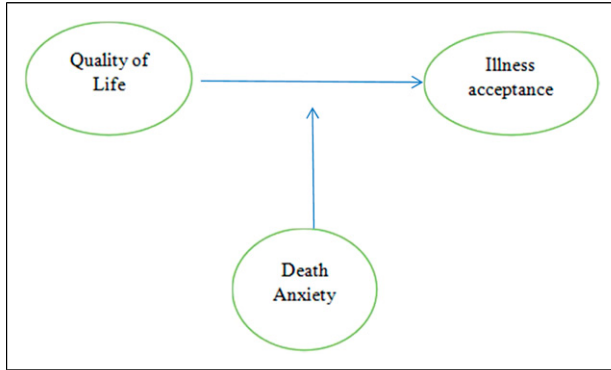
The demographic data was subjected to descriptive analysis, whereas the study variables were examined using PLS-SEM.

**Table 1.** Demographic characteristics of the ESDR Patients included in the study (240).

Demographic Variables	f(%)
Gender	
Male	141(58.8)
Female	99(41.3)
Age of the participant	
25–35	44(18.3)
36–45	63(26.3)
46–55	45(18.8)
56–65	74(30.8)
66–75	14(5.8)
Qualification of the participant	
Vocational education	42(17.5)
High school	131(54.6)
College/University	10(4.2)
Uneducated	57(23.8)
Socioeconomic status	
Upper	3(1.3)
Middle	67(27.9)
Lower	170(70.8)
Any other disease with ESDR	
Diabetes	80(33.3)
Hepatitis	70(29.2)
High blood pressure	47(19.6)
No disease	43(17.9)
Any other mental illness with ESDR	
Yes	10(4.1)
No	230(95.8)
Insomnia	193(80.4)
Muscle cramp	190(80.0)
Fatigue	232(97.3)
Hospitalization during the period of COVID-19	122(50.8)

## Result of the Study

The (Table 1) depicts the demographic features of the study participants, who were 58% male and 41% female. The majority of participants are between the ages of 56 and 65 and come from the middle and lower classes. The data were collected during the COVID-19 period, when patients were required to attend during a critical period since they did not receive treatment at home. Which revealed that 50% of respondents had been hospitalized during the duration of COVID-19. Patients with ESDR reported comorbidities such as hepatitis, hypertension, and diabetes; only 17% of patients



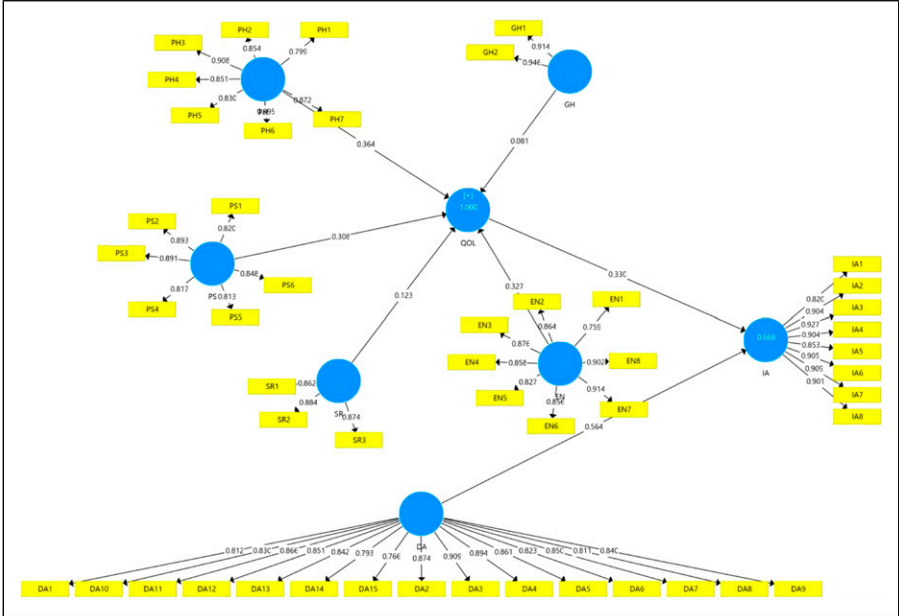
**Figure 1.** Conceptual frame-work of the study.

reported no comorbidity with ESDR, and 4% reported psychological comorbidity with ESDR.

### *Assessment of Measurement Model*

The present study incorporated structural equation modeling (SEM) technique using Smart PLS 3.2.6 to examine the measurement model. There are two steps of measurement model: convergent validity and discriminant validity. Measurement model with its features were exhibited in the [Figure 2](#).

The present study examined convergent validity with three steps, namely; individual item reliability, internal consistency reliability, and average variance extracted (AVE) ([Table 2](#)). The factor loading of every construct is known as individual item reliability ([Hair et al., 2016](#); [Hulland, 1999](#)). Each item of a construct has a different and unique factor loading. The loading of a construct above 0.30 can be retained in the model as the minimum acceptable loading value of a construct is 0.30 ([Hair et al. 2016](#)). [Hair et al. \(2016\)](#) stated that items of the construct must be removed if the removal helps in increasing the value of AVE and composite reliability (CR). Hence, the current study did not report any removal of items as the removal of items failed to increase the value of AVE and CR. In addition, the second step for the assessment of convergent validity is internal consistency reliability. The internal consistency reliability can be examined by the CR of the construct. According to previous studies, Cronbach's alpha and CR are appropriate for the successful examination of internal consistency reliability ([Hair et al., 2014](#)). The value of CR must be above than 0.70 ([Hair et al., 2017](#)). By following the recommendations of [Hair et al. \(2017\)](#), each item of the present study exhibited the value above than 0.70. In the third step, the study determined AVE to examine convergent validity. In order to evaluate the perfect convergent validity, the value of AVE must be greater than 0.50 ([Fernandes, 2012](#); [Hair et al., 2014](#)). The convergent



**Figure 2.** Measurement model

validity of the present study is accurate as every construct represented the value of AVE above than 0.50.

The second step in measurement model is the assessment of discriminant validity. Discriminant validity determines the degree of variance among the constructs (Hair et al., 2010). Discriminant validity is examined through [Fornell-Larcker’s \(1981\)](#) criteria, cross-loadings, and heterotrait-monotrait ratio (HTMT). Firstly, in [Fornell-Larcker’s \(1981\)](#), the first value of every construct must be bold. The diagonal value of discriminant validity shows the square root of AVE. The discriminant validity is considered valid if the diagonal values are greater than non-diagonal values in respected rows and columns. [Table 3](#) denotes the acceptance values of discriminant validity and illustrates that all values are in acceptable range. Secondly, cross-loadings are another criteria for the assessment of discriminant validity ([Grégoire & Fisher, 2006](#)). The cross-loadings of each construct must be greater than the cross-loadings with other constructs. [Table 4](#) exhibits the acceptable cross-loadings of the constructs. Thirdly, heterotrait-monotrait ratio (HTMT) is another criteria to measure discriminant validity ([Henseler et al., 2015](#)). HTMT is a factor correlation which differentiate among constructs ([Henseler et al., 2016](#)). [Table 5](#) represents the HTMT value of the constructs.



**Table 2.** Loadings, Composite Reliability, and Average Variance Extracted.

Constructs	Items	Loadings	AVE	CR
Death anxiety	DA1	0.812	0.709	0.973
	DA2	0.874		
	DA3	0.909		
	DA4	0.894		
	DA5	0.861		
	DA6	0.823		
	DA7	0.850		
	DA8	0.811		
	DA9	0.840		
	DA10	0.830		
	DA11	0.866		
	DA12	0.851		
	DA13	0.842		
	DA14	0.793		
	DA15	0.766		
Environment	EN1	0.759	0.736	0.957
	EN2	0.864		
	EN3	0.876		
	EN4	0.858		
	EN5	0.827		
	EN6	0.856		
	EN7	0.914		
	EN8	0.902		
General health	GH1	0.914	0.865	0.928
	GH2	0.946		
Illness acceptance	IA1	0.820	0.794	0.969
	IA2	0.904		
	IA3	0.927		
	IA4	0.904		
	IA5	0.853		
	IA6	0.905		
	IA7	0.909		
	IA8	0.901		
Physical health	PH1	0.799	0.739	0.952
	PH2	0.854		
	PH3	0.908		
	PH4	0.851		
	PH5	0.830		
	PH6	0.895		

*(continued)*

**Table 2.** (continued)

Constructs	Items	Loadings	AVE	CR
Psychological	PH7	0.872	0.719	0.939
	PS1	0.820		
	PS2	0.893		
	PS3	0.891		
	PS4	0.817		
	PS5	0.813		
	PS6	0.848		
Social relationships	SR1	0.862	0.762	0.906
	SR2	0.884		
	SR3	0.874		

Note. AVE = average variance extracted, CR = composite reliability.

**Table 3.** Latent Variable Correlations and Square Roots of Average Variance Extracted (AVE).

	DA	EN	GH	IA	PH	PS	SR
DA	0.842						
<b>EN</b>	0.587	<b>0.858</b>					
<b>GH</b>	0.423	0.537	<b>0.930</b>				
<b>IA</b>	0.778	0.436	0.504	<b>0.891</b>			
<b>PH</b>	0.523	0.530	0.356	0.655	<b>0.859</b>		
<b>PS</b>	0.547	0.517	0.310	0.671	0.745	<b>0.848</b>	
<b>SR</b>	0.492	0.502	0.446	0.532	0.522	0.533	<b>0.873</b>

Note. Entries in the boldface represent the square root of average variance extracted (AVE) DA = Death Anxiety, IA, Illness Acceptance, EN = Environment, GH = General health, PH = Physical Health, PS = Psychological Health, SR = Social Relationship.

### Assessment of Structural Model

The next step of the SEM is the structural model also known as inner model. The relationship among the constructs can be determined by structural model. Bootstrap technique of SEM provides the results for the structural model. The current study determined quality of life as a second order construct. [Figure 3](#) depicts the assessment of the structural model.

The inner model shows the path coefficients of the hypothesized relationships of the study. Hypothesis H1 predicted that there is a significant relationship between quality of life and illness acceptance. The outcomes represented in [Figure 3](#) and [Table 6](#) indicate that there is a significant relationship between quality of life and illness acceptance ( $\beta = 0.247$ ;  $t = 5.594$ ;  $p < 0.000$ ). Similarly, hypothesis H2 stated that death anxiety negatively moderates the relationship between quality of life and illness acceptance. The interaction effect in [Figure 3](#) and [Table 6](#) depicts that death anxiety negatively

**Table 4.** Cross-Loadings.

	DA	EN	GH	IA	PH	PS	SR
<b>DA1</b>	<b>0.812</b>	0.524	0.454	0.778	0.521	0.532	0.523
<b>DA2</b>	<b>0.874</b>	0.531	0.433	0.818	0.556	0.578	0.531
<b>DA3</b>	<b>0.909</b>	0.547	0.367	0.754	0.518	0.547	0.485
<b>DA4</b>	<b>0.894</b>	0.543	0.290	0.716	0.527	0.566	0.495
<b>DA5</b>	<b>0.861</b>	0.477	0.295	0.575	0.371	0.380	0.389
<b>DA6</b>	<b>0.823</b>	0.495	0.451	0.655	0.450	0.471	0.448
<b>DA7</b>	<b>0.850</b>	0.443	0.345	0.651	0.409	0.424	0.432
<b>DA8</b>	<b>0.811</b>	0.528	0.337	0.591	0.446	0.460	0.415
<b>DA9</b>	<b>0.840</b>	0.445	0.252	0.609	0.402	0.439	0.348
<b>DA10</b>	<b>0.830</b>	0.505	0.279	0.577	0.404	0.408	0.386
<b>DA11</b>	<b>0.866</b>	0.460	0.326	0.626	0.405	0.430	0.324
<b>DA12</b>	<b>0.851</b>	0.472	0.403	0.628	0.357	0.381	0.389
<b>DA13</b>	<b>0.842</b>	0.521	0.349	0.617	0.425	0.455	0.386
<b>DA14</b>	<b>0.793</b>	0.498	0.381	0.594	0.374	0.411	0.267
<b>DA15</b>	<b>0.766</b>	0.390	0.341	0.502	0.346	0.326	0.273
<b>EN1</b>	0.429	<b>0.759</b>	0.454	0.320	0.406	0.384	0.457
<b>EN2</b>	0.490	<b>0.864</b>	0.554	0.390	0.421	0.414	0.557
<b>EN3</b>	0.499	<b>0.876</b>	0.462	0.392	0.502	0.491	0.429
<b>EN4</b>	0.441	<b>0.858</b>	0.391	0.365	0.471	0.456	0.397
<b>EN5</b>	0.519	<b>0.827</b>	0.317	0.294	0.455	0.445	0.296
<b>EN6</b>	0.468	<b>0.856</b>	0.542	0.447	0.455	0.456	0.510
<b>EN7</b>	0.572	<b>0.914</b>	0.485	0.391	0.470	0.459	0.398
<b>EN8</b>	0.605	<b>0.902</b>	0.469	0.381	0.451	0.440	0.396
<b>GH1</b>	0.376	0.433	<b>0.914</b>	0.452	0.263	0.227	0.449
<b>GH2</b>	0.409	0.553	<b>0.946</b>	0.483	0.386	0.338	0.389
<b>IA1</b>	0.586	0.264	0.495	<b>0.820</b>	0.503	0.521	0.366
<b>IA2</b>	0.701	0.381	0.454	<b>0.904</b>	0.565	0.584	0.484
<b>IA3</b>	0.764	0.449	0.518	<b>0.927</b>	0.602	0.608	0.508
<b>IA4</b>	0.686	0.375	0.372	<b>0.904</b>	0.620	0.632	0.427
<b>IA5</b>	0.641	0.393	0.313	<b>0.853</b>	0.626	0.644	0.427
<b>IA6</b>	0.682	0.360	0.495	<b>0.905</b>	0.565	0.582	0.518
<b>IA7</b>	0.748	0.418	0.486	<b>0.909</b>	0.579	0.598	0.549
<b>IA8</b>	0.716	0.442	0.456	<b>0.901</b>	0.602	0.610	0.491
<b>PH1</b>	0.388	0.346	0.285	0.504	<b>0.799</b>	0.747	0.331
<b>PH2</b>	0.441	0.479	0.355	0.565	<b>0.854</b>	0.800	0.375
<b>PH3</b>	0.501	0.453	0.241	0.596	<b>0.908</b>	0.869	0.469
<b>PH4</b>	0.524	0.469	0.166	0.567	<b>0.851</b>	0.812	0.449
<b>PH5</b>	0.519	0.432	0.408	0.658	<b>0.830</b>	0.739	0.527
<b>PH6</b>	0.434	0.456	0.342	0.589	<b>0.895</b>	0.857	0.450

(continued)

**Table 4.** (continued)

	DA	EN	GH	IA	PH	PS	SR
<b>PH7</b>	0.342	0.539	0.341	0.461	<b>0.872</b>	0.803	0.525
<b>PS1</b>	0.441	0.367	0.353	0.553	0.780	<b>0.820</b>	0.371
<b>PS2</b>	0.447	0.465	0.224	0.548	0.857	<b>0.893</b>	0.461
<b>PS3</b>	0.492	0.479	0.207	0.568	0.813	<b>0.891</b>	0.472
<b>PS4</b>	0.485	0.454	0.151	0.530	0.773	<b>0.817</b>	0.399
<b>PS5</b>	0.511	0.439	0.345	0.641	0.756	<b>0.813</b>	0.506
<b>PS6</b>	0.412	0.421	0.303	0.575	0.825	<b>0.848</b>	0.496
<b>SR1</b>	0.454	0.455	0.469	0.539	0.496	0.502	<b>0.862</b>
<b>SR2</b>	0.429	0.399	0.332	0.473	0.462	0.469	<b>0.884</b>
<b>SR3</b>	0.400	0.459	0.359	0.371	0.404	0.421	<b>0.874</b>

Note: DA = Death Anxiety, IA, Illness Acceptance, EN = Environment, GH = General health, PH = Physical Health, PS = Psychological Health, SR = Social Relationshipship.

**Table 5.** HTMT Correlation Matrix for Discriminant Validity.

	DA	EN	GH	IA	PH	PS	SR
DA							
EN	0.609						
GH	0.461	0.591					
IA	0.791	0.452	0.557				
PH	0.540	0.559	0.391	0.688			
PS	0.571	0.553	0.345	0.713	0.723		
SR	0.531	0.560	0.583	0.583	0.581	0.601	

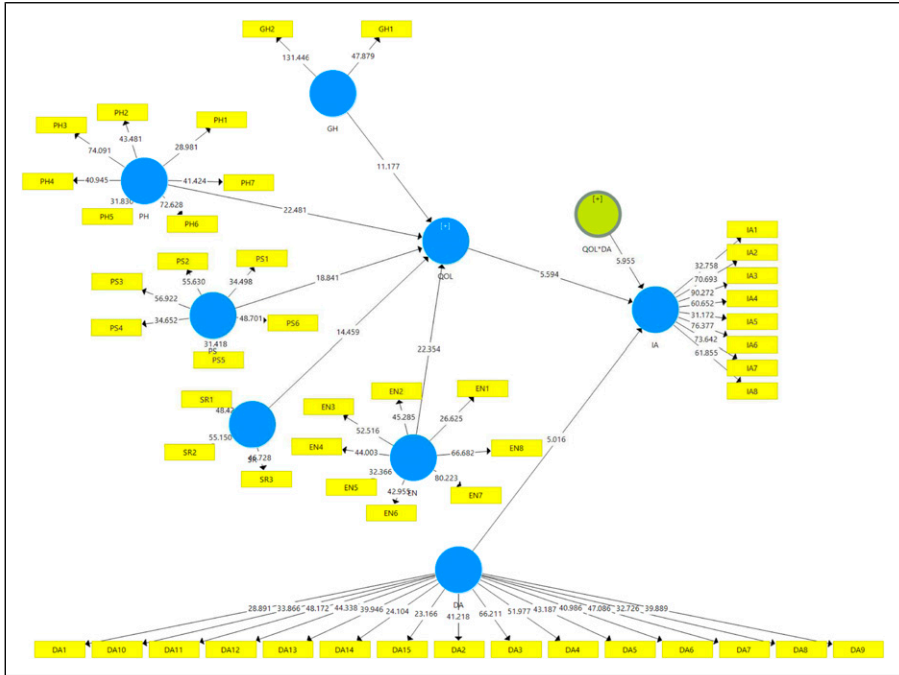
Note: DA = Death Anxiety, IA, Illness Acceptance, EN = Environment, GH = General health, PH = Physical Health, PS = Psychological Health, SR = Social Relationshipship.

moderates the relationship between quality of life and illness acceptance ( $\beta = -0.265$ ;  $t = 5.955$ ;  $p < 0.000$ ).

The interaction effect is presented in the [Figure 4](#). Exogenous construct is shown on x-axis and endogenous construct is shown on y-axis. The simple slope plot represents the relationship between independent and dependent variable for high and low level of moderator by three lines (green, red, and blue). Green and blue lines emphasize the low and high level of moderator, whereas the red line denotes the effect of independent variable on dependent variable except moderating effect.

## Discussion

Chronic renal failure is treated in patients who require long-term dialysis. Both hemodialysis and peritoneal dialysis have a profound impact on the lives of patients.



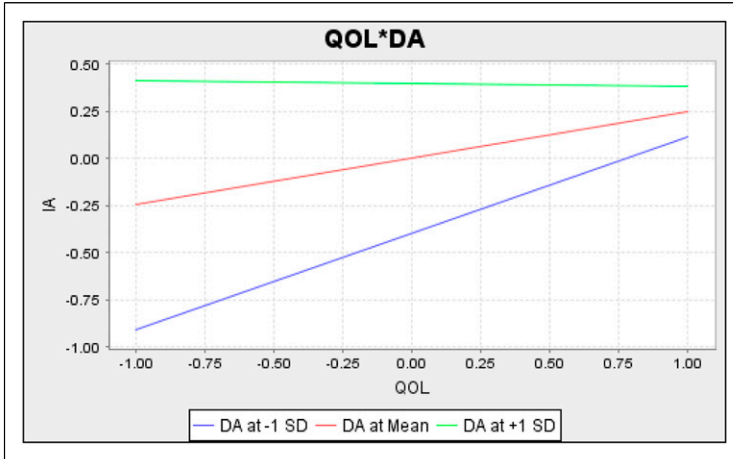
**Figure 3.** Structural Model (Direct relationship and Moderating Effect).

**Table 6.** Structural Model Assessment with Interactions.

Hypothesis	Relationships	Beta	SE	T-value	p-value	Decision
H1	QOL -> IA	0.247	0.044	5.594	0.000	Supported
H2	QOL *DA-> IA	-0.265	0.044	5.955	0.000	Supported

Note: QOL = quality of life, IA = illness acceptance, DA = death anxiety.

Hemodialysis is a life-sustaining treatment for those with end-stage renal illness. Hemodialysis can have a significant detrimental influence on a person’s overall health-related quality of life and outcomes (Zyoud et al., 2016). Many hemodialysis patients report having a poor quality of life in terms of lifestyle, social connections, and mental health (Nataatmadja et al., 2020). Because of their immune-compromised state and frail health, patients undergoing hospital HD are likely to be at a higher risk of getting severe COVID-19 (Gansevoort & Hilbrands, 2020). As a result, the study’s aims were to assess ESDR patients’ quality of life and illness acceptance during the duration of COVID-19. Because previous research has shown that COVID-19 has a significant impact on patients’ psychological health, this study examines the moderating effect of death anxiety.



**Figure 4.** Interaction Effect of quality of life and death anxiety on illness acceptance.

All Urdu-translated instruments were employed in the current study because Urdu is Pakistan's native language. The findings demonstrated that the instruments employed for data collection were culturally appropriate (Table 2). The scales' convergent validity and reliability vary from 0.70 to 0.90, indicating strong reliability among the indigenous population. In the current study, the majority of the participants were elderly and feeble people over 65 (Table 1). Renal illness patients are a fragile elderly population that has a higher mortality rate than the overall population (Coppolino et al., 2020). The current study's findings demonstrated that the load on self-care rose during the term of the COVID-19. Internalization of disease burden or a lack of acceptance of illness can occur as a result of frequent clinic and hospital visits, food restrictions, increased medication load, and home glucose, blood pressure, and weight monitoring (Song et al., 2017). Patients with ESDR in the current study stated (Table 1) that medical and psychological problems such as diabetes, high blood pressure, hepatitis, anxiety, sleeplessness, heart failure, aches, and fatigues after hemodialysis impacted their quality of life (Dąbrowska-Bender et al., 2018). The results revealed that only 4% of respondents had a psychological illness. Thus, the mental health of kidney transplant recipients does not appear to have been adversely affected by the COVID-19 pandemic and seclusion. Patients undergoing hemodialysis were more likely to experience back pain, headaches, and hypertension. Additionally, they indicated a greater onerousness factor related to dialysis (Lee et al., 2020).

The primary goal of this study was to examine quality of life, illness acceptance, and the moderating role of death anxiety in patients with kidney failure receiving hemodialysis in the period of COVID-19. The findings indicated that COVID-19 had an effect on patients' quality of life and acceptance of illness, whereas death anxiety acted as a moderator of the association (Table 6). In this study, quality of life (environment,

general health, psychological health, and social relationships) scores were worse. Furthermore, factors linked to social dysfunction tended to be worse. This is unsurprising given that social isolation is a common problem among renal patients (Moorthi & Latham-Mintus, 2019). The significant relationship between poor quality of life and low acceptance of illness shows that anxiety is associated with an increase in a maladaptive attitude toward chronic renal disease (Table 6). Little research has examined the possible relationship between hemodialysis and patient acceptance of chronic renal illness. According to several of these studies, patients with a functioning kidney transplant have a significantly higher acceptance of illness score than patients on hemodialysis (Garca-Llana et al., 2013; Kokoszka et al., 2016). Due to the rigorous and protracted nature of dialysis therapy, as well as the lack of time for work, hobbies, and other social activities, patients on hemodialysis face increased social isolation and support issues (Dbrowska-Bender et al., 2018; Goh & Griva, 2018).

The current study results showed that patients' quality of life, illness acceptance, and suffering from death anxiety have poor quality of life. As a study revealed, acute renal illness has a relatively high mortality rate, even in the absence of COVID-19 infections (Diao et al., 2020). Furthermore, in-patient hospital mortality was 31.7% higher in 133 of 149 COVID-19 positive ESRD patients (Ng et al., 2020). According to another study, 44% of 710 hospitalized patients had proteinuria, 27% had hematuria, and 3.2% had acute renal injury, all of which were associated with a high death rate (Zhang & Parikh, 2019). Patients with chronic renal failure face a conundrum of death anxiety combined with a fear of living. Sixty-four percent of participants in an ESRD trial exhibited high levels of death anxiety. Approximately 70% of the patients had a low or moderate quality of life (Ghiasi et al., 2021). According to the findings, it is vital to address the death anxiety of ESRD patients receiving hemodialysis (Dewina et al., 2018). Health-related quality of life is a strong predictor of death and hospitalization, which may influence the prognosis and course of the illness. This decline in quality of life in dialysis patients is a result of death anxiety (Abdul Gafor et al., 2018). Another factor contributing to the current sample's low quality of life may be their old age, low socioeconomic level, and lack of education and unemployment (Table 1). It is crucial to recognize the impact of death anxiety and poor quality of life in patients with end-stage renal disease (ESRD). It also highlights how end stage renal disease patients may be at risk of increased perceptions of death anxiety in the period COVID-19 as well as sleep disorders and psychological distress. Unnecessary delays in addressing these individuals' mental health disorders will have an effect on the result of ESRD management.

## Conclusion

COVID-19 poses a major health risk to humans. During the pandemic, the combined action of multiple causes resulted in a slew of psychological issues. Our research discovered some key facts that should be taken into account when treating ESRD patients. The results of the study showed that ESRD patients suffer from death anxiety and poor quality of life that affect their acceptance of illness. Poor quality of life was

connected with elderly patients who had no formal education and lived in a lower socioeconomic stratum. Furthermore, this study found that a lower quality of life was connected with a lower rate of disease acceptance. These findings should be of interest to educators, pharmacists, and clinicians who work with patients suffering from end-stage renal disease (ESRD). To help patients improve their QOL, healthcare professionals should be mindful of patients with inadequate formal education, many physical and psychological co-morbid diseases, and geriatric patients. To summarize, global health measures should be employed to treat psychological stress, especially in patients with end-stage renal disease (ESRD) and other chronic diseases.

### *Limitation of the Study*

Because the study is cross-sectional, a cause-and-effect link between risk factors cannot be established. The target population was only end-stage renal disease. As data was collected in the period of Covid-19 and those patients who visited hospitals and hospitalized for dialysis, during the inquiry and research phases, Pakistan's policy was to shut down Lahore, Punjab, and implement strict prevention and control measures across the country, such as donning masks, quarantining at home, and monitoring hospital workers. The local government enforced limits on dialysis clinics, which may have influenced patients' fear of death. It also highlights how end-stage renal disease patients may be at risk of increased perceptions of death anxiety in the period COVID-19 as well as sleep disorders and psychological distress.

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