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Barriers to Care, Depressive Symptoms, and Moderating Factors among Patients with ESRD

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Abstract

End-Stage Renal Disease (ESRD) is the fifth and final stage of Chronic Kidney Disease (CKD) and has been reported to have the highest prevalence rate in the United States, with about 2,242 cases per million in the total population in 2017 (Johansen et al., 2021). Current studies document a high prevalence of depression among patients with ESRD which may lead to increased mortality (Shirazian et al., 2017). Additionally, barriers in access to care, which may be understood as the barriers that prevent individuals from seeking mental health services, has been linked to increased levels of undertreatment (Clement et al., 2012). The research linking ESRD, and depression is clear, however, few studies document the relationship between barriers to care and depressive symptoms. Therefore, the goals of the current study are to investigate the relationship between barriers in access to care and depressive symptoms among patients with ESRD, as well as the role of race/ethnicity and gender in moderating that relationship. Identifying the relationship between barriers in access to care and depressive symptoms may help provide direct interventions, that may improve health outcomes among patients with ESRD.

Keywords: Barriers to care, Chronic Kidney Disease (CKD), End-Stage Renal Disease (ESRD), Depression, Depressive Symptoms.

Barriers to Care, Depressive Symptoms, and Moderating Factors among Patients with ESRD

Chronic Kidney Disease

According to the Center for Disease Control (CDC), approximately 15% of adults in the United States have chronic kidney disease (CKD), and although this number has remained stable over the past decade, the number of individuals with risk factors for CKD has risen steadily (Johansen et al., 2021). On a global scale, the prevalence rates are similar, with about 13.4% of the world's population estimated to suffer from CKD (Lv & Zhang, 2019). The difference in the global to U.S population of adults with CKD emphasizes the severity of this condition in the U.S, with more than 1 in 7 American adults suffering from CKD (CDC, 2021).

CKD is currently defined as a significant change in kidney structure and a gradual decrease in overall kidney function (Webster et al., 2017). This disease is primarily due to hypertension and diabetes but other factors such as environmental toxins and infections have also been attributed to the development of this condition (Chen et al., 2019). Currently, there is no cure for CKD, and it is typically treated based on the stage of progression, but when left untreated the disease may progress into full-blown kidney failure, which is known as End-Stage Renal Disease (ESRD) (Assadi, 2021). A recent seven-year cohort study found that out of approximately 28,779 CKD patients, 1,730 cases progressed to ESRD, and 7,628 cases ended in death (Xie et al., 2016). Unfortunately, the bulk of the population of patients who receive little to no care for CKD are individuals belonging to low socioeconomic status or racial/ethnic minority groups (Xie et al., 2016).

End-Stage Renal Disease in the US

Between 2017 and 2018, the United States Renal Data System (USRDS), reported a 2.3% increase in the incidence of ESRD among U.S Adults. Furthermore, ESRD, which is the fifth and final stage of CKD has been reported to have the highest prevalence rates in the United States, with about 2,242 cases per million in the total population in 2017 (Johansen et al., 2021). The severity of ESRD is considerably worse than CKD as it is characterized by permanent loss of function in the kidney as well as changes in cardiovascular function, bone metabolism, and blood coagulation (Kanda et al., 2017). For patients with ESRD, psychological effects may also include anxiety, depression, fatigue, and reduced sleep quality (Naamani et al., 2021).

About three-quarters of patients with kidney disease are required to undergo peritoneal (PD) or hemodialysis (HD) therapy to restore kidney function (Shrestha, 2018). Although dialysis therapy is not preferred, it is typically used over kidney transplantation for a variety of reasons, from lack of availability of kidney donors to failed evaluations for kidney transplantations (Tonelli et al., 2011). Research has shown that peritoneal dialysis is the better alternative of the two, as it is associated with reduced cost of treatments and better quality of life, however for a variety of reasons, it is still underutilized globally (Perl & Bargman, 2016). A 2008 survey revealed that out of approximately 2 million dialysis patients, only about 10% were given peritoneal dialysis therapy as opposed to hemodialysis (Lameire & Beisen, 2010). Research suggests that overutilization of HD therapy is due to reduced clinical competency in managing patients on PD (Mehrotra, 2018).

Kidney Transplantation

Despite adequate success rates associated with dialysis treatments, kidney transplantation is still generally accepted as the best course of treatment for ESRD, due to an increase in quality of life and overall longevity (Augustine, 2018). Kidney transplantation, which involves the transfer of a healthy kidney from a living or deceased donor into a recipient with kidney failure procedure, entails multiple steps which may impact the feasibility of transplantation (i.e. the pre-transplant assessment and the shortage of organ supply (Augustine, 2018). Living donor kidney transplantation (LDKT), and deceased donor kidney transplantation (DDKT) are the two options for kidney donation, with the latter being more common (Sigurjonsdottir & Grimm, 2019). Research has shown that LDKT offers several advantages over DDKT, such as quicker recovery, little to no dialysis, shorter hospital stays, and an overall bypass of the kidney transplant waitlist (Sharma et al., 2020). Although DDKT still offers patients with kidney disease longevity after treatment, LDKT is better correlated with higher survival rates (Sigurjonsdottir & Grimm, 2019). This is usually because the time that deceased donor recipients spend on the waitlist equates to more dialysis sessions, which typically projects lower survival rates post-surgery (Augustine, 2018).

In 2018, according to the United States Renal Data System (USRDS), the number of patients with ESRD reached an all-time high of 26,726. However, the number of ESRD patients who received a kidney transplant barely increased from the previous year. More recently, the number of kidney transplants performed between 2019 and 2020 decreased by 2.5%, without a decrease in the number of patients with ESRD, (United Network for Organ Sharing (UNOS), 2021). These statistics highlight the fact that although kidney transplantation is the best way to treat kidney disease, patients may often face significant barriers before, the process of transplantation.

Barriers in Access to Transplantation

Certain groups of patients often experience challenges in access to transplantation at higher rates than other patients with ESRD. For the purposes of this study, these challenges will be referred to as the *Barriers in Access to Transplantation*. The most common barriers affecting access to kidney transplantation in the United States include but are not limited to transportation, low health literacy, lack of medical knowledge, distance from the transplant center, and socioeconomic status (Browne et al., 2021). Researchers have found that African Americans (AA) typically experience these challenges at higher rates than other racial groups (Harding et al., 2017). AA represents over 30% of patients with ESRD while making up only 12.4% of the total U.S population (Harding et al., 2017; United States Census Bureau, 2021). However, AA are not the only minoritized group that experiences these disparities. Researchers have also found that when compared to non-Hispanic white patients, access to transplantation is 65% lower for AA patients and 43% lower for Hispanic/Latinx patients (Ku et al., 2020). Additionally, data shows that of all the patients who were placed on the waiting list for a kidney transplant in 2001, 70% of white patients received a transplant while only 54% of AA and 57% of Asians received a transplant during five years (Malek et al., 2010). These statistics show a historical trend that has affected communities of color for decades.

In addition to race, a few studies have investigated the relationship between gender and the barriers in access to transplantation. Some studies have come to the general conclusion that women are less likely than men to access necessary steps in receiving a kidney transplant (Lipford et al., 2018; Rota-Musoll et al., 2021). A longitudinal cohort study on adult ESRD patients revealed that women were 18% less likely than men to receive activation status for deceased donor transplantation (Garg et al., 2000). More specifically, studies have shown that age, comorbidity, as well as the cause of kidney failure, influence the rate at which women receive transplants relative to men (Ahearn et al., 2021; Segev et al., 2009). These trends are indicative of flaws in the system which influence how female patients receive treatment for ESRD.

Psychosocial Outcomes

Current research documents the high prevalence of depression among patients with CKD and ESRD. Moreover, the data also links the manifestation of depressive symptoms with increased mortality and low quality of life following treatment for kidney disease (Shirazian et al., 2017). In terms of kidney transplantation, research does document a prevalence of depressive symptoms in this population as well. In 2014, about 25% of kidney transplantation patients reported major depressive symptoms, with correlates of those symptoms being barriers such as income, marital status, and malnutrition (Chilcot et al., 2014). Despite depression being most prevalent among kidney disease patients, it is important to recognize that the assessment of depressive symptoms among patients with kidney disease is difficult, due to an overlap between the physical symptoms of kidney disease and depressive traits (Chilcot et al., 2008). However, depression is not the only psychosocial outcome that can manifest from an encounter with kidney disease and subsequent transplantation. Research has shown that despite kidney transplantation being the safest and most effective mode of treatment for ESRD, it also provides a difficult psychological experience that can lead to cognitive impairment, mental distress, and varying forms of psychopathology (De Pasquale et al., 2020). Nonetheless, for the purposes of this study, we will focus on depression as a sole psychosocial outcome. The concern for depressive symptoms within kidney transplant patients is due to its relationship with nonadherence to medication, mortality, graft failure, and weight gain, all of which contribute to low quality of life (Robiner et al. 2021). The effects of psychosocial outcomes on recovery from kidney transplantation are so dire, that it is now a standard for all adult dialysis patients to receive frequent evaluations for depression (Centers for Medicare & Medicaid Services, 2019). Additionally, it is alsoa requirement that all transplant patients undergo comprehensive psychosocial assessments before being placed on the waitlist (Mandelbrot et al., 2007). Unfortunately, like most patients with chronic diseases, patients with ESRD experience significant barriers in accessing mental health services that may help alleviate their symptoms.

Barriers in Access to Mental Health Care

Barriers in access to mental health care may be understood as the hurdles that prevent individuals who display psychological symptoms such as symptoms associated with depression and anxiety from seeking treatment, thus, leading to greater levels of undertreatment and increased symptomology (Clement et al., 2012). These barriers are endemic in the healthcare system today because a large percentage of people with mental health conditions avoid or delay treatment. In the United States, about 31% of the total population suffers from anxiety and substance use disorders and a substantial 67% never receive treatment (Clement et al., 2012). Barriers in access to care may include but are not limited to; financial frustration, uncertainty of where to receive help, fear of embarrassment, medical mistrust, and a fear of being involuntarily committed, (van Beljouw et al., 2010).

Since patients diagnosed with CKD or ESRD are more likely to report psychological distress regardless of the type of treatment they undergo (De Pasquale et al., 2020), it is clear that barriers in access to care may play an important role in the development of these illnesses. This position is based on research, suggesting that avoidance of treatment or lack thereof may lead to poorer outcomes such as the development of more symptoms, poor quality of life, and an increased possibility of remission, (Marshall et al., 2005). The barriers listed above may be classified as stressors, which represent circumstances that force individuals to adapt to a new way of life and may result in psychological and/or physiological illnesses (Meyer, 2003). Additionally, race and gender may interact with these stressors in the form of racism and sexism to exacerbate symptoms of depression in patients with ESRD.

Theories of Race and Gender-Related Stress

Several theories have linked the relationship between minoritized statuses and increased susceptibility to stressors, which may lead to the development of psychological symptoms. For example, research on the minority stress model argues that individuals belonging to oppressed groups (i.e. racial/ethnic minorities, individuals identifying as LGBTQ and/or women), experience more incidents of stress in the form of discrimination and/or prejudice. These incidents in turn lead to more negative health outcomes as opposed to the general population (Meyer, 2003). More specifically, research has shown an association between sexism in the form of subtle discrimination toward women and negative mental health outcomes, such as depression and anxiety (Lewis, 2018). Additionally, research on the race-based traumatic stress theory (Carter, 2007), argues that racial/ethnic minorities vulnerable to racial discrimination, are at a higher risk for poorer physical and mental health outcomes (Polanco-Roman, Daines, & Anglin, 2016). For example, evidence suggests that discrimination and chronic stress increase the risk of cardiovascular disease in African American women (Saban et al., 2021). This research stresses the importance of investigating the influence of additional barriers that individuals with minoritized statuses face that may lead to the development of physical and psychological illnesses.

The Current Study

Although there is some research solidifying the relationship between depression and ESRD, very few studies focus on the influence of race/ethnicity, and gender in the manifestation of these depressive symptoms. Some studies report barriers such as referral delays and inadequate pretransplant evaluations as factors affecting access to renal transplantation in African American patients (Harding et al., 2017; Nonterah & Gardiner, 2020). Furthermore, other studies report that women are on average less likely to receive a kidney transplant than men (Carreo et al., 2017, Lipford et al., 2018, Rota-Musoll et al., 2021). One study reported that women have fewer conversations with their healthcare providers about kidney transplantation, thus leading to a lower rate of transplantation (Rota-Musoll et al., 2021). However, another study showed that women are more likely to report greater barriers in access to general healthcare than men, due to demands on their time, income level, and childcare responsibility (Slaunwhite, 2015). The higher number of barriers in access to care that we hypothesize may be related to the manifestation of depressive symptoms among ESRD patients, begs the question of why certain groups experience these symptoms more than others and how research may help reverse this trend. Identifying and recognizing this issue could help address and prevent depressive symptoms that may interfere with treatment and recovery from ESRD.

The research is clear that the existence or development of depression significantly affects the success of kidney transplantation. Hence, a second perspective is presented in this paper, theorizing that barriers in access to mental health care would exacerbate the prevalence of depressive symptoms in patients with ESRD. Additionally, we argue that the relationship between barriers in access to mental health care and depressive symptoms would be moderated by race and gender (see Figure 1), since certain groups are more vulnerable to systemic disenfranchisement due to their minoritized statuses.

Therefore, the goals of the current study were to examine the connection between barriers in access to mental health care and depressive symptoms, as well as investigate the role that gender and race/ethnicity play in moderating this relationship. The primary goals of this study are; 1.) To determine if barriers in access to care are predictive of depressive symptoms in patients diagnosed with ESRD 2.) To determine whether race/ethnicity and gender serve as moderating variables. It is hypothesized that the presence of multiple barriers in access to care would predict more depressive symptoms. Additionally, race and gender would serve as moderating variables, in which patients who identify as African American would be more likely to experience depressive symptoms as a result of their barriers. Moreover, women would be more likely to experience barriers in access to care and thus report higher levels of depressive symptoms.

Methods

Recruitment

Participants were recruited from a pool of patients diagnosed with ESRD from medical centers in the United States. Research assistants recruited participants either through letters of invitation sent in the mail, online ads, and/or via telephone calls. Participants then consented to participate and completed surveys that lasted about 20-30 minutes. Participants were at least 18 years of age, English speaking with the ability to comprehend study materials, and had initiated the process to receive a kidney transplant. Participants below the age of eighteen and those who had not expressed interest in a kidney transplant were excluded from the study. Participants were offered $10 as gratitude for their time in the form of gift cards or money orders. This study was approved by the University of Richmond Institutional Review Board (URIRB180506).

Participants

The surveys were completed by participants (*N*=77), with a mean age of 48.60 (*SD*= 14.47). Participants were 55.8% female (*n*=43), 39% male (*n*=30), 2.6% other (*n*= 2), and 1.3%

of participants preferred not to respond (*n*=1). Data from the few participants who did not identify as male or female was not used in the between-group analyses because the sample was too small. Additionally, participants were 46.8% African American (*n*= 36), 50.6% White (*n*=39), 1.3% Native American/Alaskan (*n*= 1), 1.3% Middle Eastern/North African (*n*= 1), 1.3% Hispanic/Latinx (*n*= 1), 3.9% mixed race (*n*= 3), and 1.3% other (*n*=1). Data from the few participants who did not identify as African American or White was not used in the between-group analyses because the sample was too small.

Materials and Measures

Data obtained from the completed surveys focused on the experiences of ESRD patients who had experienced barriers in accessing transplantation. The current study is part of a larger study entitled, The Development of the Barriers in Access to Transplantation Scale. Measures completed included; the Patient Health Questionnaire (PHQ), Health Literacy Questionnaire (HLQ), Rapid Estimate of Adult Literacy in Medicine – Transplantation (REAL-T), Barriers in Access to Transplant Scale (BATS), and the Barriers to Access to Care Evaluation scale (BACE v3). This study focuses on demographic measures, the Patient Health Questionnaire (PHQ), and the Barriers to Access to Care Evaluation scale (BACE v3).

Additionally, demographic information such as race, gender, age, employment status, annual income level, sexual orientation, disability status, relationship status, health insurance, and religion was collected.

The Barriers in Access to Care Evaluation (BACEv3). This instrument was initially created to provide evidence on the existence of specific barriers that adults with mental illness face when trying to access mental health services (BACEv3; Clement & Thornicroft, 2011). The survey contained 30 separate item questions. The questions on the survey include 12 items assessing stigma-related barriers, which measure the extent to which stigma and discrimination serve as barriers to care. Stigma-related items on the questionnaire include but are not limited to "Wanting to solve the problem on my own." Eight items assess non-stigma-related barriers. A sample question is, "Being unsure of where to go to get professional care." Ten items assess altitudinal-related barriers, which represent personal beliefs about the illness. A sample question is, "Preferring to get help from family or friends" (Clement & Thornicroft, 2011). Participant responses were measured on a Likert-type scale as response scores ranged from 0 (This is NOT APPLICABLE to me,) to 5 ("this has stopped, delayed, or discouraged me A LOT "). Summed scores for the BACE range from 0-90, therefore during analysis responses were recoded into different variables, changing it from 0-5 to 0-3. The responses, not applicable and Not Sure were removed from the scale. The BACE v3 scale has strong internal consistency ($\alpha = 0.90$) and test-retest reliability ($r = 0.92$) (Clement et al., 2012). For the current study, $\alpha = 0.97$ for the total scale, $\alpha = 0.95$ for the stigma subscale, $\alpha = 0.83$ for the non-stigma subscale, and, $\alpha = 0.87$ for the attitudinal subscale.

The Patient Health Questionnaire (PHQ). This measure was used to assess patient-reported symptoms of depression. It was initially created to assess and diagnose adult patients with depression in primary care settings (Kroenke, Spitzer, and Williams, 2001). The current study uses this scale to identify the presence of depressive symptoms among kidney transplant patients. The PHQ consists of 9 separate item questions and sum scores from the PHQ may range from 0 to 27, as each of the 9 questions are scored on a Likert type scale, from 0 (not at all) to 3 (nearly every day) (Kroenke, Spitzer, and Williams, 2001). Items on the questionnaire include but are not limited to: "Feeling down, depressed or hopeless", and "Little interest or pleasure in doing things." The PHQ has strong internal consistency ($\alpha = 0.89$) and test-retest reliability

($r = 0.84$) (Kroenke, Spitzer, and Williams, 2001). The current study had a Cronbach's alpha of 0.90 for the 9 items on the PHQ-9.

Results

Data Analytic Plan

Data from survey results were collected via Qualtrics and transferred to the statistical software program, IBM Statistical Package for the Social Sciences (SPSS) for analyses. ANOVAs, correlations, and regressions were used to examine the key hypotheses, including the appropriate assumptions.

Descriptive Statistics

Descriptive statistics, including means and standard deviations, were conducted on the demographic information. Participants were predominantly white (50.6%) and female (55.8%) with an average age of 48.60 (*SD*= 14.47). Most also had an annual household income of less than 60,000 (49.4%) and a high school education or less (28.6%), (see Table 1. For more details).

Main Analyses

Hypothesis 1 was supported by the results of a simple regression. Depressive symptoms as measured by the PHQ scale had a significant positive correlation with Barriers in Access to Care with a small effect size ($r = .173$, $p = .002$). Depressive symptoms also had a significant positive correlation with stigma-related, attitudinal related, and the non-stigma related barriers in access to care ($r= .166$, $p = .004$; $r= .221$. $p= .001$; $r= .155$ $p= .005$).

Hypotheses 2 could not be tested, as the data violated the sample size assumption for a multiple regression. Tabachnick & Fidell (2007), provide a formula for determining sample size requirement: N> 50 +8m (m= independent variable). Only n=54 participants had complete data. The formula requires at least $N \geq 74$ participants.

However, data analysis did reveal differences in participant responses based on race and gender. A one-way ANOVA revealed that there was a statistically significant difference in overall BACE scores, BACE attitudinal scores, and BACE non-stigma scores between African American and white participants (*F* (1,49) =4.710, *p*= .035; *F* (1,46) =4.654, *p*= .036; *F* (1,44) = 4.899, *p*= 0.32). The Levene's *F* test revealed that the homogeneity of variance assumption was met in each case (*p* =.276; *p*= .326; *p*= .225). White participants averaged (*M*= 32.22, *SD*= 26.92) higher scores on the BACE compared to African Americans (*M*= 17.20, *SD*= 21.82). White Participants also averaged (*M*=11.46, *SD*= 9.34; *M*= 10.21, *SD*= 6.37) higher scores on the BACE attitudinal and non-stigma treatment scales compared to African Americans (*M*= 6.05, *SD*= 7.79; *M*= 6.18, *SD*= 5.92). Additionally, a one-way ANOVA did not reveal a statistically significant difference in BACE treatment stigma scores between African American and white participants (*F* (1,45) = 2.291, *p*= .137). "Levene's test showed that the variances for BACE treatment stigma scores between African American and white participants was equal., *F* (1,45) = .812 *p* = .372. There was no significant effect for gender in overall BACE scores, BACE attitudinal scores, BACE treatment stigma scores, and BACE non-stigma scores (*F* (1,53) = .102, *p*= .750; *F* (1,50) = .088, *p*= 0.768); *F* (1,49) = .285, *p*= .596; *F* (1,48) = .105, *p*= 0.747). The Levene's *F* test revealed that the homogeneity of variance assumption was met in each case (*p* =.323; *p*= .352; *p*= .467; *p*= .720).

In measuring depressive symptoms, a one-way ANOVA did not reveal a statistically significant difference in PHQ scores between African American and White participants, *F* (1,56) = .548, *p*= .462). There was no significant effect for gender in PHQ scores, (*F* (1,61)) = .027, *p*=.871). Of note, the Levene's *F* test revealed that the homogeneity of variance assumption was met for race but not for gender (*p*= .308; *p* = .005).

Discussion

The focus of the current study was to investigate the relationship between barriers in access to care and depressive symptoms in patients with ESRD. Additionally, the study examined race/ethnicity and gender as factors that may exacerbate this relationship. Consistent with research that documents the high prevalence of depression among patients with kidney disease (Shirazian et al., 2017), as well as studies that document race/ethnicity and gender disparities within access to care, the following hypothesis (H) were developed. H1: There would be a relationship between barriers in access to care and depressive symptoms. H2: Race/Ethnicity and gender would serve as moderating variables in the relationship between barriers in access to care and depressive symptoms

Overall, data analysis among the current sample of patients with ESRD suggest that there is an association between barriers in access to mental health care and depressive symptoms. Thus, providing support for hypothesis 1. This data suggests that as the number of barriers in access to care increases, the likelihood of manifesting depressive symptoms increases as well. Results of the current study are consistent with findings from past research. Depression in patients with ESRD has been found to have correlates with both psychological and demographic predictors such as, social support, illness beliefs, coping styles, low income, employment status, and education (Chilcot et al., 2014; Tsunoda et al., 2010)

Additionally, the results of the study also indicate that in the current sample of patients with ESRD, attitudinal., non-stigma, and treatment-stigma-related barriers were also related to depressive symptoms among patients with ESRD. This data suggests that regardless of the type of barriers that are present, there is still a likelihood of the manifestation of depressive symptoms. Therefore, patients with multiple attitudinal., non-stigma, and/or stigma-related barriers are still likely to have depressive symptoms.

Hypothesis 2 could not be tested as it violated the sample size assumption for multiple regressions. However, further analysis on differences in race/ethnicity on depressive symptoms did reveal differences among participants' responses. Results of the analyses revealed that white participants on average significantly had more barriers in access to care than African American participants. These results hold for both the attitudinal and non-stigma related items on the BACE survey but not the stigma-related items. The data suggests that although White participants experience more barriers in access to care as opposed to African Americans, a majority of the barriers they experience were either due to personal attitudes or instrumental factors (i.e. relating to financial constraints or systemic factors). Those barriers were not related to forms of stigma such as discrimination and prejudice that are commonly experienced by African Americans.

Findings from the current study, that White patients experience more barriers in access to care than African Americans, do not align with findings from previous studies. Cook et al. (2016), found that between 2004 and 2012 disparities in access to mental health care significantly increased among African Americans as opposed to Whites. However, results from our study may be explained by the possibility that African Americans in this sample may have not been seeking mental health services specifically, as they were focused on barriers to accessing kidney transplantation. There were no significant gender differences in barriers in access to care experienced among participants. Additionally, analysis did not reveal any significant gender or racial differences in the average number of depressive symptoms.

According to the present study, the number of barriers in access to care and the number of depressive symptoms among patients with ESRD are connected. Therefore, barriers in access to care influence the manifestation of depressive symptoms. Studies suggest that the presence of depression among ESRD patients is related to increased hospitalization rates, mortality rates, and reduced quality of life (Molnar et al., 2017; Shirazian et al., 2017). Furthermore, a study showed that patients with ESRD and depression undergoing hemodialysis therapy are two times as likely to die or be hospitalized compared to ESRD patients without depression (Hedayati, Yalamanchili & Finkelstein, 2012). Therefore, implications from this study signify that the association established between barriers in access to care and depressive symptoms is important, as it highlights a potential remedy for mitigating a comorbid diagnosis of ESRD and depression.

It is important to recognize the presence of limitations in the current study. Firstly, the small sample size is a significant limitation to the study's methods. Not only does the sample size reduce the power of the study and its generalizability, but the moderation analysis also could not be conducted. Additionally, there were limited categories of race/ethnicity and gender for participant responses. Therefore, all analyses were limited to African American vs White and female vs male response data. Furthermore, participant data was collected through self-report measures. Data collected through self-report measures may present the issue of the social desirability response bias which causes participants to report experiences that are considered to be socially acceptable or preferred. This is consistent with research that argues that the social desirability response bias may cause inaccurate responses (Latkin et al., 2017).

Unfortunately, we were not able to determine the role of race/ethnicity and gender, but this does not mean that there are no hidden disparities within barriers in access to care, that may disproportionately affect individuals with marginalized identities. Therefore, future research aimed at investigating the role of race/ethnicity and gender as moderators in the relationship between barriers in access to care and depressive symptoms should use a larger sample size. Researchers should also focus on recruiting a more inclusive and diverse sample of patients that accounts for more than one minoritized group, as well as address the difficulties associated with recruiting ESRD patients (i.e., lack of cultural training, and mistrust in research). Lastly, researchers should also investigate the role of other factors (i.e., income, employment status, and health insurance) as possible moderators of that relationship.

Research has addressed the relationship between depression and ESRD, as well as how depression negatively affects treatment of ESRD. However, research is yet to address the relationship between barriers in access to care and depressive symptoms among ESRD patients. The findings from this study shed light on the role that barriers in access to care play in the manifestation of these symptoms. Therefore, the association between barriers to care and depressive symptoms found in this study, suggest the need to screen for barriers to care among patients with ESRD or CKD. Identifying and eliminating these barriers may be useful in reducing the prevalence of depressive symptoms among this population. Lastly, results from this study may help formulate further research and stresses the need to develop interventions to reduce barriers in access to care. Possible interventions such as; increasing community outreach efforts, expanding telehealth, prioritizing the use of simple language, and increased awareness about the severity of psychological conditions, may help reduce the prevalence of depressive symptoms, which may then lead to more positive health outcomes for patients with ESRD.

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Figure 1.

Moderating Model for Barriers in Access to Mental Health Care and Depressive Symptoms with race/ethnicity and gender.

Table 1.
Sample Characteristics

Variable	Whole Sample (*N* = 77)
Age	(*M*= 48.60, *SD* =14.47)
Race/Ethnicity	
African American	36 (46.8%)
White	39 (50.6%)
Hispanic/Latinx	1 (1.3%)
Middle Eastern/Northern African	1 (1.3%)
Native American/Alaskan	1 (1.3%)
Other	1 (1.3%)
Gender	
Male	30 (39.0%)
Female	43 (55.8%)
Other	2 (2.6%)
NR/NA	1 (1.3%)
Annual Household Income	
0 -19,999 7 (23.3)	22 (28.6%)
20,000 -39,999	11 (14.3%)
40,000 -59,999	6 (7.8%)
60,000 -79,999	12 (15.6%)
80,000 -99,999	8 (10.4%)
100,000+	9 (11.7%)
NR/NA	7 (9.1%)
Don't Know	1 (1.3%)
Education	
High School or less	22 (28.6%)
Associates Degree	3 (3.9%)
Some college, no degree	17 (22.1%)
More than an Associate's Degree, but no Bachelor's degree	1 (1.3%)
Bachelor's degree	14 (18.2%)
Some graduate, no degree	5 (6.5%)
Master's degree	10 (13%)
Doctorate	1 (1.3%)
NA/NR	2 (2.6%)
Employment Status	
Student, full time	13 (16.9%)
Student, part-time	21 (27.3%)
Employed, full time	8 (10.4%)
Unemployed, on disability	17 (22.1%)
Unemployed, supported by family	1 (1.3%)
Unemployed, supported by other	10 (13%)
NA/NR	2 (2.6%)