



Examining the influence of health on employment and work ability of Saudi Hemodialysis patients: A Mixed Methods Study

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Running head: HEALTH, EMPLOYMENT, AND WORK ABILITY

Examining the influence of health on employment and work ability of Saudi hemodialysis patients: A mixed-methods study

Abstract

Aims: To explore the employment, work productivity, activity impairment, and sustainability of work of Saudi patients with chronic kidney disease (CKD) on hemodialysis (HD).

Background: Failure to address CKD-related challenges may cause HD patients to lose their job, create a lack of compassion from co-workers, and receive discrimination hindering progress in their profession.

Design: This is a cross-sectional explanatory sequential mixed-methods study.

Methods: A convenience sample of 130 CKD patients was surveyed in the quantitative phase using the “Short-Form Health Survey” and “Work Productivity and Activity Impairment Questionnaire.” For the qualitative phase, face-to-face, semi-structured interviews took place with 16 CKD patients. Data were collected in 2017.

Results: The respondents reported poor physical and mental health. Both employed and unemployed respondents reported moderate levels of work productivity. Better physical health was related to an increased likelihood of being employed. Physical health was negatively correlated with presenteeism, while mental health was negatively associated with activity impairment. Five key themes emerged from the qualitative data: work retention, sustaining employment, suitability of work, losing the work, and unemployment.

Conclusions: Physical condition, personal distinctiveness, cultural and traditional aspects, and employment policies and approaches affect the employment status of HD.

Keywords: Chronic kidney disease; Health-related quality of life; Hemodialysis patients; Occupational health; Work impairment; Work productivity

What is already known about this topic?

- Long-term disease, such as Chronic Kidney Disease and Hemodialysis treatment, harms the patients' work-related activity and conception of self.
- The physical and mental effects of having a chronic disease on work ability and work sustainability are often overlooked as there is little comprehension of the situation and experiences of these patients in their workplace.
- The evidence of sustained working experiences for CKD patients internationally is limited, but how the disease impacts the employment and workability of HD patients within the context and culture of Saudi Arabia has not been explored.

What this paper adds?

- Both employed and unemployed respondents reported moderate levels of work productivity. For employed respondents, absenteeism was quite higher than presenteeism; however, work productivity was reportedly high.
- Better physical health was related to an increased likelihood of being employed. Physical health was negatively correlated with presenteeism, while mental health was negatively associated with activity impairment.
- Five key themes emerged from the data: work to maintain a healthy life, sustaining employment, suitability of workplace, fake employment, and unemployment.

The implications of this paper?

- The study provides direction to policymakers in planning and implementing policies geared towards improving the working conditions, employability, and ability to work among HD patients.

- The study provides evidence on the factors affecting the sustainability of work and retention of job among patient with Chronic Kidney Disease under hemodialysis treatment, such as increasing motivation and inspiration and having an HD-friendly workplace must be put into policy by the government to provide a conducive opportunity for these patients to sustain their jobs.
- The study shed light on reforming or instituting guidelines and policies to regulate better and implement policies geared towards increasing patients' employment with Chronic Kidney Disease to avoid being abused by companies.

INTRODUCTION

Chronic Kidney Disease (CKD) has become a worldwide health crisis with its increasing prevalence. In 2017, 18,270 patients were recorded by the Ministry of Health (MOH) of Saudi Arabia to have been receiving hemodialysis (HD) in MOH facilities around the country (Saudi Center for Organ Transplantation [SCOT], 2018), and this has Saudi patients undergoing hemodialysis (HD) treatment is increasing due to a rise in the number of patients with chronic kidney disease (Cruz et al., 2017). CKD patients on HD face several challenges, such as unstable mental and physical health, food and fluid restrictions, and the presence of complicated to manage symptoms (Meremo et al., 2017). Health-Related Quality of Life (HRQOL) is also severed, especially for those receiving HD for a more extended period.

One significant problem is that 70% of the entire CKD patients on HD treatment are within the working-age bracket, 18 to 65 years old (SCOT, 2013). As a result, the ability to sustain work is negatively affected (Murray et al., 2014). The percentages of employed CKD patients decreased from 74% to 72%; 26% of CKD patients who were employed were on leave due to sickness at the start of dialysis. HD patients had the worst physical functioning,

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concentrating ability, and agility at work during the HD treatment than before dialysis and following a kidney transplant (Van der Mei et al., 2011). Furthermore, several socio-demographic factors, such as age, sex, education, and the length of time the patient received HD treatment impact the employment and ability to work of patients suffering from CKD (Julián-Mauro et al., 2012).

Unemployment among these patients is a severe consequence of absenteeism and poor productivity (Shaw et al., 2013). The functioning and well-being of these patients are commonly low, as shown by their poor HRQOL. Their poor HRQOL scores affect their physical, psychological, and environmental function and activities (Kamal et al., 2013). Although low HRQOL of CKD is widely reported, few studies have investigated the influence of HRQOL on employment status and work sustainability. Research is needed to develop a deeper understanding of the factors that may facilitate work sustenance among these patients. Moreover, barriers in retaining employment and work productivity, including health and work-related needs of employees suffering from CKD and those receiving HD treatment, must be investigated (Koolhaas et al., 2013). A previous study assessed the experiences of people with CKD in the workplace (Schipper et al., 2016), although predominantly, these do not involve patients receiving HD (de Vries et al., 2012). The present study generates new evidence of work sustainability for HD patients, considering the unique cultural and societal background of Saudi Arabia, combining and testing a variety of different methods.

METHODS

Aim

The study was designed to explore the employment, work productivity, activity impairment, and sustainability of work of Saudi patients with CKD on HD treatment.

Design

The study used a cross-sectional explanatory sequential mixed methods design (Quantal method) (Creswell, 2013). This study has two phases: cross-sectional quantitative research to answer the research questions and descriptive qualitative research to explain the result findings of the first phase. The quantitative part was analyzed first. Then, the researchers developed an interview guide to explain the findings of the first phase.

Participants and settings

Across the two dialysis centers in Riyadh and Dawadmi, Saudi Arabia, 130 CKD patients participated in phase one out of 183 target respondents. Participants were recruited if they were aged 18 to 65 years, Saudi nationals, diagnosed with CKD, currently undergoing HD, received HD treatment for a minimum of six months and were not diagnosed with any mental health or cognitive problems. Then, using purposive sampling, 16 CKD patients (8 males/8 females) were interviewed to explore the influence of different factors such as employment status, educational attainment, and age. The inclusion criteria in phase 1 of the study were also used in phase 2. The demographic characteristics of participants across the study are summarized in Table 1.

Phase 1

The first phase utilized the quantitative questionnaire to explore the employment, work productivity, activity impairment, and sustainability of work of Saudi patients with CKD on HD treatment.

The Short-Form Health Survey (SF-12v2) with 12 questions was used to measure the self-assessed HRQOL of patients (Ware et al., 2002). The SF-12v2 evaluates eight domains of HRQOL: "physical functioning, role-physical, bodily pain, general health, vitality, social functioning, role-emotional, and mental health." The developer recommended only two domains

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3 to be considered, namely, physical health composite summary (PCS) and mental health
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5 composite summary (MCS). A greater score on PCS and MCS signified improved physical
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7 health and mental health, respectively. The Arabic version of SF-1 was a valid and reliable
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9 instrument (Al-Shehri et al., 2008).

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12 The Work Productivity and Activity Impairment Questionnaire (WPAI v2) assessed the
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14 participants' productivity at work and regular activities (Reilly et al., 1996). The measure
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16 consists of six questions inquiring about the patient's employment, the number of hours missed
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18 as a result of the disease and other reasons, the actual number of working hours, hours worked,
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20 the extent of how the disease affected work productivity, and the extent of how the disease
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22 affected daily activities. The questions were formatted to focus on the experience of the patient
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24 in the last seven days. The tool produces four scores, including "absenteeism, presenteeism, work
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26 productivity loss, and activity impairment." Scores are expressed in percentage, which could
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28 range from 0 to 100. Higher scores indicate greater work impairment. In this study, the Arabic
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30 version was used and found to be valid and reliable among Saudi patients (Hussain et al., 2015).

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33 Patients identified as fit for the study were approached by one of the researchers in the
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35 renal unit waiting room before the start of HD treatment. The study was explained, written
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37 (Arabic) information was provided, and patients were allowed to discuss and ask questions.

Phase 2

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45 The second phase of the study was a qualitative method using face-to-face, semi-
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47 structured interviews intended to deepen understanding of the experiences of HD patients who
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49 were employed and those who were not employed identified as having poor, moderate, and good
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51 work productivity and activity impairments. This phase provided a deeper understanding of the
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53 patient's context, family and social situations, and the facilitators and barriers of their work
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3 sustainability as they managed their long-term condition (De Souza & Oliver Frank, 2011;
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5 Koolhaas et al., 2013).

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8 The interviews took place on a separate day and time based on the participants'
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10 preferences. They lasted for a maximum of 45 min and were conducted in Arabic and often
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12 before a scheduled HD treatment. The questions were built on the theoretical notions of the
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14 capabilities approach theory, grounded on the value that an individual has to accomplish
15
16 something (Sen, 2001). This theory looks into the different possibilities and choices that a person
17
18 could make (“capabilities”), not on what that person is doing (“functioning”). Considering the
19
20 various factors that affect HD patients' ability to work and sustain their work, understanding their
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22 capabilities to accomplish the work given their difficult situation is crucial to their work
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24 sustainability. Hence, the Capabilities Approach enables the assessment of work ability and
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26 employment sustainability among HD patients. Anchoring on this approach (see Supplementary
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28 File 1), the interview focused on the ability of participants to work based on the different aspects
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30 of the WPAI. The barriers that participants experienced, which hindered their ability to work,
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32 and facilitators that assisted or enhanced their ability to get back to their work or sustained their
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34 employment were explored.
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Ethical consideration

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42 This study was part of the dissertation for a Doctor of Philosophy degree at the
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44 University of Salford. Ethical approval was obtained from the University of Salford Health
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46 Research Ethics Committee and the MOH of Saudi Arabia. Participants were provided with
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48 information regarding the study during the recruitment phase, and informed consent was
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50 collected before completing a survey or interview. Interviews were digitally recorded and took
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52 place in a quiet private room.
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Data analysis

SPSS version 22.0 was used to analyze the quantitative data. Mean and standard deviations were calculated for the HRQOL and work ability variables. Binary logistic regression was used to examine the effects of the predictor variables (socio-demographic, treatment-related, and HRQOL) on the employment status. Pearson product moment correlation was performed to establish the association between HRQOL and work ability. P-values below 0.05 were considered significant.

Qualitative data were manually coded and organized. The seven-step method for thematic analysis was used to guide the approach (Chesler, 1987): underline key terms; restate key phrases in the margin of the text; reduce the phrases and create clusters; compare, reduce, and group generated clusters to form meta-clusters; generalize statements in all generated clusters, theory generation, and prose explanations; and integrate mini-theories into an explanatory framework. Data in the Arabic language were used for the analysis to ensure that words and phrases retained the authentic meaning (which is sometimes lost if translated immediately). A second independent researcher verified each theme and key terms, phrases, clusters, and meta-clusters to minimize bias and increase the credibility and trustworthiness of the findings. After that, translation and transliteration methods were applied through forward-back-translation technique. In the final stage of the analyses, the research team transcribed, read, and re-read to understand patients' perceptions and experiences.

Data integration

This study utilized the interactive level of interaction, wherein the researchers integrate the qualitative and quantitative aspects in reporting the study's findings (Greene, 2007; Creswell,

2013). The researchers conceptually inter-twined the data from the quantitative and qualitative phases using triangulation, complementary, and expansion analytic process (Greene et al., 1989).

In triangulation, the data analyzed on work productivity, activity impairments, and the physical and mental components scores were validated, challenged, and explained in the qualitative phase. In the complementary analytic process, the data on Saudi culture's impact on the respondents' employability was explored. The qualitative data explain the findings that cannot be capture or identified by the quantitative strands. Also, the qualitative strands were used to expand the findings of the qualitative strands. New data were identified, such as data on facilitators and barriers mentioned by HD patients that help them sustain employment. The researcher used triangulation, complementary, and expansion analytic approaches to enhance or strengthen the result of the study and developed new concepts or ideas in understanding the work-life of CKD patients.

RESULTS

Quantitative results

The demographic and HD-related characteristics of participants are reflected in Table 2. The highest proportion of patients recruited were between 51 and 65 years old (42.3%). The lowest proportion was between 18 and 25 years old (6.9%). The majority were males (50.8%), living in urban areas (79.2%), married (76.9%), finished high school or less (86.9%), and unemployed (74.6%). In terms of HD treatment, most participants received HD treatment for five years or more (57.7%) and had HD for four h per session (76.2%). Nearly half of them (44.6%) took 15–30 min to reach the HD center.

HRQOL and work ability

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3 The average score in the PCS and MCS was 37.66 ($SD=11.01$) and 49.90 ($SD=10.74$),
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5 respectively. The respondents recorded a mean score of 57.00 ($SD=34.59$) on work impairment
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7 from a possible score of 0 to 100. These findings indicate that the respondents experienced
8
9 moderate levels of work impairment. For the respondents who were employed, the mean scores
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11 on absenteeism, presenteeism, and work productivity were 62.21 ($SD=27.70$), 42.73 ($SD=32.91$),
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13 and 74.30 ($SD=26.18$) from a possible overall score of 0 to 100, respectively (Table 3).
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Impact of respondents' health on their employment

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18 A logistic regression model was significant ($\chi^2[16]=79.82, p<.001$), explaining
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20 approximately 67.7% (Nagelkerke R^2) variance in employment and accurately categorized 87.7%
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22 of cases. The regression revealed a higher level of physical health, aged 26 to 50 years, being
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24 male, and living farther from the HD center significantly predicted employment among HD
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26 patients. Specifically, an increased score in the physical component was related to an increased
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28 likelihood of being employed. This indicates that HD patients with higher levels of physical
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30 health had higher chances to be employed than those with lower physical health status. Patients
31
32 26 to 35 years old and 36 to 50 years old were 12.67 times ($95\%CI=1.84, 87.21$) and 13.33 times
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34 ($95\%CI=2.23, 79.77$) more likely to be employed than patients who were 51 to 65 years old.
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36 Male patients were 89.52 ($95\%CI=8.81, 909.09$) times more likely to be employed than female
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38 patients. These findings mean that older patients (ages 51 to 65 years) and female patients had
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40 lesser chances to be employed than younger (ages 26 to 50 years) and male HD patients,
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42 respectively. Patients that took less than 15 min to reach the HD center were 0.04 times
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44 ($95\%CI=0.00, 0.41$) less likely to be employed than patients who needed more than 30 min to
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46 reach the center, implying that the farther the patient's home from the HD center the more
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48 chances that the patient is employed (Table 4).
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Pearson product-moment correlation was performed to investigate the association between employed HD patients' health and work ability (n=33). Table 5 shows that the physical component of the HRQOL and the variable presenteeism had a moderate negative correlation ($r=-0.35, p=.044$). The mental component had a moderate negative correlation with activity impairment ($r=-0.49, p=.004$).

Qualitative results

Five key themes emerged from the data: work to maintain a healthy life, sustaining employment, suitability of workplace, fake employment, and unemployment.

Work to maintain a healthy life

Most CKD patients retained their employment because they were motivated by other patients who were successful in their field. They drew inspiration from them to enjoy ordinary life and to become active in society. Being optimistic was their driving force to maintain a productive and healthy life.

“I saw CKD patients who were able to live a normal life I mean their life did not end after they became CKD patients as I imagined. Before, I thought that CKD will end my life and will makes me a hopeless person but after I saw some patients live normally, my life became more easily to live.” (RH_F_1)

The support and flexibility of the government payment scheme, employer, and workmates enabled them to maintain employment. These findings are evident in the government sector, wherein the health benefits of HD patients include sick leaves during the period of HD treatment with pay and three days off.

“I am happy with this decision [paid day-off during HD treatment]; it helped me to keep my job.” (DH_M_2)

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3 The hiring of HD patients in the Kingdom is within the framework of legality and
4 equality as mandated by the Islamic Shari'ah law. The law states that prejudice and
5
6 discrimination to work should be eliminated. The disability law states that disabled persons,
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8 including those on HD, have the right to be employed. To ensure, support, and encourage the
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10 employment of disabled persons, some legislations and measures were established. The
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12 "Tawafuq program" supports and empowers job seekers in private sectors, and "Mowaamah"
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14 creates frameworks of the work environment that has the best standards and practice suitable for
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16 disabled persons (GOV.SA, 2020). Participants' remarked:
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21 *"I have many options... I can work in hospitals or health services departments or in a*
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23 *primary health center where I am working now."* (RH_F_1)
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Sustaining employment

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28 Sustaining employment is the participant's perception of his/her workplace as safe and
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30 with good working conditions. Participants perceived that their work promotes physical and
31
32 psychological well-being. In addition, their employer's acceptance of their health condition
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34 makes them happy and healthy as they perform their job.
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38 *"Regular absent from work makes me bored and will have negative impacts on my*
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40 *psychological condition and will let me think negatively- if I stayed home or without work,*
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42 *therefore, I love to go to work even when I have HD session on the same day, simply because I*
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44 *do not want to be isolated."* (RH_F_1)
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48 *"[My manager and co-workers] are very supportive especially after they knew about my*
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50 *health condition."* (DH_M_2)
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Suitability of workplace

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3 The suitability of a job is another critical factor that influences the employment of HD
4 patients. The participants expressed that their workplace was HD patient-friendly due to the
5 following key characteristics: (1) reduced tasks, (2) they can avail a regular absence when
6 needed and allowed to rest at work, and (3) reduction of heavy physical work that may damage
7 the vascular access.
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15 *“They [colleagues and managers] treat me in a great way, and I feel that they become*
16 *more supportive with me, and I think this is because of my health condition.”* (DH_F_13)
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19 *“I did [request to be transferred for another department], and they were very supportive*
20 *... If they were unsupportive, I could have left my job and stayed home.”* (DH_M_2)
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Fake employment

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26 Health-related issues that affect CKD patients physically and their capability and ability
27 to perform their job were primary factors why some HD patients have fake employment. Fake
28 employment is the scheme used by private institutions, wherein HD patients were hired but not
29 allowed to work. However, the participants perceived that this practice affects their future
30 employment because they cannot avail scholarships to further their studies to be qualified in a
31 higher position.
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40 *“I worked under the Saudization scheme and they were giving me 500 SAR for doing*
41 *nothing, I didn't even know where the location of the company is. Then my social security*
42 *benefits stopped as they considered me employed and I didn't know that this will happen,*
43 *otherwise, I will not accept 500 SAR as I was receiving 1000 SAR from the social security*
44 *department. Then I went to search for the company in the department of labor and I found that*
45 *the company hired me for a salary of 3500 SAR (in the register), so I felt very disappointed and*
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3 *then I realized that they were not helping me they were benefiting from my status as a disabled*
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5 *person.” (RH_M_34)*
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Unemployment

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10 This theme presents the factors that contributed to the unemployment of HD patients.
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12 First was discrimination, wherein HD patients were viewed as incapable of performing the
13
14 required jobs. The second was personal situations, such as the lack of education, which hinders
15
16 patients from having another job that required less physical work. The third was Saudi culture,
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18 where women are not allowed to work and drive around the city. Last was environmental and
19
20 societal issues such as the lack of parking spaces, ramps in the building, and toilets for patients
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22 with disabilities.
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26 *“The disease does not have an impact on my ability to work but it does influence the*
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28 *decision of the employers when I applied for a job. My application for a job in a private*
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30 *healthcare centre have been rejected after they knew that I am a CKD patient and undergoing*
31
32 *HD.” (RH_F_15)*
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DISCUSSION

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37 Sustaining employment is a serious issue for a CKD patient undergoing HD treatment,
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39 but the positive psychosocial impact of continuing to work cannot be overlooked. The
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41 deteriorating physical status of HD patients, often managing multi-morbidity, was considered by
42
43 the participants as the predictor of job loss, affecting their function and working capacity, and
44
45 productivity. The study reinforces current evidence suggesting that the improved physical
46
47 dimension of patients leads to employment (Al-Jumaih et al., 2011). Physical symptoms such as
48
49 feelings of fatigue, decreased strength, and energy is strong predictors of retaining employment
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51 among HD patients who were employed (Tsutsui et al., 2017).
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3 Of note, employer's and colleagues' support, understanding, flexibility, and knowledge
4 about the health status of the HD patient were the primary factors of employment sustainability.
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6 These elements of employment sustainability are present in public sectors where HD patients
7
8 have a flexible work schedule and paid sick leave during their HD treatment. However, the
9
10 considerable flexibility in the government sector has a negative effect, including misuse of paid
11
12 sick leave by HD patients. At a closer look, the misuse of paid sick leave by HD patients is due
13
14 to the lack of guidelines or rules on how and when to avail of this health benefit. This finding
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16 suggests proper policy and guidelines regarding paid sick leave of HD patients to avoid abuse of
17
18 this benefit.
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24 HD patients working in the private sector reported a lack of support, understanding, and
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26 flexibility in their workplace, forcing them to resign from work or accept fake employment. HD
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28 patients resigned from their work due to the inability to provide quality work and their
29
30 absenteeism due to their HD treatment. Some participants opted to accept fake employment to
31
32 sustain their basic needs. Fake employment of HD patients is described as being paid regularly as
33
34 an employee but not required to work, which is favorable. Fake employment is rampant in
35
36 private sectors due to the mandate of the government to employ disabled individuals, including
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38 HD patients. This mandate further states that the employment of one disabled person in the
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40 workplace is equivalent to four working visas for foreign workers. However, this policy is often
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42 being abused. Companies recruit disabled individuals for fake employment to employ foreign
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44 workers because they can offer a low salary compared with Saudi nationals.
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49 Furthermore, the study's findings revealed the lack of social responsibility in some
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51 private sector companies as some HD patients employed in private companies mentioned that
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53 they are unhappy with the workplace and worried about possible retrenchment. One HD patient
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3 narrated that he was forced to resign from work due to his health condition and requested a
4 decrease in hours during his HD treatment. Therefore, the absence of understanding, support,
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6 decrease in hours during his HD treatment. Therefore, the absence of understanding, support,
7
8 knowledge on disabled policy, and employer's accountability toward society reduces
9
10 employment sustainability among HD patients.
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12 Discrimination of HD patients when looking for a suitable job also contributes to the
13 reduced employment sustainability and unemployment as HD patients mentioned that their
14 health condition is one of the reasons for the rejection of their application despite being qualified.
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16 This finding is consistent with Murray et al. (2014), who reported that employers prefer not to
17 hire patients with chronic diseases.
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23 Furthermore, government and social security benefits were identified as factors affecting
24 respondents' employment. Similarly, most HD patients in Spain receive financial support from
25 social security, which causes a decrease in the employment rate (Julián-Mauro et al., 2012).
26
27 Having CKD and being on HD treatment are regarded as a disability, and these patients are
28 receiving financial support from the government and social security. These social security
29 benefits are among the reasons why some of the respondents, especially those who are single and
30 have fewer responsibilities, choose to stay jobless. On the other hand, respondents expected to
31 provide for their family had to sustain better employment means with higher salaries even if it
32 meant termination of social security benefits. Hence, it is deemed essential to evaluate the
33 capability and capacity of patients to sustain work and allocate funding for patients who are not
34 capable of finding a suitable job or for patients whose medical conditions limit their ability to
35 work.
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51 The quantitative findings had also uncovered some factors socio-demographic factors that
52 influenced the HD patients' employment, including age, gender, and distance of HD center from
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3 home. The findings suggest that being younger, being male, and living away from HD centers
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5 predicted employment among HD patients. These associations of employment to gender and age
6
7 had been supported in previous studies (i.e., Gilmour et al., 2008; Koolhaas et al., 2013). Some
8
9 of the factors that favor employment among men include environmental, social, and cultural
10
11 norms. These were supported by the qualitative findings that indicate Saudi women face
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13 employment and movement restrictions due to the country's strict social and cultural norms. The
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15 influence of age on the employment of HD patients could be associated with the working-age
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17 where individuals ages between 51 to 65 years are already in the retirement phase. The impact of
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19 the distance of the patient's home to the HD center on their employment may be related to the
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21 country's availability of transportation and environmental condition. However, this finding needs
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23 further exploration to understand this relationship better.
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29 Another important finding of the study is the negative association between these patients'
30
31 mental health and activity impairment. Mental health problems, such as depression, anxiety, and
32
33 stress, have shown negative impacts on the work-related variables of HD patients (AlShahrani et
34
35 al., 2018). Employees' mental health problems affect their work productivity due to absenteeism
36
37 and poor performance (Goetzel et al., 2018).
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41 Meanwhile, mental health status, including the appropriate coping mechanism of some
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43 HD patients, helped them sustain employment and productivity. The most common coping
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45 mechanism used is acceptance, wherein employed HD patients acknowledged their situation and
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47 lived as healthy individuals. Likewise, patients avoided self-pity to become prolific in their jobs.
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49 Furthermore, the inspiration they received from other successful CKD patients undergoing HD
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51 treatment motivated them to keep going.
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3 Another factor for the employment sustainability of the respondents was the positive
4 work environment and managerial support. Some employers had changed the job descriptions of
5 patients as necessary and had moved them to other departments where they fit.
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10 Finally, family support was one of the factors for the work sustainability of HD patients
11 (Townsend, 2008). This was apparent to women who relied on family members for
12 transportation services. This outcome then implies that solid family ties posit numerous
13 optimistic implications for the respondents' well-being and employment status.
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18 **Study limitations**

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20 Some limitations are acknowledged in this study, which should be considered when
21 interpreting and utilizing the findings. The study included fewer employed respondents than
22 unemployed respondents due to the unavailability of such a sample in the present findings. Thus,
23 the associations or differences between study variables (i.e., HRQOL, absenteeism,
24 presenteeism, work productivity, and work impairment) and the demographic characteristics of
25 the employed HD patients were not examined. Future studies should include more HD centers to
26 ensure a larger sample size of employed HD patients and to ensure deeper explorations of these
27 patients' study variables. Also, the association between the efficacy of dialysis and the physical
28 fitness of employed patients was not explored in this study; this could be the focus of future
29 studies on this topic.
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44 **CONCLUSION**

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47 Physical condition, personal distinctiveness, cultural and traditional aspects, and
48 employment policies and approaches affect the employment status of HD patients, especially for
49 women. Mental health also impacts the productivity of HD patients at work. Improving the
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HEALTH, EMPLOYMENT, AND WORK ABILITY

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3 HRQOL, working conditions, employment policies, approaches, and government support may
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5 improve these patients' work ability and employability.
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Implications for practice

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10 The study extends the evidence base of employment issues for HD patients. Health
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12 professionals can use the findings to plan specific interventions for the identified predictors of
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14 employment and work ability of HD patients. Nursing care and interventions should aim at
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16 improving the physical functioning and mental health of these patients as they were found to
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18 affect their employment and work impairment, respectively. The findings may also provide
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20 direction to policy makers in planning and implementing policies geared toward improving the
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22 working conditions, employability, and ability to work of HD patients. The factors affecting the
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24 sustainability of work and job retention were identified in the present study. For example,
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26 increasing motivation and inspiration and having an HD-friendly workplace must be put into
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28 policy by the government to provide a conducive opportunity for HD patients to sustain their
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30 jobs. Furthermore, the findings shed light on reforming or instituting guidelines and policies to
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32 better regulate and implement the Saudization scheme to avoid being abused by companies.
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34 Finally, private institutions should be encouraged to provide equal opportunities for employment
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36 for HD patients and provide a working environment and condition conducive for these patients.
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Data Availability Statement

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45 Data available on request from the authors.
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Table 1 Demographic characteristics of the participants in the qualitative part (n = 16)

Variable	Females (n = 8)		Males (n = 8)	
	n	%	n	%
Age				
26-35 years	2	25.0	3	37.5
36-50 years	5	62.5	3	37.5
51-65 years	1	12.5	2	25.0
Residence area				
Urban	2	25.0	1	12.5
Rural	6	75.0	7	87.5
Marital status				
Single	4	50.0	2	25.0
Married	4	50.0	6	75.0
Employment status				
Employed	3	37.5	6	75.0
Unemployed	5	62.5	2	25.0

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Table 2 Demographic and employment-related variables (n = 130)

Demographic	n	%
Age		
18-25 years	9	6.9
26-35 years	18	13.8
36-50 years	48	36.9
51-65 years	55	42.3
Gender		
Male	66	50.8
Female	64	49.2
Residence area		
Urban	103	79.2
Rural	27	20.8
Marital status		
Single	30	23.1
Married	100	76.9
Education		
High school or less	113	86.9
Undergraduate level	17	13.1
Start of hemodialysis treatment		
Less than a year	19	14.6
1 to 2 years	19	14.6
3 to 4 years	17	13.1
5 years and more	75	57.7
Duration of hemodialysis		
Three hours	31	23.8
Four hours	99	76.2
Distance of hemodialysis center from home		
Less than 15 min	26	20.0
15 to 30 min	58	44.6
More than 30 min	46	35.4
Employment status		
Employed	33	25.4
Unemployed	97	74.6

Table 3 Health-related quality of life and work ability

Variable	Mean	SD	Range	Unemployed Mean (SD)	Employed Mean (SD)	<i>t</i>	<i>p</i>
Health-related quality of life (n = 130)							
Physical component	37.66	11.01	9.88 61.58	35.47 (10.97)	44.09 (8.42)	-4.68	<.001 ***
Mental component	49.90	10.74	21.55 71.58	50.26 (10.91)	48.87 (10.30)	0.64	.524
Activity impairment (n = 130)	57.00	34.59	0 100	61.65 (33.90)	43.33 (33.42)	2.68	.008* *
Absenteeism (n = 33)	62.21	27.70	0 100				
Presenteeism (n = 33)	42.73	32.91	0 100				
Work productivity loss (n = 33)	74.30	26.18	0 100				

Note. **Significant at .01 level, ***Significant at .001 level

Table 4 Results of logistic regression of the respondents' employment (n = 130)

Independent variables	B	SE	Wald	df	p	OR	95% CI	
							Lower	Upper
Physical component	0.10	0.05	3.97	1	.046*	1.10	1.00	1.22
Mental component	0.00	0.04	0.01	1	.909	1.00	0.93	1.08
Activity impairment	0.00	0.01	0.02	1	.876	1.00	0.98	1.03
Age								
18-25	0.98	1.45	0.46	1	.497	2.67	0.16	45.89
26-35	2.54	0.98	6.66	1	.010*	12.67	1.84	87.21
36-50	2.59	0.91	8.04	1	.005**	13.33	2.23	79.77
Gender	4.49	1.18	14.44	1	<.001***	89.52	8.81	909.09
Residence area	-1.13	0.99	1.31	1	.253	0.32	0.05	2.25
Marital status	1.13	0.96	1.40	1	.237	3.11	0.47	20.43
Education	-1.66	0.95	3.06	1	.080	0.19	0.03	1.22
Start of hemodialysis treatment								
Less than a year	-0.01	1.03	0.00	1	.996	0.99	0.13	7.56
1 to 2 years	0.44	0.96	0.21	1	.650	1.55	0.23	10.21
3 to 4 years	1.56	0.94	2.76	1	.097	4.74	0.75	29.76
Duration of hemodialysis	-0.13	0.91	0.02	1	.885	0.88	0.15	5.19
Distance of hemodialysis center from home								
Less than 15 min	-3.22	1.19	7.32	1	.007**	0.04	0.00	0.41
15 to 30 min	-0.59	0.78	0.57	1	.451	0.56	0.12	2.55

Note. *Significant at .05 level, **Significant at .01 level, ***Significant at .001 level

Table 5 Relationship between the respondents' health and work ability (n = 33)

Variable	Physical component		Mental component	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Absenteeism	0.03	.857	-0.21	.241
Presenteesism	-0.35	.044*	-0.33	.060
Work productivity	-0.12	.504	-0.31	.082
Activity impairment	-0.34	.056	-0.49	.004**

Note. *Significant at .05 level, **Significant at .01 level

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Interview Guide Anchored on the Capabilities Approach (Sen, 2001)

The in-depth interview will be guided by the theory of the Capabilities Approach to explore and offer new insight as to how facilitators and barriers may affect work ability and employment sustainability among HD patients.

Opening

After welcoming and thanking the participants for their involvement in this phase, the participants will be asked to talk about their experience in work before and after starting HD. Then, the researcher will start the interview by introducing the participants with the results of the questionnaires they filled in the first phase of the study. After that the researcher asks open-ended questions based on the concepts and domains of the theory of the Capabilities Approach below:

Capabilities Approach Concepts and Domains	Discussion
Personal characteristics, resources, and social environment	Items of the demographic questionnaire will be discussed such as education level and gender, and how this affects their employment status and work-ability.
Clinical environment and health condition (functioning)	Results of the SF-12v2 questionnaire will be discussed in this domain to explore how the health condition of the participants and the treatment modality affect their work.
Work environment and choices (capabilities)	Results of the WPAIv2 questionnaire will be discussed to gain deeper understanding of how their ability to work affects their

	<p>employment or their choices such as applying for early retirement or looking for another job. And is such choices and opportunity available for them.</p> <p>Also, how the (first domain) affect the availability of these choices and opportunities</p>
Agency	<p>How the participants feel toward future, what are their expectations and desires? What are their goals and plans to maintain their employment status and/or sustain and improve their ability to work</p>

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