QUALITY OF LIFE (QoL) AMONG CHRONIC KIDNEY DISEASE (CKD) PATIENTS IN HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM)

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LIST OF ABBREVIATIONS

QoL - Quality of Life

CKD - Chronic Kidney Disease

PCS - Physical Component Summary

MCS - Mental Component Summary

KDCS - Kidney Disease Component Summary

KDQOL-36^{TM} - Kidney Disease Quality Of Life Short Form 36

EuroQOL - European Quality Of Life

HRQOL - Health- Related Quality Of Life

ESRD - End Stage Renal Disease

Hospital USM - Hospital Universiti Sains Malaysia

WHO - World Health Organization

GFR - Glomerular Filtration Rate

SPSS - Statistical Package Social Sciences

SD - Standard Deviation

KUALITI HIDUP (QoL) DALAM KALANGAN PESAKIT BUAH PINGGANG KRONIK (CKD) DI HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM)

ABSTRAK

Penyakit buah pinggang kronik memberi kesan kepada penurunan kualiti hidup dengan meningkatkan risiko kematian semasa perkembangan patogenesisnya. Walau bagaimanapun, banyak faktor boleh diperbaiki untuk menyokong kualiti hidup. Kajian keratan rentas telah dijalankan ke atas 73 peserta. Soal selidik yang ditadbir sendiri telah diberikan kepada peserta yang menepati kriteria kemasukan melalui bersemuka. Soal selidik yang disahkan dan kualiti penyakit buah pinggang dalam bentuk pendek (KDQOL-SF™ 1.3) digunakan untuk menilai kualiti hidup. Objektif umum kajian ini adalah untuk mengkaji kualiti hidup dalam kalangan pesakit buah pinggang kronik di Hospital USM. Peserta dipilih melalui kaedah pensampelan kemudahan yang bukan kebarangkalian. Data yang dikumpul dianalisis secara statistik menggunakan perisian Statistical Package Social Science (SPSS) versi 26. Seramai 73 peserta telah terlibat dalam kajian ini. Mereka adalah wanita (56.2%), berkahwin (89.0%), belajar menengah (69.9%), menganggur (53.4%), dengan pendapatan isi rumah dalam lingkungan RM2000 – RM 3000 (35.6%), dan penduduk kampung (63.0%). Purata skor kualiti hidup dalam kalangan pesakit buah pingang kronik dalam domain fizikal, mental, dan penyakit buah pinggang dengan dan tanpa hemodialisis ialah 1435.96 (SD 338.07), 1172.33 (SD 181.39), 3422.31 (SD 334.93) dan 3526.29.23 (SD). Kelaziman kualiti hidup yang baik dalam kalangan pesakit buah pinggang kronik mengikut domain fizikal, mental, dan penyakit buah pinggang dengan dan tanpa hemodialisis masing-masing adalah 20.5%, 16.4%, 15.4% dan 16.7%. Korelasi antara domain fizikal dan domain mental

menunjukkan korelasi positif sedikit dan signifikan pada p= 0.000 ($p \leq 0.01$). Selepas mengawal semua faktor pengeliru yang berpotensi, dua pembolehubah didapati dikaitkan dengan kualiti hidup dalam domain fizikal: umur, dan status pekerjaan. Tiga pembolehubah dikaitkan dengan kaultit hidup dalam domain mental: umur, status perkahwinan dan status pekerjaan. Walau bagaimanapun, tiada pembolehubah yang signifikan kepada penyakit buah pinggang dengan dan tanpa hemodialisis. Tahap kualiti hidup dalam kalangan pesakit buah pinggang kronik menunjukkan sederhana dalam semua domain. Pemantauan kualiti hidup ialah penunjuk penting untuk mengenal pasti kesan buah pinggang kronik pada domain fizikal, metal dan penyakit buah pinggang. Jadi, terdapat keperluan untuk sistem penjagaan kesihatan untuk membangunkan garis panduan amalan berasaskan bukti yang sesuai untuk penilaian dan pengurusan untuk pesakit buah pinggang kronik.

QUALITY OF LIFE (QoL) AMONG CHRONIC KIDNEY DISEASE (CKD) PATIENTS IN HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM)

ABSTRACT

CKD leads to decreased QoL by increasing the risk of death during the progression of its pathogenesis. However, many factors can be improved to support QOL. A cross-sectional study was conducted on 73 participants. A self-administered questionnaire was given to the participants that fit the inclusion criteria via face to face. A validated questionnaire and the kidney disease quality of life short form (KDQOL-SF™ 1.3) were used to assess QoL. The general objective of this study is to study the QoL among CKD patients in Hospital USM. They were selected through a non-probability convenience sampling method. Data collected were statistically analyzed using Statistical Package Social Science (SPSS) software version of 26. A total of 73 participants were recruited into the study: were females (56.2%), married (89.0%), studied secondary (69.9%), unemployed (53.4%), with household income in the range of RM2000 – RM 3000 (35.6%), and village residents (63.0%). The mean score QoL among CKD in the domains of the PCS, MCS, and KDCS with and without hemodialysis were 1435.96 (SD 338.07), 1172.33 (SD 181.39), 3422.31 (SD 334.93) and 3526.23 (SD 259.09) respectively. The prevalence of good QoL among CKD in the domains of the PCS, MCS, and KDCS with and without hemodialysis were 20.5%, 16.4%, 15.4% and 16.7% respectively. Correlation between PCS and MCS shows slightly positive correlation and significant at p= 0.000 ($p \leq 0.01$). After controlling for all potential confounding factors, two variables were found to be associated with QoL in the domains of PCS: age, and occupational status. Three variables were associated with QoL in the domain of MCS: age, marital status and occupational status. However, none of variables were significant to KDCS with and without hemodialysis. The level of QoL among CKD patients showed moderate in all domains. Montioring QoL is an important indicator to identify impact of CKD on PCS, MCS and KDCS domains. So, there is need for the healthcare system to develop an appropriate evidence based practice guideline for the assessmet and management for CKD patients.

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

CKD is referred to as the presence of kidney damage or an estimated glomerular filtration rate (eGFR) less than 60 ml/min/1.73 mt2, persisting for 3 months or more, irrespective of the causes (Amoako et al., 2014; Vaidya & Aeddula, 2022). Globally, the prevalence of CKD is rising, which is a significant problem for public health. More than 800 million people worldwide; more than 10% of the overall population have CKD, which is a progressive condition. One of the leading causes of death and suffering in the 21st century is CKD. Chronic kidney disease represents an especially large burden in low- and middle-income countries, which are least equipped to deal with its consequences (Kovesdy, 2022).

In 2018, the prevalence of CKD in Malaysia was 15.48%, which is comparable to other Asian nations. The prevalence of CKD ranges across the area, from 10.8% in China to 17.5% in Thailand, 17.2% in India, and 15.6% in Singapore. This population-based cross-sectional study showed an increase in the prevalence of CKD in Malaysia during the previous study's 7-year period, from 9.07% to 15.48%. 3.85% of people were predicted to have stage 1 CKD, 4.82% to have stage 2 CKD, 6.48% to have stage 3 CKD and 0.33% to have stage 4-5 CKD (Saminathan et al., 2020).

CKD classifies it into 5 categories based on GFR. It also includes the staging based on three levels of albuminuria (A1, A2, and A3), with each stage of CKD being sub-categorized according to the urinary albumin-creatinine ratio in (mg/gm) or (mg/mmol) in an early morning “spot” urine sample. The 6 categories include:

- G1: GFR 90 ml/min per 1.73 m2 and above

- G2: GFR 60 to 89 ml/min per 1.73 m2
- G3a: GFR 45 to 59 ml/min per 1.73 m2
- G3b: GFR 30 to 44 ml/min per 1.73 m2
- G4: GFR 15 to 29 ml/min per 1.73 m2
- G5: GFR less than 15 ml/min per 1.73 m2 or treatment by dialysis

The three levels of albuminuria include an albumin-creatinine ratio (ACR)

- A1: ACR less than 30 mg/gm (less than 3.4 mg/mmol)
- A2: ACR 30 to 299 mg/gm (3.4 to 34 mg/mmol)
- A3: ACR greater than 300 mg/gm (greater than 34 mg/mmol). (Vaidya & Aeddula, 2022)

If kidney disease is not detected in its early stages or worsens despite treatment, a number of symptoms may appear. Weight loss and poor appetite, swollen ankles, feet, or hands from water retention (oedema), shortness of breath, fatigue, blood in the urine, an increased need to urinate, especially at night, difficulty sleeping (insomnia), itchy skin, crampy muscles, nausea-like headaches, and erectile dysfunction in men are all possible symptoms (Chen et al., 2019). The three most common complaints were excessive tiredness (81%) sleep disturbance (70%) and joint and bone discomfort (69%) (Brown et al., 2017). Men often reported fewer symptoms than women did, while South Asian patients frequently spoke of more severe symptoms. Musculoskeletal problems were more bothersome to older patients than impaired concentration was to younger people (Brown et al., 2017).

CKD leads to decreased QOL by increasing the risk of death during the progression of its pathogenesis. QoL is an important outcome that is used as a valuable parameter of health and well-being. The assessment of QoL can be challenging due to its subjective nature and relates to how patients feel about and are satisfied with matters relating to their condition and treatment (J. et al., 2017). Patients with CKD have lower QoL, more symptoms, and greater psychological distress, and the severity of these changes is adversely linked with GFR (Kefale et al., 2019). High burden of comorbidity and comorbidities, the health-related quality of life of CKD patients is typically worse than the general population. However, many factors can be improved to support QOL (Kim et al., 2013).

This study was conducted among CKD patients to assess their QoL. A better understanding of the nature of CKD-related complications may help to optimize the management in life (Stanifer et al., 2016). This study helps nurses to find out the level of QoL and how CKD patients feel about QoL. And as a nurse, we can help patients to feel better, inside and out, mentally and physically. There are many studies done on hemodialysis and ESRD patients in Malaysia (Ramatillah et al., 2017; Yusop et al., 2013). But there is less study on QoL among CKD stage 1-5. Patients' QoL progressively declined across the stages of CKD (Goh et al., 2019).

1.2 Problem Statement

On March 12, 2022, Malaysia's Health Minister, YB Tuan Khairy Jamaluddin, reportedly said to Strait News that the country's younger population is being diagnosed with CKD and needing dialysis more frequently. Additionally, he noted that since 2018, more than 8,000 new kidney patients have been diagnosed annually in Malaysia, and over 40,000. If this increased trend continues, approximately 106,000 CKD patients will require dialysis by the year 2040, with 30% of these patients being under the age of 45 (Nuradzimmah Daim, 2022).

According to Sabanayagam et al., (2010) a population-based cross-sectional study in Singapore examined the prevalence and risk factors of CKD and compare inter-ethnic differences in a population-based sample of Chinese, Malays, and Indians, the three major ethnic groups in Asia that represent more than two-thirds of world's population. The prevalence of CKD was 12.8% among Chinese, Malays, and Indians, 11.4%, 18.6%, and 17.6%, respectively (Sabanayagam et al., 2010). Its shows that Malays has higher prevalence of CKD compared to Indians and Chinese.

Furthermore, Salman et al., (2015), also conducted retrospective research on CKD patients. 1,914,897 patients were admitted to Hospital USM and visited in total between 2009 and 2013. The patients' median age was 61.18 ± 13.37 years (interquartile range: 18–92), with a majority of patients (32.4%) in the 60–69 age range and just 3.2% in the 18–29 age range. Malay people were the majority (95.9%), with Chinese, Indian, and other races constituting the minority. About 91 per cent of the cases came from the state of Kelantan, and 69.2 percent were from cities (Salman et al., 2015).

According to Hooi et al., (2013), the prevalence of CKD in West Malaysia was 9.07% (Hooi et al., 2013). However, this study aimed to explore the QoL of CKD patients, particularly in Kelantan. In Kelantan, the prevalence of CKD has been increasing over the years.

QoL is severely impacted by CKD and is related to higher risks of cardiovascular morbidity and premature mortality. People with CKD have a mortality rate from cardiovascular disease (CVD) that is at least 8 to 10 times higher than people without CKD. A study show decreases in health-related quality of life during progression of CKD (Avramovic & Stefanovic, 2012).

1.3 Research Questions

i. What is the mean score QoL among CKD patients in Hospital USM?
ii. What is the level of QoL among CKD patients in Hospital USM?

iii. Is there any correlation between the PCS domain, MCS domain, and KDCS domain among CKD patients in Hospital USM?

iv. Is there any association between selected sociodemographic characteristics (age, sex, ethnicity, religion, marital status, educational level, occupational status, household income, and place of residence) with QoL among CKD patients in Hospital USM?

1.4 Research Objectives

1.4.1 General Objective

To study the quality of life among CKD patients in Hospital Universiti Sains Malaysia (HUSM).

1.4.2 Specific Objectives

i. To determine mean score QoL among CKD patients in Hospital USM.

ii. To assess the level of QoL among CKD patients in Hospital USM.

iii. To identify the correlation between the PCS domain, MCS domain, and KDCS domain among CKD patients in Hospital USM.

iv. To determine the association between selected sociodemographic characteristics (age, sex, ethnicity, religion, marital status, educational level, occupational status, household income, and place of residence) with QoL among CKD patients in Hospital USM.

1.5 Research Hypothesis

i. Hypothesis H_0: There is no significant correlation between the PCS domain, MCS domain, and KDCS domain among CKD patients in Hospital USM.

Hypothesis H_1: There is a significant correlation between the PCS domain, MCS domain, and KDCS domain among CKD patients in Hospital USM.

ii. Hypothesis H_0: There is no significant association between selected sociodemographic characteristics (age, sex, ethnicity, religion, marital status, educational level, occupational status, household income, and place of residence) with QoL among CKD patient Hospital USM.

Hypothesis H_1: There is a significant between selected sociodemographic characteristics (age, sex, ethnicity, religion, marital status, educational level, occupational status, household income, and place of residence) with QoL among CKD patient in Hospital USM.

1.6 Conceptual and Operational Definitions

Table 1.1 Definition of terms

Terms	Conceptual definitions	Operational definitions
Quality of Life (QoL)	Individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns (WHO, 2012).	In this study, it is referred to assessing the QoL among CKD. The instrument that was used is KDQOL-36^{TM} version 1.3.
Physical Component Summary (PCS)	PCS domain contains physical function, role function, pain, and general health. (Mahato et al., 2020).	In this study, it is referred to assessing physical of CKD patients in term of QoL.
Mental Component Summary (MCS)	MCS domain contains physical role, emotional role, social function, and energy/fatigue. (Mahato et al., 2020).	In this study, it is referred to assessing mental of CKD patients in term of QoL.
Kidney Disease Component Summary (KDCS)	KDCS domains contain symptoms, effects, the burden of kidney disease, work status, cognitive function, quality of social interactions, sexual function, sleep, social support, healthcare staff encouragement, and patient satisfaction (Mahato et al., 2020).	In this study, it is referred to assessing effect of CKD disease in patient's life.
Chronic Kidney Disease (CKD)	Chronic kidney disease (CKD) is referred to as the presence of kidney damage or an estimated glomerular filtration rate (eGFR) less than 60 ml/min/1.73 mt2, persisting for 3 months or more, irrespective of the cause (Vaidya & Aeddula, 2022).	In this study, it is referred to as a person who has progressive loss of kidney function over a period of months or years. CKD stages 1-5 will participate in this study.

1.7 Significance of the Study

The purpose of the study is to assess the level of QoL among CKD patients at Hospital USM. QoL is influenced by an individual’s physical and mental health, the degree of independence, the social relationship with the environment and other factors. It is believed that the study's conclusions would help patients improve their QoL by helping them to feel better, inside and out and mentally and physically. This study also helps healthcare workers to identify how each domain’s QoL affected most and how it’s related to each other.

Additionally, it can serve as a guide for healthcare workers as they develop plans for more efficient patient health education on improving QoL. Health education is key in the nursing industry to generate huge health advantages for CKD patients. As nurses work with patients with CKD, the nurses may also utilize it as a guideline for making plans for a more comprehensive approach to their patients' health.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter reviews a series of literature regarding the QoL among CKD patients. The general finding of the literature reviews presented in a few sections by the key terms of the research. The recent articles and related issues were included in this chapter. The chosen conceptual framework to guide this proposed study is discussed.

2.2 Review of literature

2.2.1 Quality of life

According to WHO, a person's view of their position in life in relation to their objectives, expectations, standards, and concerns, as well as the culture and value systems in which they live, constitutes their QoL (WHO, 2012). QoL is a term that refers to the wellbeing of a population or an individual in terms of both positive and negative aspects of their existence at a certain period. QoL is a complicated subject with various interpretations and definitions across disciplines, including those of health and medicine. In the fields of health and medicine, the concept of QoL is crucial (Haraldstad et al., 2019).

KDQOL-36^{TM} was used for assessing QoL in 3 domains: physical component summary (PCS), mental component summary (MCS), and kidney disease component summary (KDCS) (Cohen et al., 2019). Domain one was used to assess QoL in the PCS domain which contains physical function, role function, pain, and general health. Domain two, was used to assess QoL in the MCS domain which contains physical role, emotional role, social function, and energy/fatigue. Domain three, was used to assess QoL in KDCS domains which contain symptoms, effects, the burden of kidney disease, work status, cognitive function, quality of social interactions, sexual function, sleep, social support, healthcare staff encouragement, and patient satisfaction (Mahato et al., 2020).

A recent study by Nguyen et al., (2018), a national representative sample of community-dwelling adults in England study shows a clear reduction in health-related quality of life (HRQOL) associated with CKD. The instruments used to measure QoL was EuroQOL. Mobility, usual activity and pain/discomfort were three dimensions of health that were more likely related to CKD (Nguyen et al., 2018). This finding is similar to another study in which mobility and pain/discomfort were the domains largely affected (Lee et al., 2012).

In a study by Tannor et al., (2019), the largest general public hospital in Ethiopia, Tikur Anbessa Specialized Hospital (TASH), which offers tertiary care, did a cross-sectional study in 2017 at its nephrology clinic. The instrument used to measure QoL in the study was KDQOL-36^{TM}. The domains which make up the physical quality of life were more impaired than the domains that constitute the mental quality of life. The disease is influenced by some number of variables, including disease-related symptoms, adverse drug reactions, and patient-family contact levels. Low QoL has been the main issue for CKD patients, and its development can harm the disease's progression. QoL decreased throughout the five CKD stages (Tannor et al., 2019).

Moreover, in a study by Kefale et al., (2019), a cross-sectional study found that QoL declined throughout all phases of CKD, which is consistent with other studies. The instrument that was used for this study was The Medical Outcomes Study Short Form 36-Item Health Survey. The domains that make up the physical QoL were worse off than the mental QoL domains. This finding is consistent with earlier research results, which showed that CKD patients had lower physical component QoL compared to mental component QoL. This may be caused by the chronic nature of the illness; patients may adjust psychologically to their circumstances as well as to the illness and its treatment, directly affecting patients' QoL over time (Kefale et al., 2019).

According to Mahato et al., (2020), a cross-sectional study in Nepal shows patients in the early stage of CKD had better QoL than patients in the late stage in terms of both PCS and MCS. A validated questionnaire and the KDQOL-36^{TM} were used to assess QoL. This finding is consistent with a study in Indonesia that reported that patients at the initial stages of CKD had better QoL than those in the end stages of CKD (J. et al., 2017). Based on the KDQOL-36^{TM}, 53.64% of 440 CKD patients in Nepal had good QoL in the domain of PCS and 22.05% had good QoL in the domain of MCS (Mahato et al., 2020).

The instrument used for assessing the QoL among CKD patients was KDQOL-36^{TM} (Mahato et al., 2020). This instrument is commonly used to assess generic and kidney-disease-targeted aspects of quality of life for individuals (Ricardo et al., 2013).

2.2.3 Correlation between PCS domain, MCS domain, and KDCS domain among CKD patients

Most people struggle to keep their mental health in good shape, but those who suffer from CKD may find it even harder. Depending on the stage of their kidney illness, patients may experience additional stressors that have an adverse effect on their mental health. It could be overwhelming to them since they think they are being asked to alter or do without so many things. The probability that a patient would experience effects on their mental health increases with stage. Financial strain, feeling like a burden to others, fear of causing pain, inability to get a good night's sleep, job changes, dietary restrictions, and concern over how these stressors will affect one's relationships with family, friends, coworkers, and romantic partners are a few examples of these stressors. Patients with chronic kidney disease and those receiving treatment may experience physical discomfort, which may have an impact on their mental health and their capacity to cope with stressful situations. Additionally, if a patient has a mental illness, this can make their kidney disease worse. This is because to the fact that mental health can affect physical health and may affect dietary habits, sleep patterns, energy levels, and your ability to adhere to a doctor's recommended course of treatment (Sousa et al., 2017).

CKD patients frequently have neuropsychiatric problems such as depression, anxiety disorders, and cognitive impairment. This resulted in a decline in physical health and made the kidney condition worse by raising the number of symptoms and consequences. These disorders frequently lower quality of life, lengthen hospital stays, and increase death (Silva et al., 2019).

2.2.4 Association between selected sociodemographic characteristics and quality of life among CKD patients.

In a recent study by Mahato et al., (2020), a cross-sectional study was carried out in Nepal in 2019 with 440 participants. For those aged 31 to 50 and those aged 51 and above, the former group reported greater QoL. The QoL of those who completed university education was superior to that of illiterates. Those who were at stage 1 through stage 4 had better QoL than those who were at stage 5 (Mahato et al., 2020).

According to Tannor et al., (2019), two hundred and two individuals with moderate to advanced CKD who were not receiving dialysis participated in a cross-sectional observational study. This study demonstrated that patients with moderate to severe CKD had poor QoL. Poor QoL was shown to be strongly correlated with low income, and CKD stage 5. There was a slight predominance of males over females as shown in other studies. When compared to females, the male gender has been linked to a faster progression of kidney disease (Tannor et al., 2019).

Plus, in a study by Kefale et al., (2019), a cross-sectional study taken at a hospital reveals the high score SF-36 domains were found to be predicted by high economic status. With the exception of physical functioning, emotional role functioning, and mental health, high family income, higher educational status, and high family income groups had higher scores on the SF-36. Low QoL has also been repeatedly linked to poorer social position, which is indicated by lesser education, worse financial standing, or unemployment. The summary of the physical and mental components of the study participants with low income were regarded to have a lower QoL (Kefale et al., 2019).

In a recent study by Cruz et al., (2011), QoL decreased in all stages of kidney disease. A reduction in physical functioning, physical role functioning and in the PCS was observed progressively in the different stages of kidney disease. Individuals with higher educational levels who were professionally active displayed higher PCS values, whereas men and those with a higher income presented better MCS values. Older patients performed worse on the PCS and better on the MCS (Cruz et al., 2011).

In a recent study by Kalanatar et al., (2019), race and ethnicity are important factors to consider when interpreting QoL results since different traditions, values, and expectations across various cultures are likely to have a significant impact on patient's self-reported physical and mental health. According to an observation cohort study in the US, the lowest physical component scores were associated with higher mortality among Hispanic, African American, and other ethnicity patients. Similarly, point estimates of the lowest quartile of MCS trended toward higher mortality in Hispanic, African American, and other race/ethnicity patients (Kalantar et al., 2019). Meanwhile, in Asia, a population-based cross sectional study in Singapore compares inter-ethnic differences in a population-based sample of Chinese, Malays, and Indians, the three major ethnic groups that represent more than two-thirds of the world's population. The prevalence of CKD was 12.8% (among Chinese, Malays, and Indians, 11.4%, 18.6%, and 17.6%, respectively). Malay and Indians are at high risk of having poor quality of life (Sabanayagam et al., 2010).

According to Molested et al., (2021), a cross-sectional study, 512 participants were included and most of them were married 316 (62%), and 119 (23%) had a low level of education. In this study shows patients with CKD stage 4–5, being married or having a permanent partner and a high educational level had positive impacts on mental QoL. Higher educational level was also associated with better physical QoL (Molsted et al., 2021).

In a nutshell, to summarize older age, male, have lower education levels, are unemployed, having lower household incomes, unmarried, living in rural areas, have related to poor QoL. Meanwhile, minorities, younger people, females, higher education, those employed higher household income, married, and have better QoL.

2.3 Theoretical and Conceptual Framework of the study

In this study, a conceptual self-management model will be applied. Ansari, Rashid M.; Hosseinzadeh, Hassan; Harris, Mark Fort; Zwar, and Nicholas Arnold developed this conceptual framework. This model investigates the connections between the elements that affect self-management. These factors can be divided into five groups, including sociodemographic traits, behavioural and psychological traits, social support, cultural traits, and self-management obstacles (Ansari et al., 2017).

The conceptual framework identifies seven important, interrelated components that together make up the model, including sociodemographic characteristics (age, gender, and education), behavioural and psychological traits (diet adherence, physical activity), social support (family and friends), barriers to self-management (lack of knowledge, self-confidence, financial support, and family support), and cultural characteristics (cultural beliefs, dietary practices).

This conceptual framework has been used in the previous study by Ansari et al., (2017). The study has been done in Pakistan to explore the factors that may affect diabetes self-management and to present the potential outcomes for type 2 diabetes self-management among the middle-aged population of rural area of Pakistan. This conceptual model was retrieved from the Conceptual Model of Diabetes Self-Management for Middle-Aged Population of Rural Area of Pakistan which factors such as sociodemographic, behavioural and psychological traits, social support, obstacles to self-management, and cultural traits have an impact on Type 2 diabetes self-management. These factors together then predict health outcomes (Ansari et al., 2017).

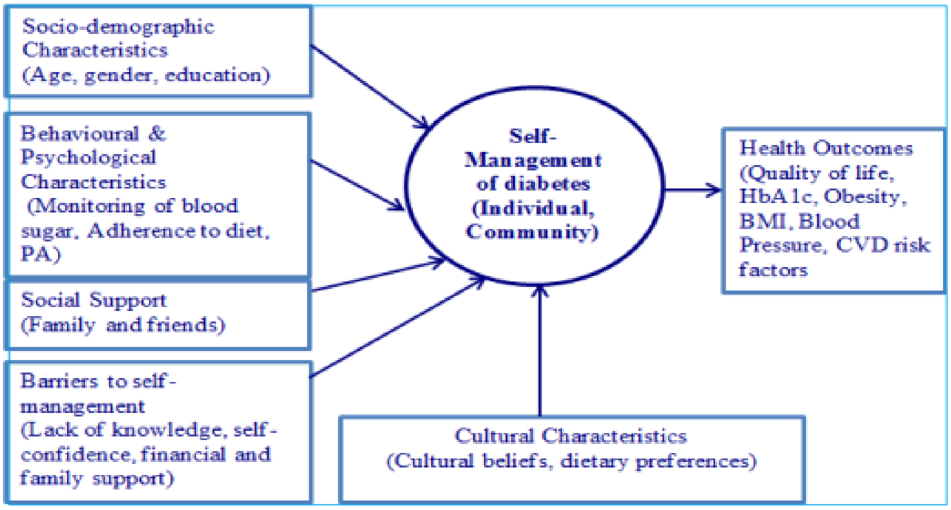

Figure 2.1 Conceptual framework of self-management of type 2 diabetes (Ansari et al., 2017)

The sociodemographic variables examined in this study include age, sex, ethnicity, religion, marital status, educational level, occupational status, household income, and place of residence among CKD patients in Hospital USM. The model can also evaluate whether any of the factors have an impact on the patients' quality of life.

The participants will indicate a good or low level of life quality as the outcome. In general, the researcher use this conceptual framework to identify a variable factor associated with QoL.

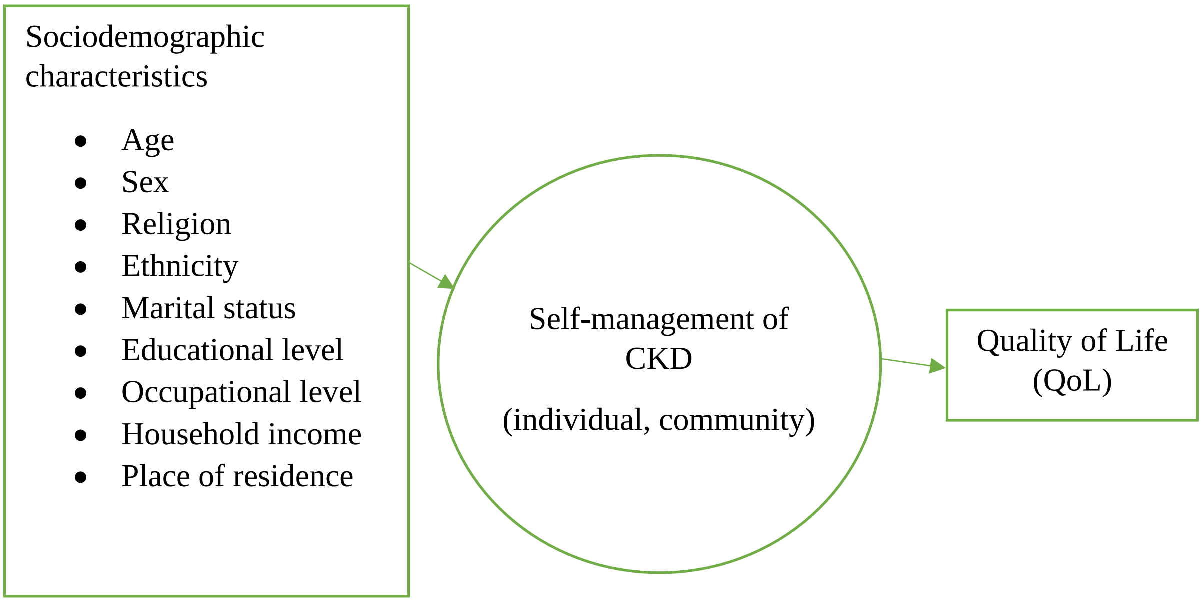

Figure 2.2 Conceptual framework of self-management of CKD adapted from Ansari et al (2017)

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

The aim of chapter three is to explain the approach and rationale for supporting the research methodology chosen. It is very important to determine and understand the most appropriate research design to ensure the study's purpose is correctly conveyed. This chapter contains an explanation of the design of the study and the purpose of its selection.

3.2 Research Design

In this study, cross-sectional designs were used. Cross-sectional design is a descriptive study, data are collected on the whole population at a single point of time to examine variables of interest. This allows the researcher to measure the outcome and the exposure of the respondents at the same time based on the researcher's objectives (Setia, 2016). The advantages of cross-sectional study include not costly to perform, does not require a lot of time and can be carried out at a one-time point or over a short period (Levin, 2006).

3.3 Study setting and Population

This study was conducted at the medical (7 Utara & 7 Selatan) and surgical (3 Utara & 2 Intan) wards and CKD Resource Centre in Hospital USM. This study involved CKD patients admitted to the medical and surgical wards and visit CKD Resource Centre in Hospital USM.

3.4 Sampling Plan

3.4.1 Sample criteria - Inclusion and Exclusion Criteria

Inclusion Criteria

Specific requirements for eligibility in this study of each subject must be:

- CKD patients aged 18 years and above (Kefale et al., 2019)
- CKD stage 1-5 (Cruz et al., 2011)
- Admitted to general medical (7 Utara & 7 Selatan) and surgical ward (3 Utara & 2 Intan) wards or visiting CKD Resource Centre in Hospital USM
- Able to understand, speak and write Malay

Exclusion Criteria

Subject is excluded from this study if they:

- Diagnosed with end-stage renal disease (ESRD) and regular dialysis or a history of kidney transplant (Yann Ng et al., n.d.)
- Admitted CKD patients with severe septicemia
- Patients with cognitive, speech or hearing impairment (Kefale et al., 2019)

3.4.2 Sample size Estimation

The sample size calculations were done based on the objectives of the study and the largest size was chosen as the right sampling size for this study.

For objective 3, the sample size calculation was to determine the correlation between PCS domain, MCS domain, and KDCS domain among CKD patients in Hospital USM.

p1= 0.513, p2= 0.73, zα=1.96 (α=0.05), zβ= 0.84 (80% power) (Cohen et al., 2019)

$$n = \frac{p1(1 - p1) + p2(1 - p2)}{(p1 - p2)2}\ (z\alpha\ +\ z\beta)\ 2$$

n = 78

The minimal sample size was 78 and after considering the 10% drop out, the calculated sample size was:

n = 78 + 10% drop out

n = 87

For objective 4, the sample size calculation was to determine the association between sociodemographic characteristics with QoL among CKD patients in Hospital USM.

p1= 0.203, p2= 0.39, zα=1.96 (α=0.05), zβ= 0.84 (80% power) (Yann Ng et al., n.d.)

$$n = \frac{p1(1 - p1) + p2(1 - p2)}{(p1 - p2)2}\ (z\alpha\ +\ z\beta)\ 2$$

n = 93

The minimal sample size was 93 and after considering the 10% drop out, the calculation sample size was:

n = 93 + 10% drop out

n = 104

3.4.3 Sampling Method

Convenience sampling was used in this study to recruit a sample. Convenience sampling is a non-probability sampling technique in which the researcher selects sample members from only available and easily accessible participants (Stratton, 2021). This method was chosen because it best meets the need of the study as a respondent chosen is best to represent the population of the study. The researcher approached the potential participants who were admitted to medical (7 Utara & 7 Selatan) & surgical (3 Utara & 2 Intan) wards and visited CKD Resource Centre in Hospital USM and fulfilled the inclusion criteria. A set of questionnaires was passed to the voluntary participants. Any patients of the target population who are available at the moment was approached. He or she was asked to participate in the research. If the person showed consent, the questionnaire was given.

3.5 Instrumentation

3.5.1 Instrument

This study assess the QoL among CKD patients in Hospital USM. Data from the respondents were collected via a self-administered questionnaire in this study which consisted of two sections. Section A comprises socio-demographic information, whereas Section B contains questions on QoL.

Section A: Socio-demographic data

This socio-demographic data consisted of 9 questions that included age, sex, ethnicity, religion, marital status, educational level, occupational status, household income, and place of residence.

Section B: QoL among CKD patients

This section has 24 questions to assess the QoL among CKD patients. These questions will be used on multiple Likert scales. KDQOL-36^{TM} has 3 domains: PCS, MCS, and KDCS. In domain one, 21 items were used to assess QoL in the physical component summary domain: 10 for physical function, 4 for role function, 2 for pain, and 5 for general health-related questions. In domain two, 14 items were used to assess QoL in the metal component summary domain: 5 for the physical role, 3 for the emotional role, 2 for the social function, and 4 for energy/fatigue-related questions. In domain three, 43 items were used to assess QoL in kidney disease component summary domains: 12 for symptoms, 8 for effects, 4 for the burden of kidney disease, 2 for work status, 3 for cognitive function, 3 for quality of social interactions, 2 for sexual function, 4 for sleep, 2 for social support, 2 for health staff encouragement, and 1 for a patient satisfaction-related question. (Mahato et al., 2020). Development of the KDQOL-36^{TM} survey measure was supported in part by a subgrant from the University of Arizona to RAND and an unrestricted research grant from Amgen to RAND (Hays et al., 1994). The KDQOL-36^{TM} is a self-report measure developed for individuals with kidney disease and those on dialysis.

3.5.2 Translation of Instrument

In this study, a questionnaire for QoL was used in the Malay version because it was easier for respondents to answer since the native language for Malaysian. The Malay version questionnaire was obtained from RAND Cooperation. The May version of KDQOL-36^{TM} is translated by Marie-Pierre Emery, M.Sc., Director from MAPI Institute (Rand, n.d.).

3.8.3 Validation and Reliability of Instrument

The Malay KDQOL-36^{TM} was found to be a valid and reliable tool to assess the QoL of patients with CKD in Malaysia The acceptable values of alpha, ranging from 0.70 to 0.95 (Tavakol & Dennick, 2011). The overall Cronbach alpha of the Malay KDQOL-36^{TM} was 0.715, whilst the Cronbach alpha of the individual domains ranged from 0.872–0.901. At retest, the intraclass correlation coefficient ranged from 0.584–0.902, indicating moderate to good correlation (Goh et al., 2019).

3.6 Variable

3.6.1 Variable Measurement

The variable used in this research are the dependent variable and independent variable as shown in Table 3.1

Table 3.1 Variables (independent and dependent)

Independent variable	• Selected sociodemographic characteristics (age, sex, ethnicity, religion, marital status, educational level, occupational status, household income, and place of residence)
Dependent variable	• QoL among CKD patients in Hospital USM

3.6.2 Variable Scoring Method

Section A was filled with 10 questions of sociodemographic and measured to self-report by descriptive data for frequency, and percentage. Participates were tick in the box that is suitable for them.

In Section B, at the scoring procedure for the KDQOL SF-36^{TM} have to transform to the raw precoded numeric value of the item to the 0-10 possible range. Higher transformed scores reflect better QoL. However, some of the precoded values are in different directions which is a smaller number reflecting better QoL. Each item is put in the 0 to 100 range so that the lowest and highest possible score are set at 0 and 100 respectively. Scores represent the percentage of the total possible score achieved. Table 3.2 shows the recoding items:

Table 3.2 Recording items

Item numbers	Original response category	To recoded value of
4a-d 5a-c 21	1 2	0 100
3a-j	1 2 3	0 50 100
19a, b	1 2 3 4	0 33.33 66.66 100
10 11a, c 12a-d	1 2 3 4 5	0 25 50 75 100
9b, c, f, g, i, 13e 18b	1 2 3 4 5 6	0 20 40 60 80 100
20	1 2	100 0
1-2 6 8 11b, d 14a-k 15a-h 16a-b 24a-b	1 2 3 4 5	100 75 50 25 0
7 9a, d, e, h 13a-d, f 18 a, c	1 2 3 4 5 6	100 80 60 40 20 0

Three items are not listed in this table (17, 22, 23) because these items need additional instructions. For items 17 and 22 need to multiply by 10 to put on a 0 – 100 possible range. Item 23 is on a 1-7 precoded range. To recode this item, subtract 1 from the precoded value, divide the difference by 6 and multiply by 100.

In the second as a final step, items in the same scale are averaged together to create the scale score. Table 3.3 shows Averaging items to form domains.

Table 3.3 Averaging items to form domains

Domains	**Number of items**	**After recoding per table 3.2, Averaging the following item**
PCS domain		
Physical function	10	3a-j
Physical role	4	4a-d
Pain	2	7-8
General health-related	5	1, 11a-d
MCS domain		9b, c, d, f, h
Emotional well-being	5	4a-d
Emotional role	3	5a-c
Social function	2	6, 10
Energy/fatigue	4	9a, e, g, i
KDCS domain		
Symptoms	12	14a-k
Effects	8	15a-h
Burden of kidney disease	4	12a-d
Work status	2	20, 21
Cognitive function	3	13b, d, f
Quality of social interactions	3	13a, c, e
Sexual function	2	16a, b
Sleep	4	17, 18a-c
Social support	2	19a, b
Staff encouragement	2	24a, b
Patient satisfaction	1	23

The mean and SD in each domain were used to divide the level of QoL into three levels: poor QoL, moderate QoL, and good QoL. For poor QoL, the level was less than the mean-1 SD; for moderate QoL, the level was equal to the mean +/− SD; and for good QoL, the level was more than the mean + 1 SD (Mahato et al., 2020).

3.7 Data Collection Method

Data for this research study was collected after obtaining ethical approval from the Universiti Sains Malaysia Human Research Ethical Committee (HREC) from January 2023 until March 2023. Permission to carry out this study in clinic, medical and surgical