UNIVERSITI PUTRA MALAYSIA

QUALITY OF LIFE AMONG PATIENTS WITH CHRONIC KIDNEY DISEASE UNDERGOING DIALYSIS IN SERDANG HOSPITAL, SELANGOR, MALAYSIA: A CROSSSECTIONAL STUDY

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BACHELOR OF NURSING

2022

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YAP HUI YING

Thesis Submitted to the Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Bachelor of Nursing

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ABSTRACT

Background: The quality of life reflects the patients' health perception and life satisfaction. As the prevalence of chronic kidney disease has increased drastically, the population receiving renoprotection treatment also increased. Renal replacement therapy like dialysis is deemed to increase the life expectancy of patients. Still, dialysis patients have a poor quality of life. Limited studies were done to understand the well-being of dialysis patients in Malaysia. ***Objective:*** The purpose of this study is (1) to study the quality of life among patients with chronic kidney disease undergoing dialysis in a public hospital by using KDQOL^{TM}-36 and (2) to investigate the relationship between sociodemographic characteristics and quality of life. ***Method:*** A cross-sectional observational study was conducted with a sample of 82 dialysis patients at a public hospital in Selangor, using a self-administered questionnaire that encompasses a consent form, sociodemographic information, and Kidney Disease Quality of Life Instrument (KDQOL^{TM}-36). ***Data Analysis:*** The collected data was analysed with the Kolmogorov-Smirnov test to check the normality and completeness of the data. A parametric test (Independent t-test, ANOVA test) or non-parametric test (Mann-Whitney test, Kruskal-Wallis test) was adopted to study the relationship between variables. ***Outcome:*** The PCS and MCS have a mean score of 49.50 ± 25.256 and 58.64 ± 21.606 respectively, which indicates a satisfying quality of life. The sociodemographic characteristics such as age and ethnicity have a significant relation with quality of life, with $p < .05$. ***Conclusion:*** Dialysis patients in Serdang Hospital have a gratifying quality of life.

Keywords: Quality of Life, Patients, Chronic Kidney Disease, Dialysis, KDQOL-36

KUALITI HIDUP DALAM KALANGAN PESAKIT PENYAKIT BUAH PINGGANG KRONIK YANG MENJALANI DIALISIS DI HOSPITAL SERDANG, SELANGOR, MALAYSIA: KAJIAN KERATAN RENTAS.

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ABSTRAK

Latar Belakang: Kualiti hidup adalah mencerminkan persepsi kesihatan dan kepuasan hidup pesakit. Oleh kerana kelaziman penyakit buah pinggang kronik telah meningkat secara drastik, populasi yang menerima rawatan "renoprotection" juga meningkat. Terapi penggantian buah pinggang seperti dialisis dianggap dapat meningkatkan jangka hayat pesakit. Namun begitu, pesakit dialisis masih mengalami kualiti hidup yang teruk. Beberapa kajian telah dilakukan untuk memahami kesejahteraan pesakit dialisis di Malaysia adalah terhad. ***Objektif:*** Tujuan kajian ini adalah (1) untuk mengkaji kualiti hidup dalam kalangan pesakit penyakit buah pinggang kronik yang menjalani dialisis di hospital awam dengan menggunakan KDQOL^{TM}-36 dan (2) untuk menyiasat hubungan antara ciri-ciri sosiodemografi dan kualiti kehidupan. ***Kaedah:*** Kajian pemerhatian keratan rentas melibatkan 82 pesakit dialisis dari sebuah hospital awam di Selangor dengan menggunakan soal selidik yang merangkumi borang kebenaran, maklumat sosiodemografi, dan *Kidney Disease Quality of Life Instrument* (KDQOL^{TM}- 36). ***Analisis Data:*** Data yang dikumpul telah dianalisis dengan *Kolmogorov-Smirnov test* untuk menyemak kenormalan dan kesempurnaan data. Ujian parametrik (*Independent t-test, ANOVA test*) atau ujian bukan parametrik (*Mann-Whitney test, Kruskal-Wallis test*) telah digunakan untuk mengkaji hubungan antara pembolehubah. ***Hasil Kajian:*** PCS dan MCS telah menunjukkan skor min dengan 49.50 ± 25.256 dan 58.64 ± 21.606 yang menunjukkan kualiti hidup yang memuaskan. Ciri-ciri sosio-demografi seperti umur dan etnik mempunyai hubungan yang ketara dengan kualiti hidup, dengan $p < .05$. ***Kesimpulan:*** Pesakit dialisis di Hospital Serdang mempunyai kualiti hidup yang memuaskan.

Kata Kunci: Kualiti Hidup, Pesakit, Penyakit Buah Pinggang Kronik, Dialisis, KDQOL-36

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DECLARATION BY STUDENT

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
BKD	Burden of Kidney Disease
CAPD	Continuous Ambulatory Peritoneal Dialysis
CCPD	Continuous Cycler-Assisted Peritoneal Dialysis
CKD	Chronic Kidney Disease
CRC	Clinical Research Centre
CVI	Content Validity Index
eGFR	Estimated Glomerular Filtration Rate
EKD	Effects of Kidney Disease
ESKD	End-Stage Kidney Disease
H_0	Null Hypothesis
HD	Haemodialysis
HRQOL	Health-related Quality of Life
IBM	International Business Machines Corporation
JKEUPM	Ethics Committee for Research Involving Human Subject UPM
KDIGO	Kidney Disease: Improving Global Outcomes
KDQOL	Kidney Disease Quality of Life Instrument
MCS	Mental Component Summary
MREC	Medical Research and Ethics Committee
NMRR	National Medical Research Register
PCS	Physical Component Summary
PD	Peritoneal Dialysis
QOL	Quality of Life
RAND	Research And Development
RRT	Renal Replacement Therapy
S-CVI/UA	Scale-Level Content Validity Index/ Universal Agreement
SPKD	Symptoms / Problems of Kidney Disease
SPSS	Statistical Package for the Social Sciences
UPM	Universiti Putra Malaysia
WHO	World Health Organisation

CHAPTER 1

INTRODUCTION

1.0 Background

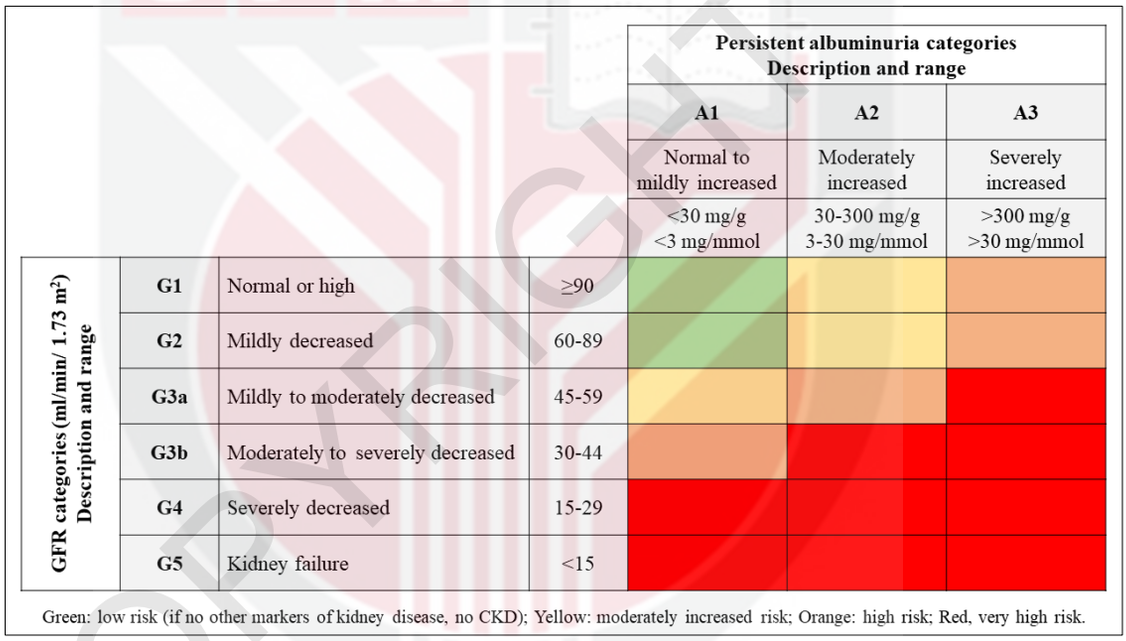
Chronic kidney disease (CKD) is a “silent killer” of humans that contributes to a high morbidity and mortality rate. Most people are unaware they have chronic kidney disease. Indeed, chronic kidney disease would only pose signs and symptoms of kidney failure in the advanced stage since the renal function loses progressively. It is not surprising that people already have developed end-stage kidney disease (EKSD) while seeking medical treatment. Globally, Lv and Zhang (2019) have stated in their study that the estimated prevalence of chronic kidney disease is about 13%. In addition, the pervasiveness of chronic kidney disease in Malaysia has spiked approximately from 9% in 2011 to 15% in 2018 within ten years (Bujang et al., 2017). Thus, chronic kidney disease has become an unavoidable public health issue in Malaysia.

Briefly, an individual is diagnosed with a chronic kidney disease when abnormalities found in either kidney structure or kidney function present for more than three months and severely affect an individual’s health (KDIGO, 2013). It could demonstrate as markedly kidney damage with decreased glomerular filtration rate.

Specifically, chronic kidney disease is graded into five stages based on the estimated glomerular filtration rate (eGFR). The prognosis of chronic kidney disease reflects its relative risks for its outcomes. Figure 1.1 has demonstrated the staging of chronic kidney disease based on glomerular filtration rate, the categorizing of albuminuria, and the prognosis of chronic kidney disease with colour coding.

Figure 1.1

Predicting the prognosis of chronic kidney disease



Note. Prognosis of CKD by GFR and Albuminuria Categories: KDIGO 2012. Adopted from *"Official Journal of the International Society of Nephrology KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease"*, by Kidney Disease: Improving Global Outcomes (KDIGO), 2013.

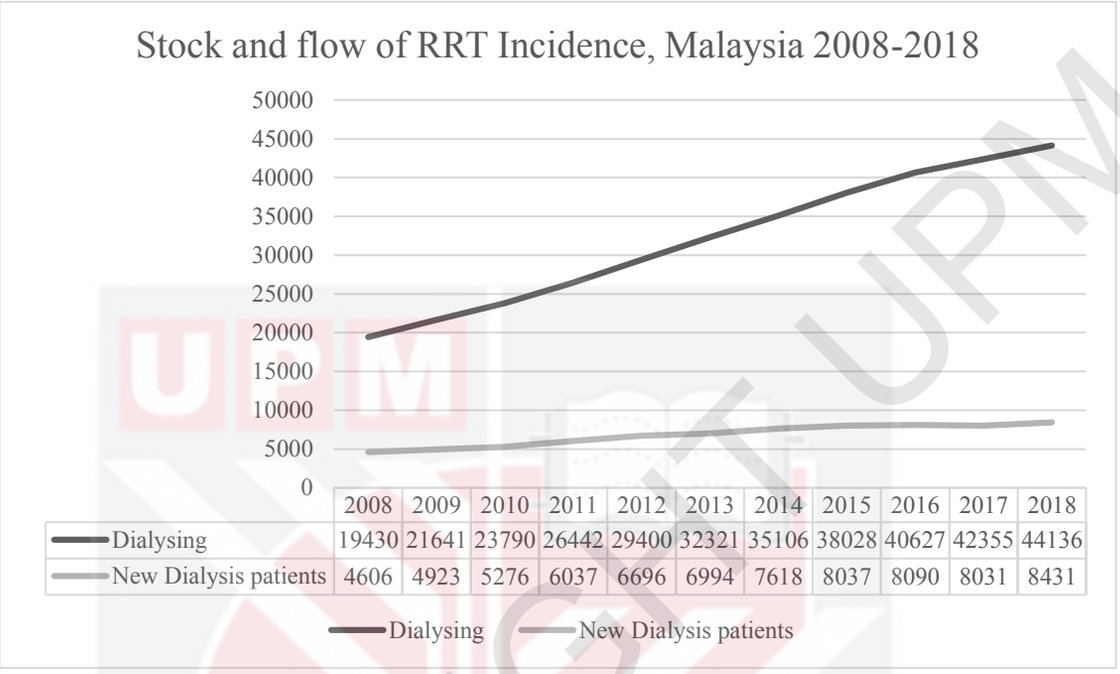
As the renal function is reduced, other chronic kidney disease complications would afflict the individual with chronic kidney disease. Bowling et al. (2011) have

concluded that reduced estimated glomerular filtration rate (eGFR) could provoke high significance of concurrent chronic kidney disease-related complications in any age. The most common complications are anaemia, hypertension, mineral and bone disorder, fluid overload, and electrolytes imbalance (Bello et al., 2017; Ministry of Health Malaysia, 2018). Besides, frailty with muscle weakness, exhaustion, and fatigue are often experienced by individuals with chronic kidney disease for the remaining lifespan. Hence, renal replacement therapy (RRT) is a treatment aimed to slow down the progression of chronic kidney disease and reduce its complications (Ministry of Health Malaysia, 2018).

Renal replacement therapy (RRT) includes dialysis, renal transplant, and palliative care. However, dialysis is often offered with haemodialysis (HD) or peritoneal dialysis (PD) to increase survival, especially in patients with end-stage kidney disease. Nonetheless, the optimal timing for dialysis initiation is unclear. Most guidelines recommend that patients with an estimated glomerular filtration rate of less than 15 mL/min/1.73m^2 receive early renal replacement therapy by undergoing dialysis. Meanwhile, Chan et al. (2019) suggested that patients with advanced chronic kidney disease start dialysis when there are signs and symptoms of kidney failure, inability to control blood volume and pressure, and worsening nutritional status. In Malaysia, the 26th Report of the Malaysian Dialysis and Transplant Registry has revealed a dramatic increase in the number of dialysis patients from 19 million dialysis patients to 44 million dialysis patients within ten years. Indeed, the dialysis patients were made up of 86% haemodialysis patients and 10% peritoneal dialysis patients in 2018 (National Renal Registry Malaysia, 2018).

Figure 1.2

Stock and flow of Renal Replacement Therapy (RRT) Incidence in Malaysia. 2008 – 2018



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Dialysing	19430	21641	23790	26442	29400	32321	35106	38028	40627	42355	44136
New Dialysis patients	4606	4923	5276	6037	6696	6994	7618	8037	8090	8031	8431

Note. Stock and flow of Renal Replacement Therapy (RRT) Incidence in Malaysia. 2008 – 2018. Adapted from "*26th Report of the Malaysian Dialysis and Transplant Registry*", by National Renal Registry Malaysia, 2018.

Of dialysis preserve renal function and slow down the progression, dialysis is still affecting the patients' life. Patients undergoing haemodialysis spend up to four hours removing the waste products and excess fluid. Moreover, haemodialysis performs about three sessions per week and patients need to stay next to the dialysis machine every session. Thus, haemodialysis deems to disturb the daily activities of patients. On the other hand, either continuous ambulatory peritoneal dialysis (CAPD) or continuous cycler-assisted peritoneal dialysis (CCPD), both peritoneal dialysis types seem to be much more convenient than haemodialysis as patients can perform

dialysis at home or overnight to minimise the interference toward daytime work. However, patients undergoing continuous ambulatory peritoneal dialysis would keep the dialysate in the peritoneal cavity for four to six hours, and then remove it from the body. Keeping the dialysate in the body may make the patient feel uneasy and uncomfortable while performing the daily routine. Meanwhile, continuous cycler-assisted peritoneal dialysis that is done overnight could also affect the sleeping quality of the patients. Undoubtedly, dialysis is an effective treatment to delay the progression of kidney disease, but it does bring some difficulties that affect the quality of life of dialysis patients.

1.1 Problem Statement

Based on Clinical Practice Guidelines Management of Chronic Kidney Disease (Second Edition), renoprotection interventions such as blood pressure control, glycaemic control, protein restriction, lipid-lowering, uric acid reduction, miscellaneous agents prevention are the essential treatments for a patient with chronic kidney disease (Ministry of Health Malaysia, 2018). With that, the patient's adherence and compliance towards the treatment is the key to success in delaying the progression of chronic kidney disease. Nevertheless, the treatment could affect the well-being of individuals as they are strictly adhering to nutrition regime, fluid restriction, lifestyle modification, and medical management. Sometimes, patients could suffer from infection over the access site or catheter site, leading to peritonitis or septicaemia.

Quality of life is a complex topic. In fact, World Health Organization (1948) has defined quality of life (QOL) as individuals' perceptions 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. Also, various factors measure individuals' quality of life, such as physical, social, psychological and others. Kharshid et al. (2020) studied patients with chronic kidney disease without dialysis in Penang, Malaysia; they concluded that the health-related quality of life was strongly associated with the severity of chronic kidney disease. Otherwise, limited studies were done to assess the quality of life of chronic kidney disease patients undergoing dialysis in Malaysia. Besides, sociodemographic characteristics also could be the determinants of quality of life. Hence, there is a need to define and understand the quality of life or well-being of dialysis patients with chronic kidney disease and scrutinize its relations with sociodemographic factors.

1.2 Research Objective

1.2.1 General Objective

To study the quality of life among patients with chronic kidney disease undergoing dialysis in Serdang Hospital, Selangor, using KDQOL^{TM}-36.

1.2.2 Specific Objective

i. To describe the sociodemographic characteristics among dialysis patients with chronic kidney disease in Serdang Hospital, Selangor.

ii. To determine the quality of life among dialysis patients with chronic kidney disease in Serdang Hospital, Selangor.

iii. To investigate the relationship between sociodemographic characteristics and quality of life among patients with chronic kidney disease undergoing dialysis in Serdang Hospital, Selangor.

1.3 Research Hypothesis

1.3.1 Null Hypothesis

H_{01}: There is no relationship between sociodemographic characteristics and quality of life among patients with chronic kidney disease undergoing dialysis in Serdang Hospital, Selangor.

1.4 Definition of Term

1.4.1 Quality of Life

Quality of life (QOL) is individuals' perceptions 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 (World Health Organization, 2012). It is a subjective evaluation of an individual's life in terms of positive or negative perspectives. In this study, KDQOL^{TM}-36 will be adopted as the instrument for evaluating the quality of life among patients with chronic kidney disease undergoing dialysis. KDQOL^{TM}-36 determines the quality of life in terms of health perception, the burden of kidney disease, and the effects of kidney disease on daily life.

1.4.2 Chronic Kidney Disease

Chronic kidney disease is known when there is an irreversible change in the structure and function of the kidney for more than three months with or without evidence of kidney damage that affects the body's health (Kalantar-Zadeh et al., 2021; (KDIGO), 2013). Chronic kidney disease is marked by a glomerular filtration rate of less than 60 mL/min/1.73m^2, albuminuria, urine sediment abnormalities, imbalanced electrolytes, structural abnormalities, and history of kidney transplantation (Ministry of Health Malaysia, 2018;

"Summary of Recommendation Statements Chapter 1: Definition and Classification of CKD," 2013).

1.4.3 Dialysis

Dialysis is one of the renal replacement therapies given to patients underlying the late stage of chronic kidney disease. In Malaysia, patients usually receive either hemodialysis or peritoneal dialysis to remove waste products from the body. The main goal of dialysis is to increase the life expectancy of the patient and reduce morbidity. Hemodialysis helps patients remove body toxins through the diffusion of solutes between the blood and a dialysis solution (Dr Anita Bhajan Manocha, 2012a; Ialysis et al., 2009). Likewise, peritoneal dialysis uses a Tenckhoff catheter inserted into the abdominal cavity and administered dialysate to the peritoneal cavity (Dr Anita Bhajan Manocha, 2012b).

1.5 Conceptual Framework

Figure 1.3

Conceptual framework on the quality of life among patients with chronic kidney disease undergoing dialysis

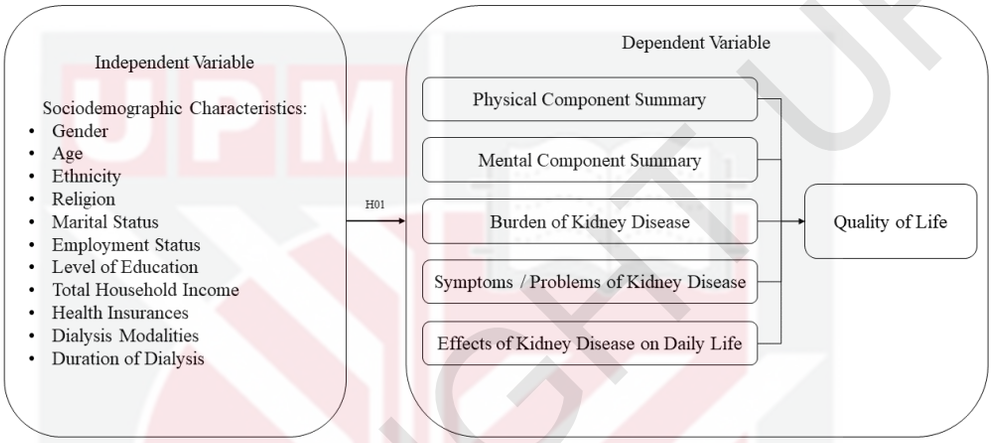


Figure 1.3 revealed the conceptual framework, which has demonstrated the relationship between sociodemographic characteristics and the quality of life of the study. Sociodemographic characteristics are the independent variable. The quality of life is the dependent variable of the study. Sociodemographic characteristics include age, gender, ethnicity, religion, marital status, employment status, level of education, total household income, health insurance, dialysis modalities, and duration of dialysis. Likewise, the physical component summary, mental component summary, the burden of kidney disease, symptoms or problems, and its effects on daily life from KDQOLTM-36 will reflect the quality of life of dialysis patients with chronic kidney disease.

1.6 Significant of theStudy

Mainly, the study aimed to investigate the quality of life among dialysis patients with chronic kidney disease. Using KDQOL^{TM}-36 could help dialysis patients with chronic kidney disease evaluate their quality of life by reflecting on their perceptions of life. Asides from reviewing the effectiveness of the dialysis treatment plan, the study could draw the healthcare profession's attention to the impacts and outcomes of the dialysis treatment plan instead of physical health. Thus, the main goal of the treatment is not only to focus on renoprotection but also patients' mental health. Understanding the quality of life among patients undergoing dialysis is vital in providing nursing care to patients. Indeed, the quality of nursing care given could increase patients' satisfaction and thus improve the well-being of patients.

1.7 Summary

In short, Chapter 1 has mainly discussed the background and the problem statement of the study. In addition, the research objectives and hypothesis have been stated lucidly in this chapter. The conceptual framework also has been shown and explained. In the next chapter, further information regarding the study will be discussed.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

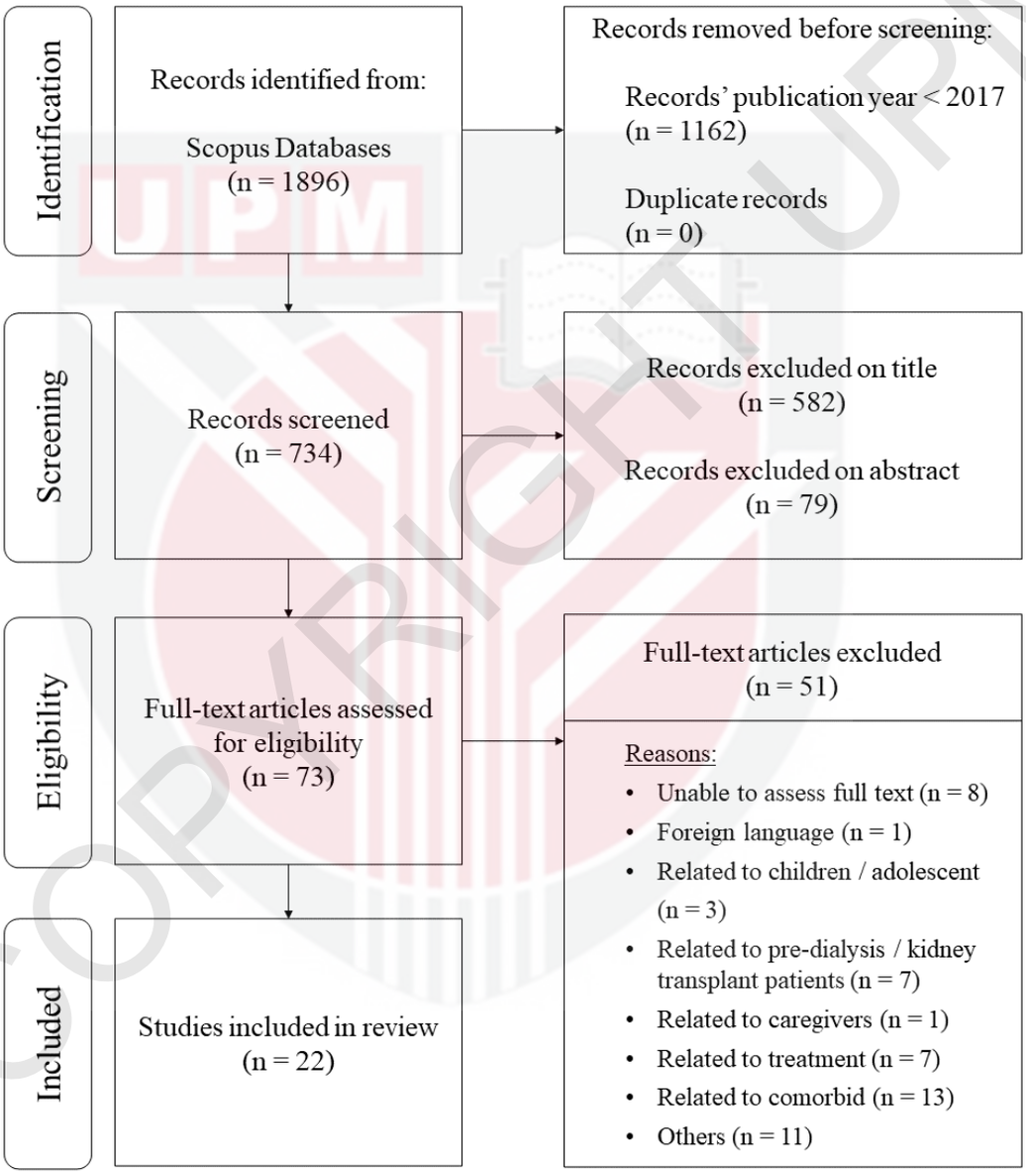
Through Chapter 2, the researcher will elucidate the quality of life among dialysis patients by conducting a systemic literature review of previous studies. By using the PECO search framework, the population was identified as "patients", exposure was identified as "dialysis", and the outcome was identified as "quality of life". With that, keywords including “patient” AND “chronic kidney disease” AND “dialysis” AND “quality of life” has been utilized in searching with Scopus. The process of identifying, screening, including, and excluding records or articles has been demonstrated in Figure 2.1 using a PRISMA four-phase flow diagram.

A total of 1896 results has found in the Scopus database. A screening of pieces of literature will remove based on their title, abstract, and year of publication. So, the outdated (n = 1162), unrelated (n = 661), and duplicated (n = 0) records have pulled out. Then, the screening of full-text records or articles helps assess the eligibility of pieces of literature. Some literatures (n = 51) have excluded with reasons, for example, unable to assess full text (n = 8), foreign language (n = 1), related to children /

adolescent (*n* = 3), related to pre-dialysis / kidney transplant patients (*n* = 7), related to caregivers (*n* = 1), related to treatment (*n* = 7), related to comorbid (*n* = 13), and others (*n* = 11).

Figure 2.1

PRISMA flow diagram



2.1 Sociodemographic Characteristics

Sociodemographic is the combination of the words “social” and “demographic”. Sociodemographic data describes the characteristics of a study population. By reviewing pieces of literature, most studies have proved sociodemographic or personal characteristics could be the factors that influence the well-being of an individual (Alhajim, 2017; Al-mansouri et al., 2021; Balogun et al., 2017; Bayin Donar & Top, 2020; Cruz et al., 2017; Ganu et al., 2018; Gesualdo et al., 2017; Hussien et al., 2021; Joshi et al., 2017; S. Kim et al., 2021; Mahato et al., 2020; Nayana et al., 2017; Sittisongkram et al., 2019). The sociodemographic characteristics mentioned in these studies are age, sex, religion, race, marital status, socioeconomic status, employment status, level of education, health insurance, dialysis modalities, and duration of receiving treatment.

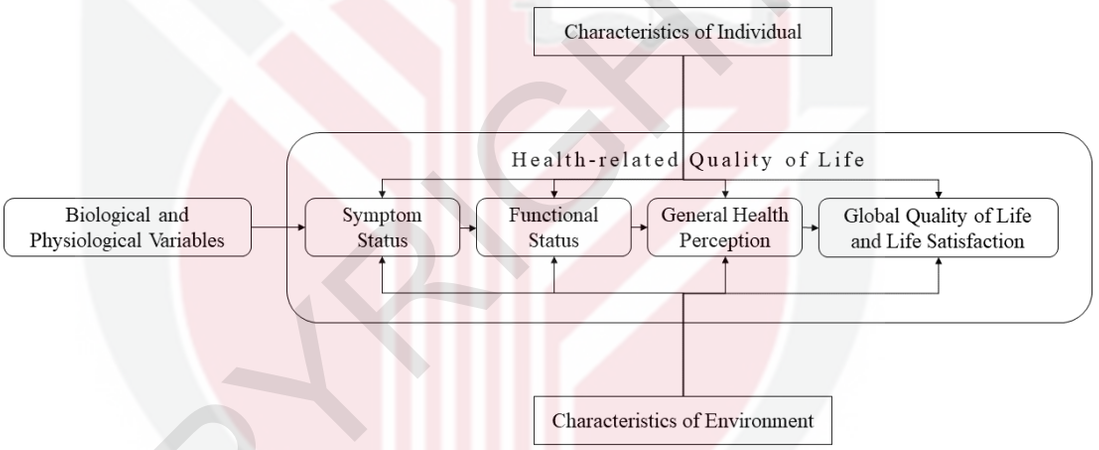
2.2 Quality of Life

In (WHO, 1948) defined health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”. Quality of life or health-related quality of life could be described as the individual satisfaction with life over time. Henceforth, quality of life is a complex subjective evaluation as it considers the overall well-being from different aspects: physical, mental, emotional, and social (Bayin Donar & Top, 2020; Hussien et al., 2021). Besides, a conceptual model for health-related quality of life shown in Figure 2.2 has elucidated the

determinants of the health-related quality of life, encompasses disease symptoms, functional status, health perception, and life satisfaction affected by personal characteristics, environmental factors, biological and physiological factors (Jung & Kim, 2020; Sittisongkram et al., 2019).

Figure 2.2

A conceptual model for health-related quality of life



Note. Conceptual model for health-related quality of life, from "Linking clinical variables with health-related quality of life", by Wilson IB and Cleary PD, *A conceptual model of patient outcomes*. JAMA. 1995; 273:59-65. Copyright © American Medical Association 1995

2.3 Assessment of Quality of Life

There is no gold standard tool for evaluating the quality of life, especially among patients with chronic kidney disease. However, various validated instruments are available to assess the quality of life among patients with chronic kidney disease. Aguiar et al. (2019) have recommended a Sickness Impact Profile, Short Form 36-Item Health Survey (SF-36), Functional Impairment Index, Cantril's Self-Anchoring Scale, Life Satisfaction Scale, Kidney Disease Component Summary, and KDQOL-SF as the questionnaire for determining the quality of life. Usually, the questionnaire will mainly focus on several domains such as physical, mental, and social in investigating the quality of life. Of course, the assessment of the quality of life among dialysis is crucial for the healthcare profession, as it is effective in evaluating and improving the health outcome in decision making the quality of life among patients with chronic kidney disease (Alhajim, 2017; Bayin Donar & Top, 2020). Kim et al. (2021) have suggested an overall mean score of over fifty per cent of the total score could be reputed as good quality of life, and vice versa.

2.4 Quality of Life Among Patients with Chronic Kidney Disease Undergoing Dialysis

Generally, dialysis patients with underlying chronic kidney disease have an impaired quality of life. Alhajim (2017) has found that 58 out of 104 hemodialysis patients in Iraq have been enormously impacted, with a mean score of 39.1±16.1. However, his study only reflected the well-being of hemodialysis patients with a "snap-shot", which means at a point in time. Meanwhile, most studies rarely count on peritoneal dialysis patients that also need attention. Only five studies have touched on the quality of life among peritoneal dialysis patients by comparing them with the hemodialysis group.

The quality of life of dialysis patients is strongly related to physical and emotional welfare (Intas et al., 2020; Khrulev et al., 2019; Nayana et al., 2017). Physical welfare is mainly affected by physical activities, symptoms of kidney disease, the burden of kidney disease (Balogun et al., 2017; Hussien et al., 2021; Khrulev et al., 2019; Mahato et al., 2020). Dialysis patients often experience muscle spasms, skin dryness, nausea, vomiting, chills, and fatigue that would increase the burden of kidney disease (Dąbrowska-Bender et al., 2018). And, the burden of kidney disease becomes even worse when dialysis patients fail to adhere to a therapeutic regime, such as fluid restriction (Pereira & Leite, 2019).

2.5 Relationship Between Sociodemographic Characteristics and Quality of Life

As mentioned, several studies have discussed the effect of sociodemographic characteristics on the dialysis population's well-being. Here, the relationship between each sociodemographic characteristic (age, sex, religion, race, marital status, socioeconomic status, employment status, level of education, health insurance, dialysis modalities, and duration of receiving treatment) and quality of life will be pointed out lucidly.

2.5.1 Age

Age is an unmodified factor in determining the quality of life. Ageing may decrease the physical abilities of an individual. Generally, studies have proposed that age would affect the quality of life. Of these, three studies have shown that ageing is the factor for having a lower quality of life (Alhajim, 2017; Bayin Donar & Top, 2020; Mahato et al., 2020). (Alhajim, 2017) has urged the significance level of the elderly group from the study population in Iraq has a low quality of life with $p = .004$. However, two studies have refuted the statement ageing decreases the quality of life. Joshi et al. (2017) have revealed that elderly patients have a better quality of life with a mean score of 61.11±18.70 in the social domain. Five studies have shown elderly dialysis

patients have the same or even higher quality of life as age-matched or younger individuals (Balogun et al., 2017).

2.5.2 Gender

Gender is the sexual identity of an individual. Two studies have explained that gender does not affect the quality of life, while its significance level is $p = .969$ (Alhajim, 2017) and $p > .05$ (Cantú & Saucedo, 2019). Nonetheless, three studies have suggested gender affects the well-being of dialysis patients. Of these, two studies have learnt female patients have an impaired quality of life (Hussien et al., 2021; Nayana et al., 2017). Only research done by (Gesualdo et al., 2017) has mentioned male patients could experience poor welfare with a five times chance compared to female patients.

2.5.3 Ethnicity

Malaysia is a multi-culture country with different races. However, limited studies have discussed the effects of similar ethnicities on the quality of life of dialysis patients. Only Hussien et al. (2021) have mentioned most patients that have a lower quality of life are Asian and some minor ethnicities.

2.5.4 Religion

Religious practice could strengthen the psychosocial health of an individual. Gesualdo et al. (2017) have indicated patients without clerical practice were about three times more likely to have an impaired quality of life. Also, Cruz et al. (2017) have clarified religious belief and its coping usage could cause an impact on the quality of life.

2.5.5 Marital Status

The presence of a life partner could give social support to the patients. Nayana et al. (2017) have supported that marital status is strongly related to social support. Moreover, the significance level of single patients to have a poor quality of life is $p < .05$ (Al-mansouri et al., 2021), and it is nearly nine times the potential compared or others (Gesualdo et al., 2017).

2.5.6 Employment Status

Employment status is strongly related to socioeconomic status, and it influences the well-being of dialysis patients incidentally. Most studies have concluded that unemployed patients could have a lower quality of life (Al-mansouri et al., 2021; Ganu et al., 2018; Gesualdo et al., 2017; Joshi et al.,

2017; S. Kim et al., 2021). Al-mansouri et al. (2021) compared the quality of life among unemployed patients with other groups and found out the significance level was $p < .05$.

2.5.7 Level of Education

The level of education may indicate the health literacy of an individual. Fives studies have agreed dialysis patients who have a higher education level would have better well-being (Al-mansouri et al., 2021; Bayin Donar & Top, 2020; Ganu et al., 2018; Gesualdo et al., 2017; Hussien et al., 2021). Gesualdo et al. (2017) have contended patients with lower education levels were approximately four times at risk to experience a lower quality of life. Besides, Ganu et al. (2018) believed higher education levels would improve the coping skills of dialysis patients.

2.5.8 Total Household Income

Total household income reflects the socio-economic status of an individual. Studies have proved that socio-economic status has a strong relationship with the quality of life among dialysis patients (Alhajim, 2017; Al-mansouri et al., 2021; Hussien et al., 2021; Joshi et al., 2017; Sittisongkram et al., 2019). Alhajim (2017) has indicated the significance level of lower

socioeconomic status impacts the quality of life negatively is $p = .003$. Plus, Al-mansouri et al. (2021) have concluded dialysis patients with a lower household income would have an impaired quality of life, with $p < .05$.

2.5.9 Health Insurance

Health insurance is an investment that would help cover medical expenses. Limit studies were done to discuss possessing health insurance and its effects on the quality of life. Mahato et al. (2020) have supported patients who owned health insurance could receive better medical services in nephrology clinics. Hence, health insurance improves the quality of life.

2.5.10 Dialysis Modalities

Several studies have compared the quality of life among patients receiving hemodialysis and peritoneal dialysis. Sittisongkram et al. (2019) have justified their findings that peritoneal dialysis patients (68.15 ± 10.07) have a slightly higher mean score of quality of life than hemodialysis patients (67.56 ± 10.61). Nevertheless, they have explained that hemodialysis patients have a better quality of life in terms of physical function, general health, role emotion, work status, and sleep (Sittisongkram et al., 2019). Furthermore, Chuasuwan et al. (2020) have attested peritoneal dialysis patients have a better

quality of life, with the same findings from Hussien et al. (2021) and Alhajim (2017). In contrast, three studies have disputed that dialysis modalities could not affect the quality of life (Aguiar et al., 2019; Cantú & Saucedo, 2019; Rini et al., 2021). Cantú and Saucedo (2019) have highlighted no significant differences between the quality of life of hemodialysis patients and peritoneal dialysis patients, with $p > .05$.

2.5.11 Duration of Dialysis

Four studies have investigated the association between the duration of dialysis and quality of life. Half of these studies found out the dialysis period did not affect the quality of life among patients, with $p > .05$ (Cantú & Saucedo, 2019; Nayana et al., 2017). On the other hand, two studies have clarified a longer duration of undergoing dialysis would decrease the quality of life, with $p < .001$ (Joshi et al., 2017; Sittisongkram et al., 2019).

2.6 Summary

In conclusion, Chapter 2 has exemplified sociodemographic characteristics and their association with the quality of life among dialysis patients with chronic kidney disease. The next chapter will discuss the methodology of the study.

CHAPTER 3

METHODOLOGY

3.0 Introduction

This chapter will discuss the applied research methodology to study the relationship between sociodemographic characteristics and the quality of life among patients with chronic kidney disease undergoing dialysis in Serdang Hospital. Ethical consideration is to protect the privacy and confidentiality of the study's respondents.

3.1 Study Design

The study was conducted in a quantitative method with a descriptive cross-sectional survey. Indeed, a cross-sectional study helps investigate the quality of life among patients with chronic kidney disease undergoing dialysis at a specific point in time, and no long-term follow-up is needed. Besides, Aggarwal and Ranganathan (2019) have explained that a cross-sectional study is beneficial in determining the disease burden and healthcare needs. A cross-sectional study is low-cost and much instantaneously to conduct. However, it is susceptible to biases, such as nonresponse bias and recall bias (Wang & Cheng, 2020).

3.2 Study Location

The study was conducted at the nephrology ward and clinics in Serdang Hospital, Selangor, Malaysia. The nephrology ward and clinics involved 7A Ward, nephrology clinic, and dialysis unit. Briefly, Serdang Hospital is a referral government hospital located in Mukim Dengkil, Sepang District, Selangor Darul Ehsan. It is placed between the South Kajang Valley Expressway (SKVE) on the east and the Faculty of Medicine and Health Sciences (FMHS) of Universiti Putra Malaysia (UPM) on the west. Besides, Serdang Hospital is a multi-speciality hospital with six hundred and twenty beds and various healthcare facilities. It provides inpatient and outpatient healthcare services to approximately five hundred and seventy thousand residents staying in Serdang, Putrajaya, Kajang and Bangi areas. In addition, Serdang Hospital is a teaching hospital for Universiti Putra Malaysia (UPM), especially for medical students (Hospital Serdang, 2021a). Indeed, Serdang Hospital provides comprehensive, affordable, safe, friendly, caring, efficient and cost-effective nephrology services such as dialysis to patients (Hospital Serdang, 2021b). Therefore, Serdang Hospital chose as the research location.

3.3 Study Duration

The study was conducted for about ten months, from February 2022 to November 2022. The duration for data collection took around three months, from April 2022 to June 2022. Refer to Gantt Chart as Appendix VI in the Appendix.

3.4 Study Population

The population considered in the study are inpatients admitted to the 7A ward and outpatients who visit the nephrology clinic and dialysis unit in Serdang Hospital, Selangor. The estimated population size (number of dialysis patients) is approximately four hundred people.

3.5 Study Sampling

3.5.1 Sampling Method

The study used a convenience sampling method throughout the data collection. A convenience sampling method is a form of non-probability sampling that allows the participants to decide their wish to participate in the study or not (Stratton, 2021). It aids the researcher to collect a large number of responses within a short period.

3.5.2 Sample Size

The sample size of the study was determined with a formula developed by Cochran Gemmell William in 1977. The Cochran Formula was suitable for all finite populations or infinite populations (Uakarn et al., 2021). The calculation formula is:

$$n = \frac{p(1-p)}{\frac{e^2}{z^2} + \frac{p(1-p)}{N}}$$

While

n = sample size

N = population size

e = acceptable sampling error

p = the population proportions

z = z value at reliability level at 95% or significance level at 0.05

So,

N = 400 e = 0.05 p = 0.5 z = 1.96

$$n = \frac{0.5(1-0.5)}{\frac{0.05^2}{1.96^2} + \frac{0.5(1-0.5)}{400}}$$

$$n = \frac{0.25}{0.001275770512}$$

$n = 195.9600082$

$n \approx 196$

Allowing a 10% of non-response rate,

$n = 196 + (196 \times {}^{10}/_{100})$

$n = 196 + 19.6$

$n = 215.6$

$n \approx 216$

Therefore, the final sample size of the study was 216 participants.

3.6 Participant's Criteria

The study involved inpatients and outpatients who are receiving dialysis treatment at Serdang Hospital, Selangor. The participants should fulfil the stated criteria to involve in the study.

3.6.1 Inclusion Criteria

- Malaysian
- Aged 18 years old and above
- Initiation of dialysis at least three months
- Chronic kidney disease staging from moderate to advanced

3.6.2 Exclusion Criteria

- Have a cognitive impairment
- Underlying acute kidney disease
- Received kidney transplant

3.7 Study Instrument

The study was conducted using a questionnaire as the research instrument. A questionnaire could gather information and ease the data collection from a large population within a period (Chirk et al., 2006).

3.7.1 Questionnaire

The employed instrument in the study was the Kidney Disease Quality of Life Instruments, KDQOL^{TM}-36 Survey in English by RAND Corporation, Malay translation by Goh et al. in 2019, and Mandarin Chinese translation by Amgen, Inc. and MAPI Institute (provided by RAND Corporation). KDQOL^{TM}-36 is a health survey that consists of 36 items (RAND Corporation, n.d.). It helps evaluate the quality of life of individuals underlying kidney disease and receiving dialysis (Hays et al., 1994).

The questionnaire of the study included two parts: Part I and Part II. Part I would inquire about sociodemographic information (11 items). It included age, gender, ethnicity, religion, marital status, employment status, level of education, total household income, health insurance, dialysis modalities, and duration of dialysis. Meanwhile, Part II consists of the KDQOL^{TM}-36 Survey that evaluates kidney disease and quality of life, which breaks into three sections as follows:

(i) Section A: Physical Component Summary (PCS) and Mental Component Summary (MCS) (12 items),

(ii) Section B: Burden of Kidney Disease (BKD) (4 items) and Symptoms or Problems of Kidney Disease (SPKD) (12 items),

(iii) Section C: Effects of Kidney Disease (EKD) (8 items).

3.7.2 Scoring System

3.7.2.1 Part II: Kidney Disease and Quality of Life

KDQOL^{TM}-36 contained five subscales: Physical Component Summary (PCS), Mental Component Summary (MCS) from SF-12 as a generic core, Burden of Kidney Disease (BKD), Symptoms or Problems of Kidney Disease (SPKD), and Effects of Kidney Disease (EKD) (Cohen et al., 2019). The Short Form 12 items (SF-

12) were scored using T-score metrics, with a higher score reflecting a better health-related quality of life (HRQOL) (Peipert et al., 2019). The Burden of Kidney Disease (BKD) encompassed five response options with a range of "definitely true" to "definitely false". The Symptoms or Problems of Kidney Disease (SPKD) and the Effects of Kidney Disease (EKD) encompassed five response options ranging from "not at all bothered" to "extremely bothered".

First, all response options will be coded into numeric values such as 1 to 5 or even 6. The pre-coded numeric values of the response options will then transform into a 0 - 100 possible range indicating the quality of life (Refer to Table 3.2).

Table 3.1

Item numbers and their corresponding subscales

Item Numbers	**Subscales**	**k**
1-12	Physical Component Summary (PCS), Mental Component Summary (MCS)	12
13-16	Burden of Kidney Disease (BKD)	4
17-28	Symptoms / Problems of Kidney Disease (SPKD)	12
29-36	Effects of Kidney Disease (EKD)	8

Table 3.2

Recode values corresponding to response options of items

Item Numbers	Original Response Category	To recode value of
i4 – i7	1	0
	2	100
i2-i3	1	0
	2	50
	3	100
i12-i16	1	0
	2	25
	3	50
	4	75
	5	100
i1, i8, i17-i27, i28a, i28b, i29-i36	1	100
	2	75
	3	50
	4	25
	5	0
i11	1	0
	2	20
	3	40
	4	60
	5	80
	6	100
i9-i10	1	100
	2	80
	3	60
	4	40
	5	20
	6	0

Note. Raw numeric values have recoded with the referral of *"Kidney Disease Quality of Life Short Form (KDQOL-SF), Version 1.3: A manual for use and scoring PCAR (NCI) View project PROMIS View project"*, by Ronald D Hays & Coons, 1997. https://www.researchgate.net/publication/274568265

3.8 Pre-test

No pre-test was done in the study as KDQOL^{TM}-36 has been used in several studies. It was adopted as the research instrument in previous research conducted in the United States (Cohen et al., 2019; Ricardo et al., 2013), Egypt (Nagy et al., 2021), Hong Kong (Chen et al., 2016), Singapore (Yang et al., 2013), and Malaysia (Goh et al., 2019).

3.9 Validity and Reliability

KDQOL^{TM}-36 was a decisive assessment tool in evaluating health-related quality of life, either in English, Malay or Chinese versions (Chen et al., 2016; Goh et al., 2019; Ricardo et al., 2013; Yang et al., 2013).

3.9.1 Validity

Content validity has defined as the degree of appropriateness of items or scales in an instrument (Salkind, 2012). A content validity index (CVI) evaluates the content availability in quantitative evaluation. The recommended scale-level content validity index/ universal agreement (S-CVI/UA) not be lower than 0.8 for good validity of the indicator scale (Shi et al., 2012). All subscales from KDQOL^{TM}-36 have a content validity index of more than 0.9

(Chen et al., 2016). Therefore, KDQOL^{TM}-36 is a valid questionnaire. Refer to the validity test for KDQOL^{TM}-36 as Appendix II in the Appendix.

3.9.2 Reliability

Reliability has defined as the degree of freedom from measurement error in an instrument. Cronbach's alpha determines the internal consistency and reliability of the scales. The recommended Cronbach's alpha reliability coefficient is 0.7 to 0.9 for sufficient internal consistency (Jensen, 2003). Nevertheless, Cronbach's alpha reliability coefficient greater than 0.9 showed excellent internal consistency. The English KDQOL^{TM}-36 has a Cronbach's alpha reliability coefficient greater than 0.8 (Chen et al., 2016). Likewise, the Malay KDQOL^{TM}-36 has a Cronbach's alpha reliability coefficient greater than 0.8 for each domain (Goh et al., 2019). Thus, KDQOL^{TM}-36 is a reliable questionnaire. Refer to the reliability test for KDQOL^{TM}-36 as Appendix III and IV in the Appendix.

3.10 Data Collection

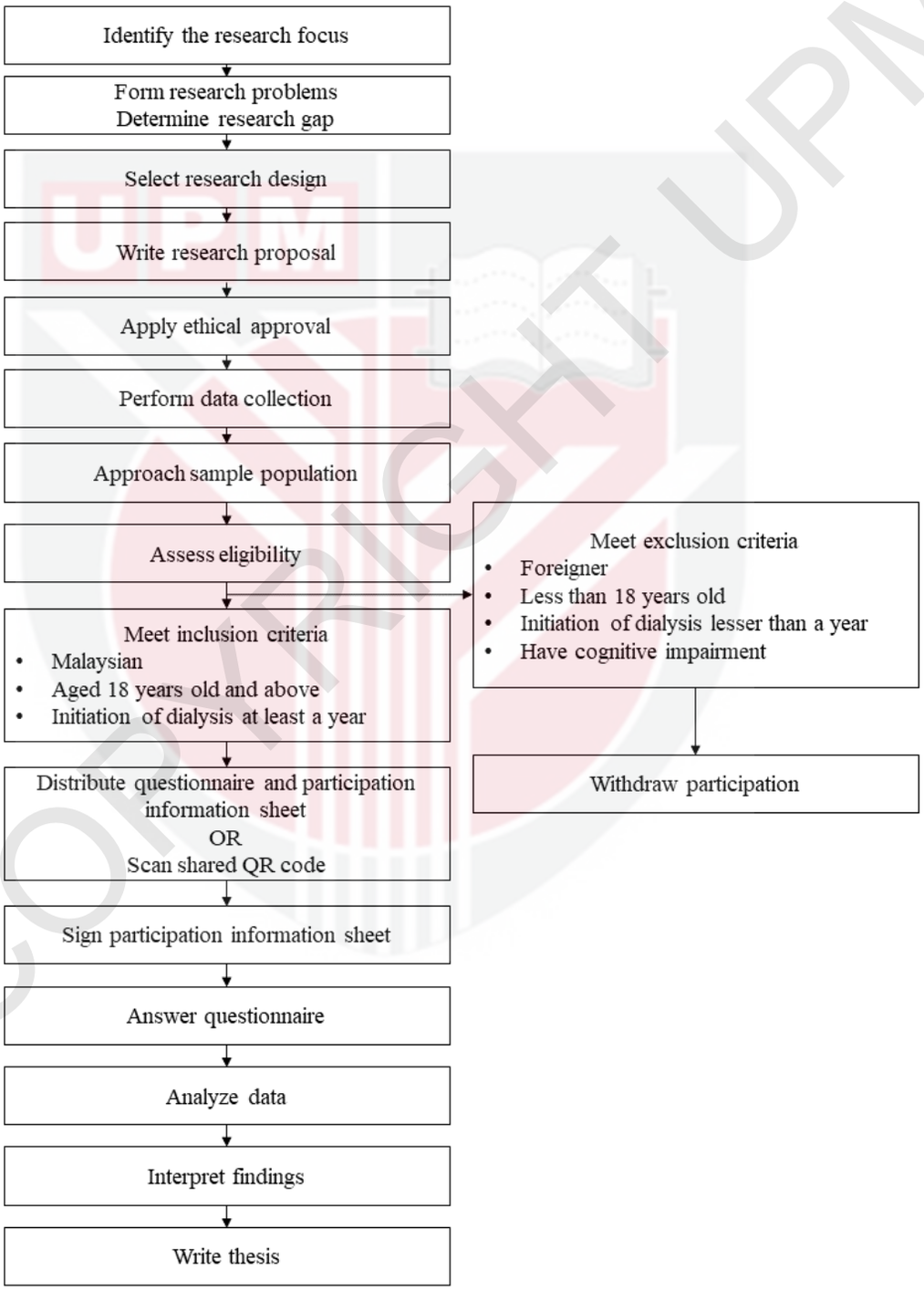
Data collection started right after receiving the ethical approval of the study. The researcher visited Serdang Hospital physically following standard operating procedures. The researcher would initiate communication with the patients in Serdang

Hospital by introducing and explaining the study to patients. Of course, the participants were recruited based on the inclusion and exclusion criteria. The patients who were interested in answering the questionnaire and fulfilled the prerequisites would be known as participants. Then, the researcher distributed the printed questionnaire with a participation information sheet to the participants. At first, the printed questionnaire was prepared in bilingual (Malay and English). Participants have a few minutes to read the consent and understand their rights throughout the participation. Participants who agreed to their involvement and signed the consent will answer the questionnaire in 15 minutes. Later, the researcher will collect the completed questionnaire and check its completeness.

However, there were some difficulties faced by the participants while answering the printed questionnaire: (1) the printing fonts were too small and (2) some participants could not read in both Malay and English. Hence, an online questionnaire was prepared in three languages (Malay, English and Chinese) and shared through a QR code (Refer to Appendix V), which is linked to Google Form (https://forms.gle/5MAeuvmCka1hVjEz7). Then, the researcher would share the QR code among participants to scan the QR code and allow answering the questionnaire online.

Figure 3.1

Study flowchart of quality of life among patients with chronic kidney disease undergoing dialysis in Serdang Hospital, Selangor, Malaysia: a cross-sectional study



3.11 Data Analysis

The study has utilized IBM Statistical Package for Social Science version 22.0 (SPSS v22.0) for Windows as the primary tool for analyzing the data. All data would present in the constructed tables in Chapter 4.

3.11.1 Descriptive Analysis

A descriptive analysis would show the main features of the collected data. Before statistical analysis, all variables had been evaluated as dedicated to data types. For example, the categorical data would only demonstrate frequency and percentage. Meanwhile, the continuous data would check its completeness and normality by applying the Shapiro-Wilk or Kolmogorov-Smirnov test. According to Mishra et al. (2019), the Shapiro-Wilk test is suitable for a sample size of less than 50, whereas the Kolmogorov-Smirnov test is suitable for a sample size of 50 and above. At significance level $p > .05$, the data has a normal distribution. Also, skewness and kurtosis of data would check and determine the symmetry and peakedness of the distribution. Kim (2013) has recommended another z-test to determine the normality of the data by dividing skew values or excess kurtosis with its standard error. The z-value between -1.96 and +1.96 would affirm the null hypothesis, in which the data is normally distributed with $\alpha = .05$.

3.11.2 Inferential Analysis

An inferential analysis would perform to investigate the relationship between sociodemographic characteristics and quality of life among dialysis patients with chronic kidney disease. The test was performed depending on the normality of the data. Sociodemographic characteristics (independent variable) were categorical data, and quality of life (dependent variable) was continuous data. Therefore, the parametric test would be performed with an independent t-test (for categorical data with two groups) or a one-way ANOVA test (for categorical data with more than two groups) if the data has a normal distribution. In contrast, the nonparametric test will be performed with the Mann-Whitney test (for categorical data with two groups) or the Kruskal-Wallis test (for categorical data with more than two groups) if the data does not have a normal distribution. A $p \leqslant .05$ indicates it is statistically significant that there is a strong relationship between the two variables.

3.12 Gantt Chart

Refer to Appendix VI

3.13 Budget

Refer to Appendix VII

3.14 Ethical Consideration

The study had applied for ethical approval through National Medical Research Registry (NMRR) and Medical Research and Ethics Committee (MREC) since the study will involve human subjects that visit the Ministry of Health facilities.

Written permission had given to the following parties:

- Clinical Research Centre (CRC)
- Director of Serdang Hospital
- The head of the department or representative of the nephrology department at Serdang Hospital
- The Matron or Sister of the respective clinics and wards
- Ethics Committee for Research Involving Human Subject UPM (JKEUPM)
- Deputy of Dean Research (Research and Internalization)
- Informed consent for respondents

Furthermore, respondents involved in the study received a participation information sheet with the questionnaire. By signing the consent, respondents believed in being understood and aware of their rights to confidentiality. The respondents could withdraw their involvement as they perceived a violation of rights. In addition, the researcher considered the language used in the questionnaire appropriate, without discriminative or abusive words. Next, the report or publication would declare in general, without identifying the features of the respondents. All data and printed materials would save in the facility for at least five years. Also, the researcher would manage and assess all downloaded data on a password-protected computer, USB flash drive or hard disc that could only retrieve by the researcher, qualified monitors and auditors, the sponsors, its affiliates, and governmental or regulatory authorities.

3.15 Summary

In brief, Chapter 3 has illustrated the research design, research method, research site, sampling method, and research instruments in the study.

CHAPTER 4

RESULTS

4.0 Introduction

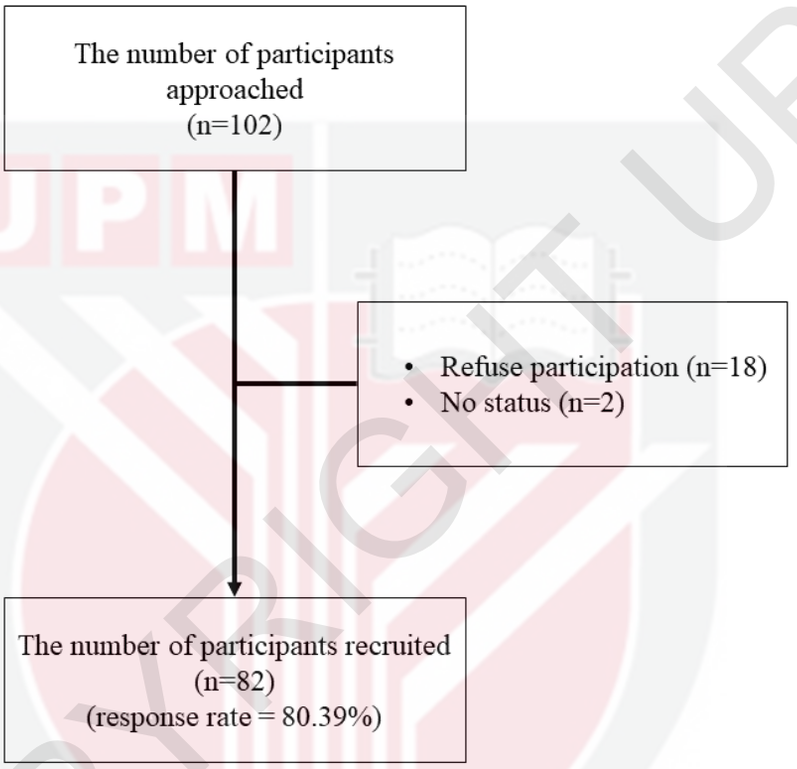
Chapter 4 will demonstrate and interpret the findings of the study based on the participants' sociodemographic characteristics and the assessment of their quality of life, followed by the association of the sociodemographic characteristics and the quality of life among dialysis patients.

4.1 Response Rate

Ideally, the research required 216 subjects from Serdang Hospital. The questionnaire was only distributed to 102 individuals because of the short data collection period and the small number of peritoneal dialysis patients. In fact, peritoneal dialysis patients only visit the hospital on appointment days. Of these, 82 individuals completed the questionnaire. The response rate was equal to the percentage of complete surveys over the number of distributed surveys. Therefore, the response rate is 80.39%. Figure 4.1 figured out the recruitment of the respondents throughout the study.

Figure 4.1

Recruitment of participants throughout the study



4.2 Descriptive Analysis

4.2.1 Sociodemographic characteristics among dialysis patients with chronic kidney disease in Serdang Hospital, Selangor.

All collected data has been presented in Table 4.1 with regard to frequency and percentage. A total of 82 respondents from Serdang Hospital were involved in the study. Of these, 46 respondents were male (56.1%), and 36 respondents were female (43.9%). Most of the respondents were Malay (65.9%, *n* = 54) and believed in Islam (68.3%, *n* = 56). Some respondents were of other ethnicities (4.9%, *n* = 4), such as Iban, Sabahan, and Indonesian. More than half of the respondents were married (69.5%, *n* = 57). The respondents were aged between 45 to 54 years old (34.1%, *n* = 28). Besides, most respondents were retired (50%, *n* = 41) and had a secondary education level (52.4%, *n* = 43). Only 9.8% (*n* = 8) of the respondents were from the T20 incoming group with a total household income of more than RM10,960; otherwise, most of the respondents were from the B40 incoming group with a total household income of less than RM4,850 contributed to 73.2% (*n* = 60). Also, 15.9% of the respondents (*n* = 13) owned health insurance such as AIA, PRUBSN, and TAKAFUL. Next, 79.3% of the respondents received hemodialysis (*n* = 65), while 20.7% received peritoneal dialysis (*n* = 17) in Serdang Hospital. It was surprisingly found that most of the respondents have been receiving dialysis treatment for more than three years (75.6%, *n* = 62).

Table 4.1

Descriptive statistical analysis for sociodemographic characteristics among dialysis patients (N = 82)

Sociodemographic Characteristics	*n*	%
Gender		
Male	46	56.1
Female	36	43.9
Age		
18 – 24	2	2.4
25 – 34	11	13.4
35 – 44	13	15.9
45 – 54	28	34.1
55 – 64	10	12.2
≥ 65	18	22.0
Ethnicity		
Malay	54	65.9
Chinese	21	25.6
India	3	3.7
Others	4	4.9
Religion		
Islam	56	68.3
Buddha	16	19.5
Hindu	3	3.7
Christian	7	8.5
Others	0	0.0
Marital Status		
Single	14	17.1
Married	57	69.5
Divorced / Widowed	11	13.4

Employment Status		
Employed	21	25.6
Retired	41	50.0
Student	1	1.2
Unemployed	19	23.2
Level of Education		
No formal education	3	3.7
Primary education	9	11.0
Secondary education	43	52.4
Tertiary education	27	32.9
Total Household Income		
< RM4, 850	60	73.2
RM4, 850 – RM10, 959	14	17.1
≥ RM10, 960	8	9.8
Health Insurance		
No	69	84.1
Yes	13	15.9
Dialysis Modalities		
Hemodialysis	65	79.3
Peritoneal Dialysis	17	20.7
Duration of Dialysis		
< 1 year	10	12.2
1 – 3 years	10	12.2
> 3 years	62	75.6

4.2.2 Quality of life among dialysis patients with chronic kidney disease in Serdang Hospital, Selangor.

Table 4.3 showed the mean score for each domain, including physical component summary (PCS), mental component summary (MCS), the burden of kidney disease (BKD), symptoms or problems of kidney disease (SPKD), and effect of kidney disease (EKD), respectively. The study included 82 dialysis patients in Serdang Hospital; since then, the Kolmogorov-Smirnov test was performed to test the normality of the data. Table 4.2 displayed the determination of the normality of data by using the z-test and Kolmogorov-Smirnov test.

The Kolmogorov-Smirnov test showed only the physical component summary (PCS) had a normal data distribution with a significance level of p = .069 higher than the alpha level of 0.05. However, the z-test presented that mental component summary (MCS) ($Z_{skewness}$= 0.0402), and burden of kidney disease (BKD) ($Z_{skewness}$= 0.808) were also normally distributed. In contrast, the distribution of symptoms or problems of kidney disease (SPKD) (p = .000, $Z_{skewness}$ = -2.921) and effects of kidney disease (EKD) (p = .010, $Z_{skewness}$ = -3.083) were negatively skewed, $p < .05$ and $z < -1.96$.

Physical component summary (PCS) had a mean of 49.59 (SD = 25.168), skewness of 0.204, and kurtosis of -0.938. Next, the mental summary

component (MCS) comprised a mean of 58.64 (*SD* = 21.606); skewness, 0.107; kurtosis, -0.915. These findings revealed that the quality of life among dialysis patients was satisfactory in psychological health but slightly diminished in physical health generally in Serdang Hospital.

Meanwhile, the burden of kidney disease (BKD) manifested the lowest mean of 43.45 (*SD* = 21.958); with skewness and kurtosis of 0.215 and -0.265, respectively. A low mean score of the burden of kidney disease (BKD) reflected that chronic kidney disease was time-consuming (*M* = 33.84, *SD* = 26.461) and much interfered with the daily life of dialysis patients (*M* = 32.62, *SD* = 29.837) in the Serdang Hospital. Conversely. the symptoms or problems of kidney disease (SPKD) showed the highest mean score of 78.79 (*SD* = 13.897) with skewness of -0.777 and kurtosis of 0.077. Hence, most symptoms or problems experienced by dialysis patients were dry skin (*M* = 66.16, *SD* = 30.013) and washed out (*M* = 69.21, *SD* = 26.146). Lastly, the effect of kidney disease (EKD) presented a mean of 71.04 (*SD* = 22.455) and had a skewness and kurtosis of -0.820 and 0.377. Undoubtedly, fluid restriction (*M* = 63.11, *SD* = 33.845) gave the greatest impact on dialysis patients with underlying chronic kidney disease.

Besides, a Cronbach's alpha reliability test was performed to check the reliability of KDQOL^{TM}-36 and each domain or scale. According to Peipert et al. (2019), α coefficients less than 0.4 was marginal; within 0.40 to 0.75 was

good; higher than 0.75 was excellent. Generally, KDQOL^{TM}-36 revealed a good Cronbach's alpha with a value of 0.739. Also, each scale of KDQOL^{TM}-36 has demonstrated good reliability with α coefficients of each scale ranging from 0.599 to 0.892 as shown in Table 4.3.

Table 4.2

Determination for the normality of data with the Z-test and Kolmogorov-Smirnov test (N = 82)

Domain	Skewness	SE skewness	Z skewness	Kurtosis	SE kurtosis	Z kurtosis	Kolmogorov-Smirnov
PCS	0.204	0.266	0.767	-0.938	0.526	-1.808	.069
MCS	0.107	0.266	0.402	-0.915	0.526	-1.740	.022*
BKD	0.215	0.266	0.808	-0.265	0.526	-0.504	.002*
SPKD	-0.777	0.266	-2.921*	0.077	0.526	0.146	.000*
EKD	-0.820	0.266	-3.083*	0.337	0.526	0.641	.010*

*Reject the null hypothesis that the data were normally distributed, $p < .05$ or $z < -1.96$, $z > +1.96$.

Abbreviation: SE, standard error; PCS, physical component summary; MCS, mental component summary; BKD, burden of kidney disease; SPKD, symptoms/problems of kidney disease; EKD, effect of kidney disease.

Table 4.3

Descriptive statistical analysis and reliability analysis for KDQOL™-36 among dialysis patients (N = 82)

	Domain	Number of Items	Mean ± SD	95% CI	Cronbach's alpha
Physical Component Summary		**6**	**49.59 ± 25.168**	**44.06 – 55.12**	**0.708**
1	In general, would you say your health is		43.90 ± 23.753	38.68 – 49.12	
2	Moderate activities		54.27 ± 39.441	45.60 – 62.93	
3	Climbing several flights of stairs		54.27 ± 40.216	45.43 – 63.10	
4	Accomplished less than you would like		47.56 ± 50.248	36.52 – 58.60	
5	Were limited in the kind of work or other activities		30.49 ± 46.319	20.31 – 40.67	
8	How much did pain interfere with your normal work		67.07 ± 30.651	60.34 – 73.81	
Mental Component Summary		**6**	**58.64 ± 21.606**	**53.89 – 63.39**	**0.599**
6	Accomplished less than you would like		53.66 ± 50.173	42.63 – 64.68	
7	Didn't do work or other activities as carefully as usual		43.90 ± 49.932	32.93 – 54.87	
9	Have you felt calm and peaceful		66.34 ± 29.959	59.76 – 72.92	
10	Did you have a lot of energy		53.17 ± 26.892	47.26 – 59.08	
11	Have you felt downhearted and blue		70.73 ± 26.517	64.91 – 76.56	
12	How much of the time has your physical health or emotional problems interfered with your social activities		64.02 ± 32.890	56.80 – 71.25	

Burden of Kidney Disease		**4**	**43.45 ± 21.958**	**38.62 – 48.27**	**0.733**
13	My kidney disease interferes too much with my life		32.62 ± 29.837	26.07 – 39.18	
14	Too much of my time is spent dealing with my kidney disease		33.84 ± 26.461	28.03 – 39.66	
15	I feel frustrated dealing with my kidney disease		56.71 ± 29.410	50.25 – 63.17	
16	I feel like a burden on my family		50.61 ± 31.908	43.60 – 57.62	
Symptoms / Problems of Kidney Disease		**12**	**78.79 ± 13.897**	**75.73 – 81.84**	**0.802**
17	Soreness of muscle		73.71 ± 26.580	67.33 – 79.01	
18	Chest pain		85.67 ± 24.855	80.21 – 91.13	
19	Cramps		74.39 ± 27.210	68.41 – 80.37	
20	Itchy skin		72.26 ± 26.933	66.34 – 74.02	
21	Dry skin		66.16 ± 30.013	59.56 – 72.75	
22	Shortness of breath		90.24 ± 17.897	86.31 – 94.18	
23	Faintness or dizziness		80.49 ± 24.224	75.17 – 85.81	
24	Lack of appetite		83.23 ± 24.234	77.91 – 88.56	
25	Washed out or drained		69.21 ± 26.146	63.46 – 74.95	
26	Numbness in hands or feet		78.96 ± 22.037	74.12 – 83.81	
27	Nausea or upset stomach		86.59 ± 21.586	81.84 – 91.33	
28	Problems with your access site/catheter site		85.06 ± 23.194	79.96 – 90.16	

Effects of Kidney Disease		**8**	**71.04 ± 22.455**	**66.10 – 75.97**	**0.892**
29	Fluid restriction		63.11 ± 33.845	55.67 – 70.55	
30	Dietary restriction		70.73 ± 28.000	64.58 – 76.88	
31	Your ability to do work around the house		71.65 ± 27.989	65.50 – 77.80	
32	Your ability to travel		58.54 ± 31.967	51.51 – 65.56	
33	Being dependent on doctors and other medical staff		81.71 ± 25.474	76.11 – 87.30	
34	Stress or worries caused by kidney disease		73.78 ± 26.342	68.00 – 79.56	
35	Your sex life		73.78 ± 32.608	66.62 – 80.95	
36	Your personal appearance		75.00 ± 30.932	68.20 – 81.80	

Note. An intraclass correlation coefficient was performed with Cronbach's alpha test with a value of < 0.40, marginal; 0.40–0.75, good; and > 0.75, excellent. Adapted from "Kidney disease quality of life 36-item short form survey (KDQOL-36) normative values for the United States dialysis population and new single summary score" by Peipert, J. D., Nair, D., Klicko, K., Schatell, D. R., & Hays, R. D., 2019, *Journal of the American Society of Nephrology*, *30*(4), 654–663. https://doi.org/10.1681/ASN.2018100994/-/DCSUPPLEMENTAL

Abbreviation: SD, standard deviation; CI, confidence interval.

4.3 Inferential Analysis

4.3.1 Relationship between sociodemographic characteristics and quality of life among dialysis patients underlying chronic kidney disease in Serdang Hospital.

Table 4.4 demonstrated the inferential analysis of the normality of data and the types of data. Parametric tests such as independent t-test and ANOVA test were utilized to check the relation of the sociodemographic characteristics and physical component summary (PCS), mental component summary (MCS), and burden of kidney disease (BKD). Meanwhile, non-parametric tests (Mann-Whitney test and Kruskal-Wallis test) were applied to determine the relationship between sociodemographic characteristics with symptoms or problems of kidney disease (SPKD) and the effect of kidney disease (EKD). The test alpha level was 0.05.

The physical component summary (PCS), mental component summary (MCS), and burden of kidney disease (BKD) showed no statistical differences between sociodemographic characteristics groups with a significance level of $p > .05$. Nevertheless, the symptoms or problems of kidney disease (SPKD) provided substantial evidence of having relations with sociodemographic characteristics such as ethnicity, $\chi^2(3) = 8.176$, $p = .043$. Besides, the effect of

kidney disease (EKD) was strongly associated with age, $\chi^2(5) = 11.554$, $p = .041$.

Interestingly, the burden of kidney disease (BKD) did not show critical differences among dialysis modalities with $t(80) = -1.876$, $p = .064$ but nearly to a significance level of 0.05. There was strong evidence demonstrating that statement "I feel frustrated dealing with my kidney disease" from the burden of kidney disease (BKD) was a significant difference between the haemodialysis group ($M = 53.46$, $SD = 30.90$) and the peritoneal dialysis group ($M = 69.12$, $SD = 18.81$) by giving a value of $t(41.392) = -2.628$, $p = .012$ (Table 4.5).

Next, the duration of dialysis did not present a crucial association between all domains at $p = .05$. There was not a significant differences of dialysis duration on physical component summary (PCS), $F(2, 79) = .082$, $p = .921$; mental component summary (MCS), $F(2, 79) = 1.051$, $p = .354$; the burden of kidney disease (BKD), $F(2, 79) = 2.047$, $p = .136$; symptoms or problems of kidney disease (SPKD), $\chi^2(2) = 1.210$, $p = .546$; the effect of kidney disease (EKD), $\chi^2(2) = .962$. $p = .618$, subsequently.

Table 4.4

Inferential analysis for sociodemographic characteristics and quality of life among dialysis patients (N = 82)

Sociodemographic Characteristics	Quality of Life				
	PCS	MCS	BKD	SPKD	EKD
Gender					
Male	50.29 ± 26.38	58.61 ± 21.85	40.63 ± 19.22	80.48 ± 13.65	70.79 ± 24.00
Female	48.49 ± 23.85	58.68 ± 21.61	47.05 ± 24.84	76.62 ± 14.10	71.35 ± 22.45
p-value	.729[a]	.988[a]	.190[a]	.123[c]	.877[c]
Age					
18 – 24	81.25 ± 2.95	50.00 ± 41.25	25.00 ± 17.68	91.67 ± 11.79	35.94 ± 37.57
25 – 34	44.70 ± 21.25	60.30 ± 22.03	39.77 ± 22.23	75.00 ± 14.34	60.80 ± 25.29
35 – 44	50.00 ± 32.23	59.23 ± 20.92	44.23 ± 20.96	83.01 ± 15.70	61.78 ± 25.90
45 – 54	52.68 ± 24.38	60.95 ± 21.75	45.76 ± 23.51	76.56 ± 13.73	73.77 ± 20.35
55 – 64	37.50 ± 26.50	57.17 ± 24.44	42.50 ± 26.81	76.88 ± 15.94	72.81 ± 16.93
≥ 65	50.69 ± 21.59	55.37 ± 20.74	44.10 ± 18.99	81.13 ± 11.15	82.64 ± 15.01
p-value	.276[b]	.951[b]	.847[b]	.342[d]	.041[d]*

Ethnicity					
Malay	50.00 ± 25.35	60.93 ± 21.54	45.37 ± 22.62	78.55 ± 13.96	70.43 ± 22.91
Chinese	50.79 ± 25.97	55.56 ± 23.77	41.37 ± 21.96	83.13 ± 12.77	77.08 ± 19.62
India	59.72 ± 12.73	52.78 ± 17.66	43.75 ± 6.25	76.39 ± 6.36	73.96 ± 9.55
Others	30.20 ± 22.92	48.33 ± 9.98	28.13 ± 18.04	60.94 ± 9.53	45.31 ± 23.59
p-value	.410[b]	.547[b]	.473[b]	.043[d]*	.112[d]
Religion					
Islam	48.81 ± 25.71	60.25 ± 21.49	45.20 ± 22.30	77.83 ± 14.31	69.48 ± 23.07
Buddha	46.35 ± 23.95	51.51 ± 24.08	41.41 ± 21.76	82.03 ± 12.45	70.90 ± 18.42
Hindu	59.72 ± 12.73	52.78 ± 17.66	43.75 ± 6.25	76.39 ± 6.36	73.96 ± 9.55
Christian	58.93 ± 28.61	64.52 ± 17.29	33.93 ± 24.70	80.06 ± 16.96	82.59 ± 29.42
Others					
p-value	.630[b]	.431[b]	.620[b]	.689[d]	.232[d]
Marital Status					
Single	58.93 ± 26.09	62.08 ± 25.11	46.43 ± 24.97	83.93 ± 12.83	66.96 ± 28.40
Married	47.00 ± 25.46	56.93 ± 21.45	43.53 ± 21.36	77.78 ± 14.59	70.23 ± 22.16
Divorced / Widowed	51.14 ± 21.25	63.11 ± 18.14	39.20 ± 22.55	77.46 ± 10.70	80.40 ± 12.74
p-value	.280[b]	.559[b]	.720[b]	.387[d]	.421[d]

Employment Status					
Employed	53.57 ± 25.90	63.97 ± 21.50	50.00 ± 19.57	77.68 ± 16.14	65.03 ± 25.40
Retired	48.78 ± 25.49	57.20 ± 21.68	43.14 ± 23.13	77.85 ± 13.97	76.37 ± 19.70
Student	79.17 ± 0.00	20.83 ± 0.00	12.50 ± 0.00	83.33 ± 0.00	9.38 ± 0.00
Unemployed	45.39 ± 23.97	57.85 ± 20.62	38.49 ± 20.65	81.80 ± 11.47	69.41 ± 19.20
p-value	.487[b]	.209[b]	.185[b]	.882[d]	.082[d]
Level of Education					
No formal education	50.00 ± 25.34	53.89 ± 21.75	35.42 ± 9.55	74.31 ± 16.84	84.38 ± 9.38
Primary education	54.63 ± 31.28	57.87 ± 30.53	52.08 ± 16.24	81.25 ± 11.07	77.08 ± 20.73
Secondary education	50.00 ± 24.16	56.82 ± 20.54	40.70 ± 21.72	79.26 ± 12.93	73.84 ± 21.26
Tertiary education	47.22 ± 25.79	62.31 ± 20.68	45.83 ± 24.45	77.70 ± 16.31	63.08 ± 24.28
p-value	.897[b]	.750[b]	.432[b]	.915[d]	.140[d]
Total Household Income					
< RM4, 850	48.89 ± 25.95	57.00 ± 21.75	41.98 ± 21.59	78.06 ± 14.14	70.94 ± 23.59
RM4, 850 – RM10, 959	47.02 ± 17.63	58.63 ± 17.19	46.88 ± 21.95	78.87 ± 11.11	69.20 ± 20.39
≥ RM10, 960	59.38 ± 30.84	70.94 ± 25.92	48.44 ± 27.29	84.11 ± 16.81	75.00 ± 18.60
p-value	.502[b]	.232[b]	.605[b]	.272[d]	.772[d]

Health Insurance					
No	48.55 ± 25.43	57.92 ± 22.21	42.66 ± 22.64	78.08 ± 14.40	71.42 ± 23.53
Yes	55.13 ± 23.88	62.44 ± 18.38	47.60 ± 18.14	82.53 ± 10.50	68.99 ± 16.16
p-value	.391[a]	.493[a]	.461[a]	0.480[c]	.401[c]
Dialysis Modalities					
Hemodialysis	48.91 ± 25.96	59.10 ± 21.73	41.15 ± 21.90	78.53 ± 12.81	70.34 ± 22.95
Peritoneal Dialysis	52.21 ± 22.40	56.86 ± 21.70	52.21 ± 20.48	79.78 ± 17.89	73.71 ± 20.88
p-value	.624[a]	.706[a]	.064[a]	0.380[c]	.663[c]
Duration of Dialysis					
< 1 year	47.08 ± 22.14	63.08 ± 18.00	55.63 ± 19.86	80.21 ± 18.67	75.63 ± 25.42
1 – 3 years	51.67 ± 27.58	66.08 ± 23.11	46.25 ± 16.46	81.04 ± 15.88	69.69 ± 21.20
> 3 years	49.66 ± 25.59	56.72 ± 21.85	41.03 ± 22.60	78.19 ± 12.90	70.51 ± 22.45
p-value	.921[b]	.354[b]	.136[b]	.546[d]	.618[d]

a = Independent t-test
b = One Way Independent ANOVA
c = Mann-Whitney Test
d = Kruskal-Wallis Test
*Reject the null hypothesis, $p < .05$.

Abbreviation: PCS, physical component summary; MCS, mental component summary; BKD, burden of kidney disease; SPKD, symptoms/problems of kidney disease; EKD, effect of kidney disease.

Table 4.5

Interferential analysis of dialysis modalities and burden of kidney disease (BKD) (N = 82)

Burden of Kidney Disease		Dialysis Modalities		
		HD	PD	*p*-value
13	My kidney disease interferes too much with my life	29.62 ± 28.26	44.12 ± 33.69	.074[a]
14	Too much of my time is spent dealing with my kidney disease	33.08 ± 26.56	36.76 ± 26.69	.612[a]
15	I feel frustrated dealing with my kidney disease	53.46 ± 30.90	69.12 ± 18.81	.012[a]*
16	I feel like a burden on my family	48.46 ± 32.14	58.82 ± 30.54	.236[a]

a = Independent t-test
*Reject the null hypothesis, $p < .05$.

Abbreviation: HD, haemodialysis; PD, peritoneal dialysis.

CHAPTER 5

DISCUSSION

5.0 Introduction

Chapter 5 will discuss the findings of the study based on the research objectives. Specifically, it includes deliberation of sociodemographic characteristics and quality of life among dialysis patients. Next, this chapter will also confer on the association between sociodemographic characteristics and quality of life among dialysis patients in Serdang Hospital, Selangor.

5.1 Sociodemographic characteristics

To begin with, more than half of the respondents in the study were male (n = 46, 56.1%); similar to the research conducted by Al-mansouri et al. (2021) in Qatar, Alhajim (2017) in Iraq, and Cruz and colleagues (2017) in Saudi. Namely, the involved respondents were predominantly male in those studies. Next, most respondents in the study were aged between 45 to 54 years old (n = 28, 34.1%). It was akin to the research of Chuasuwan and colleagues in 2020 and Alhajim in 2017. The

mean age of respondents in both studies was 48.1 years old and 49.7 (*SD* = 13.1) years old, respectively.

Besides, the respondents of the study were mainly Malay (*n* = 54, 65.0%), followed by Chinese (*n* = 21, 25.6%), other ethnicities (*n* = 4, 4.9%), and India (*n* = 3, 3.7%). The other ethnic group included Iban, Sabahan, and Indonesian. Indeed, most of the respondents were belong to Allah (Islam) (*n* = 56, 68.3%); the rest of the respondents were believed in Buddha (*n* = 16, 19.5%), Christian (*n* = 7, 8.5%), and Hindu (*n* = 3, 3.7%).

Moreover, most respondents were married (*n* = 57, 69.5%), which is identical to the findings of Bayin Donar and Top (2020) in Turkey (*n* = 227, 69.2%). Half of the respondents were retired (*n* = 41, 50%), related to the study of Intas and colleagues (2020) in Greece, where most of the participants were retired (*n* = 340, 81%). Then, nearly all respondents were literate, but only 3.7% of the respondents had no formal education (*n* = 3), similar to the study of Bayin Donar and Top (2020), where the least respondents did not receive any education (*n* = 32, 9.8%). Among literate respondents, most of them had a secondary school level (*n* = 43, 52.4%), related to the study by Saminathan colleagues (2020) (47.9%).

The total household income of the respondents was usually less than RM4,850 (*n* = 60, 73.2%), falling into the B40 group. The finding was comparable with the study done by Saminathan and colleagues in 2020, as the respondents were mainly

low-income earners (64.9%). Few respondents had a household income of more than RM10,960 (T40 group) (n = 8, 9.8%). Similarly, only 13 per cent of the respondents were categorized as upper socioeconomic status in the study conducted by Alhajim in 2017. In addition, approximately 80 per cent of the respondents did not own any health insurance (n = 69, 79.3%). This finding was comparable to the study of Mahato and colleagues (2020) in Nepal, where more than eighty per cent of the participants was not having health insurance (n = 336, 83.18%).

Furthermore, almost eight per cent of the respondents in the study were receiving haemodialysis (n = 65, 79.3%), whilst twenty per cent of the respondents were receiving peritoneal dialysis (n = 17, 20.7%). The duration of dialysis among the respondents was mainly more than three years (n = 62, 75.6%), which is related to the study done by Bayin Donar and Top (2020) with a mean treatment duration of 7.01 ± 5.06 years.

5.2 Quality of life among patients with chronic kidney disease undergoing dialysis

The quality of life among dialysis patients in Serdang Hospital was exemplified through the domains including physical component summary (PCS), mental component summary (MCS), the burden of kidney disease (BKD), symptoms or problems of kidney disease (SPKD), and effect of kidney disease (EKD).

The mean physical component summary (PCS) of the respondents was 49.59 (*SD* = 25.168) in the present study. Meanwhile, the mental summary component (MCS) encompassed a mean of 58.64 (*SD* = 21.606). The result was comparable with the study of Kim and colleagues (2021) in Ethiopia, as the patients had a poor health-related quality of life (HRQOL) with an overall mean score of 49.1 (*SD* = 11.1). The study by Bayin Donar and Top (2020) also had complementary findings; the physical component summary (PCS) and mental component summary (MCS) were 48.23 (*SD* = 22.78) and 57.12 (*SD* = 17.60), correspondingly. Interestingly, the mean mental component summary (MCS) was higher than the mean physical component summary (PCS) in the present study and the study of Bayin Donar and Top in 2020. In short, dialysis patients in Serdang Hospital had a decent general quality of life.

Next, the mean burden of kidney disease (BKD) among the dialysis patients in the study was 43.45 (*SD* = 21.958). To simplify, the statements “my kidney disease interferes too much with my life” and “too much of my time is spent dealing with my

kidney disease" comprised the lowest scores. The results were akin to the study by Bayin Donar and Top in 2020. The study revealed that the burden of kidney disease had a mean score of 33.21 (*SD* = 18.65). Also, both statements granted the lowest scores for the burden of kidney disease (BKD) domain. Briefly, a low mean score implied that dialysis patients experienced a high disease burden due to chronic kidney disease.

As for the symptoms or problems of kidney disease (SPKD), the mean score was 78.79 (*SD* = 13.897). The outcome was allied with the research done by Ramatillah and colleagues in 2017 (*M* = 78.55, *SD* = 7.33), Intas and colleagues in 2020 (*M* = 69.7, *SD* = 20.4), Bayin Donar and Top in 2020 (*M* = 71.29, *SD* = 15.81). The most common problems encountered by dialysis patients were dry skin (*M* = 66.16, *SD* = 30.013) and tiredness (*M* = 69.21, *SD* = 26.146). As noted, the high mean score indicated that dialysis patients did not encounter too many signs and symptoms caused by chronic kidney disease.

Surprisingly, the effect of kidney disease (EKD) among the dialysis patients in the study had a mean of 71.04 (*SD* = 22.455). Chronic kidney disease was deemed to meddle with individuals' travel abilities (*M* = 58.54, *SD* = 31.967) and restrict fluids intake (*M* = 63.11, *SD* = 33.845). The findings were different from the studies of Bayin Donar and Top (2020) with a mean score of 57.63 (*SD* = 16.09) and Intas and colleagues (2020) with a mean score of 44.9 (*SD* = 23.1). Therefore, chronic kidney disease did not greatly impede the well-being of dialysis patients in Serdang Hospital.

5.3 Relationship between sociodemographic characteristics and quality of life among dialysis patients

Inferential analyses were conducted between the sociodemographic characteristics and the domains of quality of life to determine their correlations. The sociodemographic variables encompassed gender, age, ethnicity, religion, marital status, employment status, level of education, total household income, health insurance, dialysis modalities, and duration of dialysis. Meanwhile, the domains of quality of life were comprised of physical component summary (PCS), mental component summary (MCS), the burden of kidney disease (BKD), symptoms or problems of kidney disease (SPKD), and the effect of kidney disease (EKD).

There were different perspectives on patients' gender and their well-being undergoing dialysis. Some studies concluded that females had a better quality of life (Al-mansouri et al., 2021; Hussien et al., 2021; Nayana et al., 2017), but other studies believed males had five times better than females (Gesualdo et al., 2017). The present study identified that none of the domains from the quality of life had a significant relationship with gender, $p > .05$. Hence, males and females among the dialysis patients in Serdang Hospital shared the same quality of life. The conviction was supported by the study of Alhajim (2017) with $p = .969$, and Cantú and Saucedo (2019) with $t = .524$, $p > .05$.

Next, age was a paramount determinant of the quality of life. The effect of kidney disease (EKD) seems to be more conspicuous among young dialysis patients than older dialysis patients (p = .041). While determining the mean effect of kidney disease (EKD) across the age groups, the dialysis patients aged between 18 to 24 years old had the lowest mean score of 35.94 (SD = 37.57). Yet, the dialysis patients aged 65 and above had the highest mean score of 82.64 (SD = 15.01). Chronic kidney disease seems to be a challenge and a casualty among young patients but to be a part of life among older patients (Joshi et al., 2017). Even so, the other domains of quality of life were the same across the age group. The mean mental component summary (MCS) among the age groups was undistinguishable in the present study, comparable to the findings of Balogun and colleagues (2017).

Ethnicity was also a key figure affecting the quality of life. This finding was built on the evidence of the study review by Hussien et al. in 2021, as the Asian and minor ethnicities had a lower health-related quality of life. In the current study, the symptoms or problems of kidney disease (SPKD) showed significant differences across ethnic groups with p = .043. The minor ethnicities (Iban, Sabahan, and Indonesian) had a lower mean score of quality of life compared to Malay, Chinese, and Indian. Hussien et al. (2021) pointed out that minor ethnicities are likely to have a lower quality of life because they have difficulties assessing healthcare services. Also, racial identity affects an individual's coping strategies due to cultural beliefs (Kawakami et al., 2020).

Religious beliefs and practices improve an individual's coping abilities (Cruz et al., 2017). Religion promotes spiritual health and enhances the quality of life. However, there was no significant relationship between religion and quality of life. The study done by Cruz et al. (2017) and Gesualdo et al. (2017) compared the quality of life of religious and non-religious patients; the outcomes showed that clerical practice enhanced the quality of life. Malaysia is a multicultural country; only 1.8% of the 32.4 million population had no religion or unknown religion (DEPARTMENT OF STATISTICS MALAYSIA, 2022). All dialysis patients in Serdang Hospital practice clerical practice; thus, there were no significant differences in quality of life among multireligious dialysis patients.

The prevailing study did not show a consequential association between marital status and the domains of quality of life, $p > .05$. Indeed, Joshi et al. (2017) ascertained that marital status did not affect the quality of life through physical ($p = .300$), psychological ($p = .941$), social ($p = .935$), and environment ($p = .658$). In contrast, few studies accomplished that married patients might have better welfare than single or divorced patients (Al-mansouri et al., 2021; Gesualdo et al., 2017; Nayana et al., 2017).

Furthermore, most studies demonstrated that patients who were unemployed and had low education levels were vulnerable and had a greater risk of having poor quality of life (Al-mansouri et al., 2021; Bayin Donar & Top, 2020; Ganu et al., 2018; Gesualdo et al., 2017; Hussien et al., 2021; Joshi et al., 2017; S. Kim et al., 2021).

Moreover, a job secure would guarantee financial resources while literation would improve coping skills (Ganu et al., 2018; Joshi et al., 2017). However, there were no statistical differences in perspective of quality of life among employed, student, and retired patients ($p > .05$).

Apart from this, the present study manifested that the total household income and health insurance did not exhibit a substantial correlation with the quality of life ($p > .05$). The findings were not fit the theory of the studies conducted by Joshi et al. in 2017 and Mahato et al. in 2020. The studies revealed that the patients had a higher income and possessed health insurance that would allow the patients to grant exceptional treatment and medical services (Joshi et al., 2017; Mahato et al., 2020). Instead, dialysis patients in Serdang Hospital had a precisely identical quality of life across all income groups and whether groups held insurance or not.

The current study affirmed that the types of dialysis modalities and treatment duration did not affect the quality of life among dialysis patients ($p > .05$). The outcomes were supported by the studies of Aguiar et al. (2019), Cantú and Saucedo (2019), Nayana et al. (2017), and Rini et al. (2021). Alternatively, there were no noteworthy differences between patients receiving haemodialysis and peritoneal dialysis. Also, a longer duration of dialysis did not mean dialysis patients had feeble well-being. It was contrasted to the studies of Joshi et al. (2017) and Sittisongkram et al. (2019), where a longer treatment duration would decrease the quality of life of dialysis patients.

Although there is no significant relationship between dialysis modalities and the quality of life, peritoneal dialysis patients were better at dealing the chronic kidney disease than haemodialysis patients. The statement "I feel frustrated dealing with my kidney disease" from the burden of kidney disease (BKD) showed a statistical difference between the dialysis groups with $p = .012$. Peritoneal dialysis patients could perform the dialysis at home, whereas haemodialysis patients could only receive treatment at dialysis centres. Therefore, peritoneal dialysis patients would have more active social connections (Fan et al., 2022). Regardless, the differences in the burden of kidney disease among the dialysis groups were negligible.

5.4 Conclusion

In short, the general quality of life among dialysis patients with chronic kidney disease in Serdang Hospital was desirable. The mean physical component summary (PCS) of dialysis patients was 49.59 ($SD = 25.168$), and the mean mental component summary (MCS) of dialysis patients was 58.64 ($SD = 21.606$). Age and ethnicities were the decisive factors in determining the quality of life among dialysis patients. Age has a significant relation with the effect of kidney disease (EKD) with $p = .041$. Young dialysis patients were likely to experience more ramifications of chronic kidney disease. Meanwhile, ethnic groups showed significant differences in symptoms or problems of kidney disease (SPKD), $p = .043$. Ethnic minorities seem to encounter dilemmas caused by chronic kidney disease due to racial identities and cultural beliefs.

CHAPTER 6

CONCLUSION

6.0 Introduction

The study was conducted in a cross-sectional method for several months. Henceforth, Chapter 6 would confer the limitations of the study found during the execution of the study.

6.1 Major Implication

Overall, the quality of life among dialysis patients in Serdang Hospital was satisfactory. Nonetheless, physical welfare was slightly diminished than mental welfare among dialysis patients. Only age and ethnicity did show a significant relationship with quality of life. Ageing is not a factor in having a poor quality of life whilst the effect of chronic kidney disease was more conspicuous among young dialysis patients. Also, minor ethnicities were facing more undesirable complications of kidney disease.

The KDQOL^{TM}-36 was a self-administered questionnaire available in several languages and assessable online freely. Also, the questionnaire would help dialysis patients in evaluating their life satisfaction. Therefore, healthcare professionals should utilize the KDQOL^{TM}-36 as a tool in appraising the well-being of dialysis patients every year to deliver holistic care for dialysis patients.

Moreover, further studies and clinical trials should focus on dialysis treatment improvement. Common symptoms and problems faced by patients undergoing dialysis were dry skin, numbness of limbs, and frailty. Dialysis treatment improvement on dialysis prescription and renoprotection routines would enhance the protocol of chronic kidney disease. Indeed, it also promotes the physical well-being of dialysis patients.

Lastly, the healthcare team should be aware of the importance of psychological care to dialysis patients. To improve coping skills in encountering adversities, more counselling sessions and occupational therapies should grant to dialysis patients to identify their needs and help dialysis patients.

6.2 Limitation

Of course, the study has its limitations. First, the study was conducted in a cross-sectional method, which only describes the phenomena of dialysis patients in Serdang Hospital at a point in time. Unlike a longitudinal study, the cross-sectional study assessed the exposure (sociodemographic characteristics) and the outcome (quality of life) at the same time, which could not determine the exact relations of cause and effect (Solem, 2015).

Next, the study only recruited 37.96% (n = 82) of the required number of respondents instead of 216 individuals. Such poor sampling size did not reflect the actual quality of life among dialysis patients in Serdang Hospital. Besides, the study only involved patients from Serdang Hospital but did not involve patients from other dialysis centres and facilities. Thus, the study population did not represent the well-being of dialysis patients in either states or nations.

Also, the study findings might not justify the explicit quality of life among dialysis patients in Serdang Hospital. In the study, the number of haemodialysis patients is more than the number of peritoneal dialysis patients, resulting in the distribution of dialysis patients by the dialysis modalities were not equal. Hence, the findings of the study might become biased.

Besides, the study included chronic kidney disease patients who have comorbidities. Dialysis patients with more chronic morbid conditions would have a higher risk of impaired quality of life. Multi-morbidities would dwindle the physical welfare and lower the quality of life.

Furthermore, the study utilized a convenience sampling method in subjects' recruitment, which was a nonprobability sampling method. Despite the convenience sampling error being affordable and accessible, it also tended to be biased and had high sampling error. The researcher might be selective while approaching the dialysis population. A random sampling method would increase the generalization of the dialysis population.

The study included the dialysis modalities and duration as the sociodemographic characteristics rather than a different independent variable. Hence, the study did not compare the quality of life among the haemodialysis group and the peritoneal dialysis group. Apart from this, some peritoneal dialysis patients were previously receiving haemodialysis. Briefly, the study should compose the dialysis modalities, duration of dialysis, and switching of dialysis modalities as a new independent variable to investigate their relationship with the quality of life.

Some sociodemographic characteristics such as age and duration of dialysis were represented as categorical data instead of continuous data. The study could only display in frequency and percentage of categorized age and dialysis duration but not

in a concise way with mean and standard deviation. As age and dialysis duration are measured in years, they should be present in continuous data, technically. Therefore, the age and dialysis duration could present with higher precision.

6.3 Recommendation

Most limitations of the study were methodological errors that could be overcome by solutions. First, the researcher should ponder the way of demonstration of data, either categorical or continuous. For example, the age and dialysis duration were discrete data and should go for continuous data rather than categorical data. Hence, the researcher could show more precise data in the findings.

The researcher should increase the number of participants to at least 90% of the targeted respondents. To obtain a greater sample size, the researcher should extend the location of the study, time frame and duration of the study. Thus, the researcher has sufficient time and a number of respondents for data collection.

Besides, the researcher should consider applying a probability sampling method in data collection, such as simple random and stratified sampling methods. A probability sampling method would improve the generalization and minimize the tendency of bias in the study.

Conclusively, the study should encompass health factors that enquiry about the health status and underlying chronic diseases for determining the association between comorbidities and the well-being of patients. Asides from that, geographical factors were also a compelling determinant in measuring the quality of life. For example, the distance from home or the workplace to the dialysis centres would affect the accessibility of dialysis patients to receive treatment.

Future research should put more effort into investigating the relationship between dialysis factors (dialysis modalities, duration of dialysis, switching of dialysis modalities) and quality of life. Henceforth, a longitudinal study is preferable to observe the changes over a long period. Also, the researcher could involve more dialysis facilities in the state and the nation to study the quality of life and the need for dialysis in public.

6.4 Conclusion

Generally, the study has portrayed the dialysis patients in Serdang Hospital have a satisfying quality of life. Only ethnicity and age manifested significant relationships with quality of life. Future studies need to include more dialysis factors to determine their relationship to quality of life.

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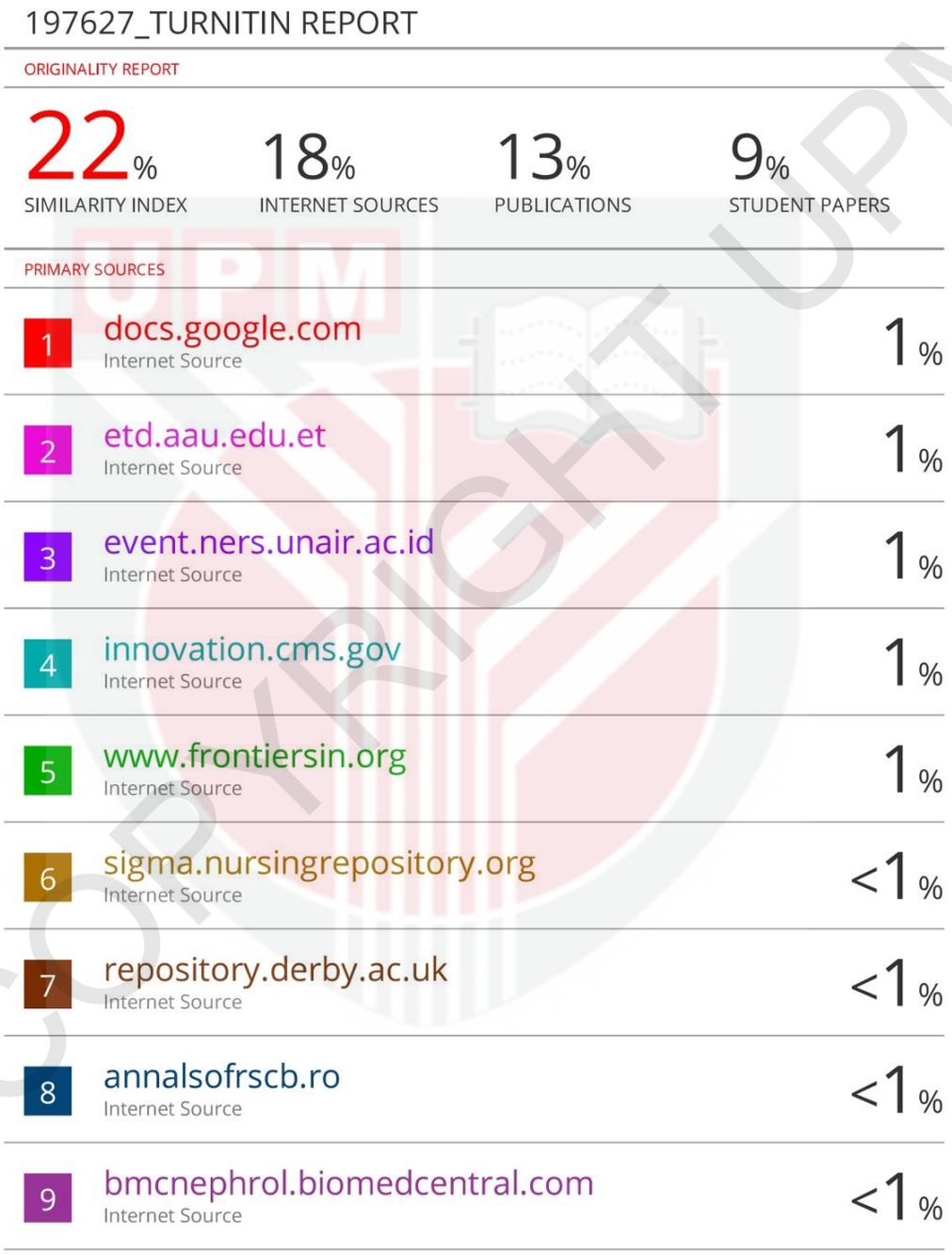
APPENDICES

Appendix I: Turnitin Report



197627_TURNITIN REPORT

ORIGINALITY REPORT

22%	18%	13%	9%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	docs.google.com Internet Source	1%
2	etd.aau.edu.et Internet Source	1%
3	event.ners.unair.ac.id Internet Source	1%
4	innovation.cms.gov Internet Source	1%
5	www.frontiersin.org Internet Source	1%
6	sigma.nursingrepository.org Internet Source	<1%
7	repository.derby.ac.uk Internet Source	<1%
8	annalsofrscb.ro Internet Source	<1%
9	bmcnephrol.biomedcentral.com Internet Source	<1%

Appendix II: Validity test for KDQOL^{TM}-36

	Content validity index		Number of subjects who correctly interpreted the item
	Clarity	Relevance	
Burden of kidney disease			
My kidney disease interferes too much with my life	1	1	10
Too much of my time is spent dealing with my kidney disease	1	1	10
I feel frustrated dealing with my kidney disease	1	1	10
I feel like a burden on my family	1	1	10
Symptoms and problems			
Soreness in your muscles	1	1	10
Chest pain	1	1	10
Cramps	1	1	10
Itchy skin	1	1	10
Dry skin	1	1	10
Shortness of breath	1	1	10
Faintness or dizziness	1	1	10
Lack of appetite	1	1	10
Washed out or drained	1	1	10
Numbness in hands or feet	1	1	10
Nausea or upset stomach	1	1	10
Problems with your access site?	0.9	0.9	9
Effects of kidney disease			
Fluid restriction	1	1	10
Dietary restriction	1	1	10
Your ability to work around the house	1	1	10

	Content validity index		Number of subjects who correctly interpreted the item
	Clarity	Relevance	
Your ability to travel	1	1	10
Being dependent on doctors and other medical staff	1	1	10
Stress or worries caused by kidney disease	1	1	10
Your sex life	1	1	10
Your personal appearance	0.9	0.9	9

Note. Content validity test for KDQOL™-36 by cognitive debriefing interviews. S-CVI/UA ≥ 0.8 indicates good validity. Adopted from "Validation of the Disease-Specific Components of the Kidney Disease Quality of Life-36 (KDQOL-36) in Chinese Patients Undergoing Maintenance Dialysis" by Chen, J. Y., Choi, E. P. H., Wan, E. Y. F., Chan, A. K. C., Tsang, J. P. Y., Chan, K. H. Y., Lo, W. K., Lui, S. L., Chu, W. L., & Lam, C. L. K., 2016, *PLOS ONE, 11*(5), e0155188. https://doi.org/10.1371/JOURNAL.PONE.0155188

Appendix III: Reliability test for English KDQOL^{TM}-36

	Cronbach's Alpha
Burden Score	0.810
Symptom Score	0.889
Effects Score	0.931

Note. Reliability test for KDQOLTM-36 by internal consistency with the measure of Cronbach's alpha in each domain. The internal consistency is deemed acceptable if Cronbach's alpha $\geqslant 0.70$. Adapted from "Validation of the Disease-Specific Components of the Kidney Disease Quality of Life-36 (KDQOL-36) in Chinese Patients Undergoing Maintenance Dialysis" by Chen, J. Y., Choi, E. P. H., Wan, E. Y. F., Chan, A. K. C., Tsang, J. P. Y., Chan, K. H. Y., Lo, W. K., Lui, S. L., Chu, W. L., & Lam, C. L. K., 2016, *PLOS ONE, 11*(5), e0155188. https://doi.org/10.1371/JOURNAL.PONE.0155188

Appendix IV: Reliability test for Malay KDQOL^{TM}-36

Domain	No.	Item	Cronbach alpha
Burden of kidney disease	13	Kidney disease interferes too much with my life	0.901
	14	Too much time is spent dealing with my kidney disease	
	15	I feel frustrated with my kidney disease	
	16	I feel like a burden on my family	
Symptoms/ burden list	17	Soreness of muscle	0.872
	18	Chest pain	
	19	Cramps	
	20	Itchy skin	
	21	Dry skin	
	22	Shortness of breath	
	23	Faintness or dizziness	
	24	Lack of appetite	
	25	Washed out or drained	
	26	Numbness in hands or feet	
	27	Nausea or upset stomach	
	28a	Problems with your access site (HD patients only)	

Domain	No.	Item	Cronbach alpha
Effects of kidney disease on daily life	29	Fluid restriction	0.884
	30	Dietary restriction	
	31	Your ability to do work around the house	
	32	Your ability to travel	
	33	Being dependent on doctors and other medical staff	
	34	Stress or worries caused by kidney disease	
	35	Your sex life	
	36	Your personal appearance	

Note. Reliability test for KDQOL™-36 by internal consistency with the measure of Cronbach's alpha in each domain. The internal consistency is deemed acceptable if Cronbach's alpha $\geqslant 0.70$. Adapted from "Cross cultural adaptation and validation of the Malay Kidney Disease Quality of Life (KDQOL-36TM)" by Goh, K. K. K., Lai, P. S. M., & Lim, S. K., 2019, *BMC Nephrology, 20*(1). https://doi.org/10.1186/s12882-019-1397-8

Appendix V: QR Code for Online Questionnaire

Appendix VI: Gantt Chart

Activities	2021								2022					
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
Identify the research problem														
Discussion with supervisor regarding the research title														
Review of the article for literature review														
Select an appropriate questionnaire														
Proposal presentation														
Submit proposal														
Obtain permission from the relevant party														
Conduct the research and data collection														
Data analysis and discussion														
Thesis presentation														
Submit the research thesis														

Appendix VII: Budget of the study

NO	ITEM	PRICE PER QUANTITY	QUANTITY	SUB-TOTAL
1	Printing Materials			
	Questionnaire, Participation Information Sheet, and Informed Consent	RM 0.50	220	RM 110.00
	Proposal	RM 15.00	4	RM 60.00
	Softbound	RM 20.00	4	RM 80.00
	Hardbound	RM 80.00	4	RM 320.00
2	Accessories	RM 10.00	1	RM 10.00
			TOTAL	RM 580.00

Appendix VIII: Participant Information Sheet and Informed Consent Form

PARTICIPANT INFORMATION SHEET AND INFORMED CONSENT FORM

(for adult subjects)

1. **Title of study**:

   Quality of Life Among Patients with Chronic Kidney Disease Undergoing Dialysis in Serdang Hospital, Selangor, Malaysia: A Cross-Sectional Study.

2. **Name of investigator and institution:**

   a. Yap Hui Ying (Principal Investigator), Faculty of Medicine and Health Sciences Universiti Putra Malaysia (UPM)
   b. Madam Rosna Abdul Raman (Supervisor), Faculty of Medicine and Health Sciences, Universiti Putra Malaysia (UPM)
   c. Dr. Wan Zul Haikal Hafiz Bin Wan Zukiman (Co-supervisor), Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

3. **Name of sponsor**:

   No External Funding

4. **Introduction:**

   It is important that you understand why the research is being done and what it will involve. Please take your time to read through and consider this information carefully before you decide if you are willing to participate. Ask the study staff if anything is unclear or if you would like more information. After you are properly satisfied that you understand this study, and that you wish to participate, you must sign this informed consent form.

   Your participation in this study is voluntary. You do not have to be in this study if you do not want to. You may also refuse to answer any questions you do not want to answer. If you volunteer to be in this study, you may withdraw from it at any time. If you withdraw, any data collected from you up to your withdrawal will still be used for the study. Your refusal to participate or withdrawal will not affect any medical or health benefits to which you are otherwise entitled.

   This study has been approved by the Medical Research and Ethics Committee, Ministry of Health Malaysia.

5. What is the purpose of the study?

The purpose of this study is to study the quality of life among patients with chronic kidney disease undergoing dialysis in Serdang Hospital, Selangor. This research is necessary to improve the understanding of patients with chronic kidney disease.

This research will be conducted for duration of 3 months (01/04/2022 till 30/06/2022). The expected number of participants is 216 individuals.

6. What are my responsibilities when taking part in this study?

It is important that you answer all of the questions asked by the study staff honestly and completely which will take about 15 minutes of your time. You will be given a survey form to be answered. This form contains 2 sections which will enquire about your socio-demographic information, your perception and satisfaction toward your health and life with dialysis underlying chronic kidney disease.

7. What are the potential risks and side effects of being in this study?

Participation to this study will not affect your treatment, and the risk is minimal. You are free to decline to answer any of the questions that you feel uncomfortable with.

8. What are the benefits of being in this study?

There may or may not be any benefits to you. Information obtained from this study will help create awareness about the well-being among dialysis respondents underlying chronic kidney disease, and it could improve the outcome of treatment plans decided by the healthcare profession.

9. Who is funding the research?

This study does not receive any external funding. You will not be paid for participating in this study.

10. Will my medical information be kept private?

All your information obtained in this study will be kept and handled in a confidential manner, in accordance with applicable laws and/or regulations. When publishing or presenting the study results, your identity will not be revealed without your expressed consent. Individuals involved in this study, qualified monitors and auditors, and governmental or regulatory authorities may inspect the study data, where appropriate and necessary.

11. Who should I call if I have questions?

If you have any questions about the study, please contact the study team members listed below.

i. Researcher

Yap Hui Ying
Contact no.: +6016 698 8409
Email: 197627@student.upm.edu.my

ii. Supervisor

Madam Rosna Abdul Raman
Contact no.: +603 9769 2429
Email: rosnaar@upm.edu.my

iii. Co-Supervisor

Dr. Wan Zul Haikal Hafiz Bin Wan Zukiman
Contact no.: +603 9769 9266
Email: zulhaikal@upm.edu.my

If you have any questions about your rights as a participant in this study, please contact: The Secretary, Medical Research & Ethics Committee, Ministry of Health Malaysia, at telephone number 03-3362 8407/8205/8888.

INFORMED CONSENT FORM

Title of Study:
Quality of Life Among Patients with Chronic Kidney Disease Undergoing Dialysis in Serdang Hospital, Selangor, Malaysia: A Cross-Sectional Study.

By signing below I confirm the following:

- I have been given oral and written information for the above study and have read and understood the information given.
- I have had sufficient time to consider participation in the study and have had the opportunity to ask questions and all my questions have been answered satisfactorily.
- I understand that my participation is voluntary and I can at anytime free withdraw from the study without giving a reason and this will in no way affect my future treatment. I am not taking part in any other research study at this time. I understand the risks and benefits, and I freely give my informed consent to participate under the conditions stated. I understand that I must follow the study doctor's (investigator's) instructions related to my participation in the study.
- I understand that study staff, qualified monitors and auditors, the sponsor or its affiliates, and governmental or regulatory authorities, have direct access to my medical record in order to make sure that the study is conducted correctly and the data are recorded correctly. All personal details will be treated as STRICTLY CONFIDENTIAL
- I will receive a copy of this subject information/informed consent form signed and dated to bring home.
- I agree/disagree* for my family doctor to be informed of my participation in this study. *(*delete which is not applicable)*

Subject:

Signature: I/C number:

Name: Date:

Investigator conducting informed consent:

Signature: I/C number:

Name: Date:

Impartial witness:

Signature: I/C number:

Name: Date:

Appendix IX: Questionnaire

UNIVERSITI PUTRA MALAYSIA
FACULTY OF MEDICINES AND HEALTH SCIENCES
DEPARTMENT OF NURSING
BACHELOR OF NURSING

RESEARCH TITLE:

QUALITY OF LIFE AMONG PATIENTS WITH CHRONIC KIDNEY DISEASE UNDERGOING DIALYSIS IN SERDANG HOSPITAL, SELANGOR, MALAYSIA: A CROSS-SECTIONAL STUDY.

QUESTIONNAIRE

RESEARCHER : YAP HUI YING
SUPERVISOR : MADAM ROSNA ABDUL RAMAN
CO-SUPERVISOR : DR, WAN ZUL HAIKAL HAFIZ BIN WAN ZUKIMAN

INSTRUCTIONS:

This study is conducted for academic purposes. All information will be kept private and confidential. Thank you for your cooperation in answering this questionnaire.

Part I: Socio-demographic Information

This section will be asking regarding your basic information. Please mark a '✓' at a box that is best describes your answer.

1. Gender

	Male
	Female

2. Age

	18 to 24 years old
	25 to 34 years old
	35 to 44 years old
	45 to 54 years old
	55 to 64 years old
	65 years old and above

3. Ethnicity

	Malay
	Chinese
	India
	Others, please specify: _____

4. Religion

	Islam
	Buddha
	Hindu
	Christian
	Others, please specify: _____

5. Marital Status

	Single
	Married
	Divorced / Widowed

6. Employment Status

	Employed
	Retired
	Student
	Unemployed

7. Level of Education

	No formal education
	Primary education
	Secondary education
	Tertiary education

8. Total Household Income

	< RM4, 850	(Below 40%)
	RM4, 850 – RM10, 959	(Middle 40%)
	≥ RM10, 960	(Top 20%)

9. Do you have any health insurance?

	No
	Yes, please specify: _____

10. Dialysis Modality

	Hemodialysis
	Peritoneal Dialysis

11. How many years have you received dialysis?

	Less than 1 years
	1 to 3 years
	More than 3 years

Part II: Kidney Disease and Quality of Life

Section A: Your Health

This survey includes a wide variety of questions about your health and your life. We are interested in how you feel about each of these issues. Please mark a '✓' at a box that is best describes your answer.

1. In general, would you say your health is:

	Excellent
	Very Good
	Good
	Fair
	Poor

The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

		Yes, limited a lot	Yes, limited a little	No, not limited at all
2	Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf			
3	Climbing several flights of stairs			

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

		Yes	No
4	Accomplished less than you would like		
5	Were limited in the kind of work or other activities		

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

		Yes	No
6	Accomplished less than you would like		
7	Didn't do work or other activities as carefully as usual		

2. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

	Not at all
	A little bit
	Moderately
	Quite a bit
	Extremely

These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling.

How much of the time during the past 4 weeks…

		All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time
9	Have you felt calm and peaceful?						
10	Did you have a lot of energy?						
11	Have you felt downhearted and blue?						

3. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?

	All of the time
	Most of the time
	A good bit of the time
	A little of the time
	None of the time

Section B: Your Kidney Disease

How true or false is each of the following statements for you?

		Definitely true	Mostly true	Don't know	Mostly false	Definitely false
13	My kidney disease interferes too much with my life					
14	Too much of my time is spent dealing with my kidney disease					
15	I feel frustrated dealing with my kidney disease					
16	I feel like a burden on my family					

During the past 4 weeks, to what extent were you bothered by each of the following?

		Not at all bothered	Somewhat bothered	Moderately bothered	Very much bothered	Extremely bothered
17	Soreness in your muscles?					
18	Chest pain?					
19	Cramps?					
20	Itchy skin?					
21	Dry skin?					
22	Shortness of breath?					
23	Faintness or dizziness?					
24	Lack of appetite?					
25	Washed out or drained?					
26	Numbness in hands or feet?					
27	Nausea or upset stomach?					
28	(Hemodialysis patient only)					
	a. Problems with your access site?					
	(Peritoneal dialysis patient only)					
	b. Problems with your catheter site?					

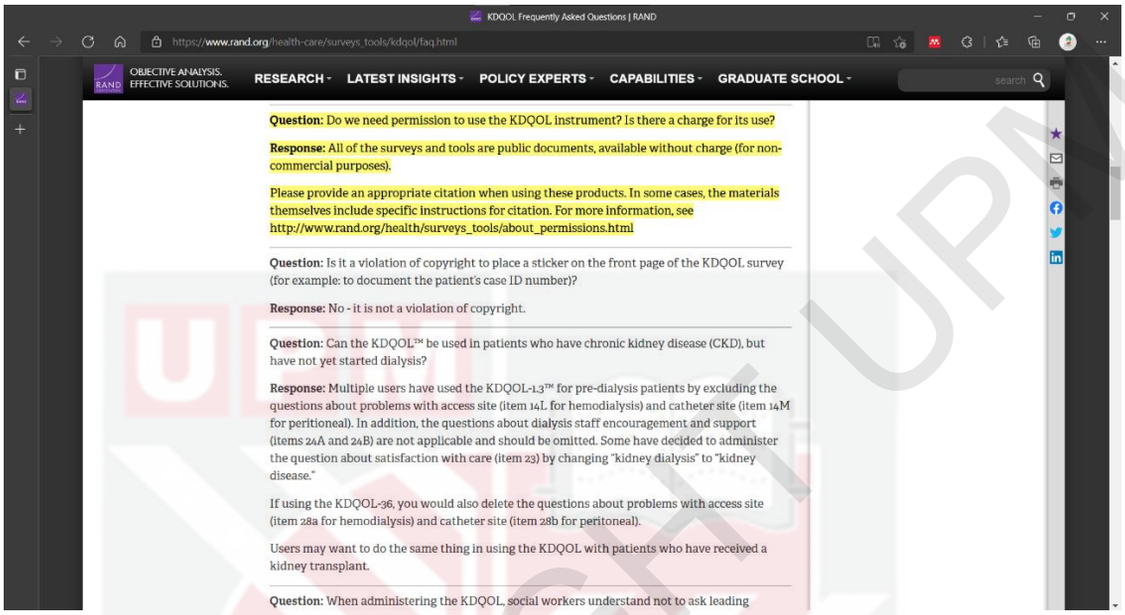
Section C: Effects of Kidney Disease on Your Daily Life

Some people are bothered by the effects of kidney disease on their daily life, while others are not. How much does kidney disease bother you in each of the following areas?

		Not at all bothered	Somewhat bothered	Moderately bothered	Very much bothered	Extremely bothered
29	Fluid restriction?					
30	Dietary restriction?					
31	Your ability to work around the house?					
32	Your ability to travel?					
33	Being dependent on doctors and other medical staff?					
34	Stress or worries caused by kidney disease?					
35	Your sex life?					
36	Your personal appearance?					

Thank you for completing these questions!

Appendix X: Permission to use English and Manadarin Chinese KDQOL™-36



KDQOL Frequently Asked Questions

rand.org/health-care/surveys_tools/kdqol/faq.html

Administering the KDQOL

Question: Do we need permission to use the KDQOL instrument? Is there a charge for its use?

Response: All of the surveys and tools are public documents, available without charge (for non-commercial purposes).

Please provide an appropriate citation when using these products. In some cases, the materials themselves include specific instructions for citation. For more information, see http://www.rand.org/health/surveys_tools/about_permissions.html

Appendix XI: Permission to use Malay KDQOL^{TM}-36

YAP HUI YING / UPM <197627@student.upm.edu.my>

Written Permission for Instruments of Final Year Project
5 messages

YAP HUI YING / UPM <197627@student.upm.edu.my> Sun, Oct 31, 2021 at 1:14 PM
To: sookunlim@um.edu.my, plai@um.edu.my

Dear Associate Prof. Dr.,

Greetings.
I am Yap Hui Ying, an undergraduate student pursuing a Bachelor of Nursing in Universiti Putra Malaysia (UPM), Malaysia. Currently, I am in my final year and on my way to doing a thesis with the title of "Quality of Life Among Patients With Chronic Kidney Disease Undergoing Dialysis in Serdang Hospital, Selangor, Malaysia: A Cross-Sectional Study".
I had read Prof.'s research article entitled **"Cross cultural adaptation and validation of the Malay Kidney Disease Quality of Life (KDQOL-36™)"** from BMC Nephrology published on 20 June 2019, and I found that Prof.'s questionnaire is suitable used as the instrument for my thesis.
Therefore, I would like to ask for Prof.'s permission for using Malay Kidney Disease Quality of Life (KDQOL-36™) in my thesis. However, I do not have the questionnaire. If Prof. allows me to use the questionnaire, would Prof. like to send or attach the softcopy of the questionnaire? I am sure that I will acknowledge the owner of the questionnaire in my course of study. Your consideration is much appreciated.

Thank you.

--
Best Regards,
YAP HUI YING
Undergraduate Student
Bachelor of Nursing
Faculty of Medicine and Health Sciences
University Putra Malaysia.

LAI SIEW MEI PAULINE <plai@um.edu.my> Mon, Nov 1, 2021 at 11:51 AM
To: YAP HUI YING / UPM <197627@student.upm.edu.my>

HI Hui YIng,

Can you please fill this form and send it back to me?

Regards,
Pauline
[Quoted text hidden]

Agreement Form to use Malay KDQOL.docx
17K

YAP HUI YING / UPM <197627@student.upm.edu.my> Mon, Nov 1, 2021 at 3:23 PM
To: LAI SIEW MEI PAULINE <plai@um.edu.my>

Greetings.
Please find the attached document as my agreement.
Any changes or revisions needed would just let me know.
Thank you.

[Quoted text hidden]

Agreement Form to use Malay KDQOL.docx
15K

LAI SIEW MEI PAULINE <plai@um.edu.my> Tue, Nov 2, 2021 at 3:04 PM
To: YAP HUI YING / UPM <197627@student.upm.edu.my>

Hi Hui Ying,

As attached

Regards,
Pauline
[Quoted text hidden]

2 attachments

Agreement Form to use Malay KDQOL.pdf
72K

Malay KDQOL-36 Flinal Version (validation study).pdf
482K

YAP HUI YING / UPM <197627@student.upm.edu.my> Tue, Nov 2, 2021 at 3:43 PM
To: LAI SIEW MEI PAULINE <plai@um.edu.my>

Dear Prof,
Well received and thank you so much.

[Quoted text hidden]

Appendix XII: Approval Letter from Medical Research and Ethics Committee (MREC)

JAWATANKUASA ETIKA & PENYELIDIKAN PERUBATAN
(*Medical Research & Ethics Committee*)
KEMENTERIAN KESIHATAN MALAYSIA
d/a Kompleks Institut Kesihatan Negara
Blok A, No 1, Jalan Setia Murni U13/52,
Seksyen U13, Bandar Setia Alam,
40170 Shah Alam, Selangor.
Tel: 03-3362 8888/8205

Ref : 22-00513-VEU (2)
Date : 1-April-2022

YAP HUI YING
UNIVERSITI PUTRA MALAYSIA (UPM)

Dear Sir/ Mdm,

ETHICS INITIAL APPROVAL: NMRR ID-22-00513-VEU (IIR)
QUALITY OF LIFE AMONG PATIENTS WITH CHRONIC KIDNEY DISEASE UNDERGOING DIALYSIS IN SERDANG HOSPITAL, SELANGOR, MALAYSIA: A CROSS-SECTIONAL STUDY

This letter is made in reference to the above matter.

2. The Medical Research and Ethics Committee (MREC), Ministry of Health Malaysia (MOH) has provided ethical approval for this study. Please take note that all records and data are to be kept strictly **CONFIDENTIAL** and can only be used for the purpose of this study. All precautions are to be taken to maintain data confidentiality. Permission from the District Health Officer / Hospital Administrator / Hospital Director and all relevant heads of departments / units where the study will be carried out must be obtained prior to the study. You are required to follow and comply with their decision and all other relevant regulations.

3. The investigators and study sites involved in this study are:

HOSPITAL SERDANG
Yap Hui Ying (Principal Investigator)
Rosna Abdul Raman
Wan Zul Haikal Hafiz Bin Wan Zukiman

4. The following study documents have been received and reviewed with reference to the above study:

Documents received and reviewed with reference to the above study:

1. Study Protocol Version 5, dated 23-February-2022
2. Patient Information Sheet (PIS) & Informed Consent Form (ICF) (English) Version 3, dated 21-February-2022
3. Patient Information Sheet (PIS) & Informed Consent Form (ICF) (Malay) Version 3, dated 21-February-2022
4. Questionnaire Version 1.0, dated 15-December-2021
5. Investigator's documents: Declaration of Conflict of Interest (COI), IA-HOD-IA, and CV:
   a) Yap Hui Ying (Principal Investigator)
   b) Rosna Abdul Raman
   c) Wan Zul Haikal Hafiz Bin Wan Zukiman

5. Please note that ethical approval is valid until 31-**March-2023**. The following are to be reported upon receiving ethical approval. Required forms can be obtained from the National Medical Research Registry (NMRR) website:

i. **Continuing Review Form** has to be submitted to MREC within 2 months (60 days) prior to the expiry of ethical approval.

Site Approval Form (A)

LAMPIRAN 1

Surat Kelulusan/Pengecualian Semakan MREC

LAMPIRAN 2

Ringkasan Projek Penyelidikan

Tajuk Penyelidikan:
Quality of Life Among Patients with Chronic Kidney Disease Undergoing Dialysis in Serdang Hospital, Selangor, Malaysia: A Cross-Sectional Study.

Nama dan Jabatan Ketua Penyelidik:
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Tarikh cadangan mula penyelidikan:
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30hb Jun 2022

Objektif penyelidikan:
Mengkaji kualiti hidup dalam kalangan pesakit buah pinggang kronik yang menjalani dialisis di Hospital Serdang, Selangor, menggunakan KDQOL™-36.

Ringkasan metodologi penyelidikan:
Kajian ini adalah kajian berbentuk kajian rentas silang. Oleh itu, setiap peserta akan menerima satu set soal selidik yang terdiri daripada dua bahagian yang merangkumi topik sosio-demografi, persepsi dan kepuasan pesakit terhadap kesihatan dan kehidupan mereka yang mempunyai penyakit buah pinggang kronik dan menjalani dialysis. Semua peserta dikehendaki untuk menjawab semua soalan yang terdapat dalam setiap bahagian. Ia akan mengambil masa selama 10 hingga 15 minit. Penyertaan peserta dalam kaji selidik ini adalah scara sukarela dan mereka berhak untuk menarik diri daripada kajian ini pada bila-bila masa.

LAMPIRAN 3

Jabatan	Fasiliti
Jabatan Nefrologi	Wad 7A, Klinik Nefrologi & Urologi, Unit Hemodialisis

BIODATA OF RESEARCHER

YAP HUI YING

My name is Yap Hui Ying, a final year nursing student from Universiti Putra Malaysia (UPM). Previously, I studied STPM in SMJK Yu Hua, Kajang. In my childhood, I dreamed as a drawing artist. When I was seventeen, I changed my mind after my precious mother sustained a traumatic brain injury. I have a strong desire to learn medical knowledge and nursing care. My family were surprised and supported my decision to be a nurse in future. As soon as my university life began, I was immersed in an ocean of knowledge. As a university student, I like to participate in various activities that would boost my body health and even my psychological well-being. Yoga is my favourite among the activities. During my clinical posting in a public hospital, I developed my interest in cardiovascular and kidney disease cases. Apart from this, I was also wondering about the patient's life perception. Therefore, I decided to conduct research related to my interest fields. Nevertheless, I still have a long way to go to become a professional nurse.