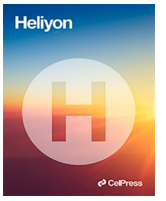
Heliyon 10 (2024) e37842

Contents lists available at ScienceDirect

Heliyon

journal homepage: www.cell.com/heliyon



Research article

A conceptual framework to improve the quality of life in patients with CKD on dialysis in KwaZulu Natal Province, South Africa

Pretty N. Mbeje [a], Geldine Chironda [a,b,*], Ntombifikile G. Mtshali [a]

[a] College of Health Sciences, School of Nursing and Public Health, 5th floor Desmond Clarence Building, Howard College Campus, University of KwaZulu-Natal, Durban, 4041, South Africa
[b] Seed Global Health, St John of God University, Mzuzu, Malawi

ARTICLE INFO

Keywords:
Conceptual framework
Quality of life
Chronic kidney disease
Dialysis
South Africa

ABSTRACT

Chronic kidney disease (CKD) is one non-communicable disease mainly caused by comorbid of diabetes and hypertension, thus compromising quality of life for the patients. Few rigorous Quality of Life frameworks on chronic kidney disease (CKD) have been reported in low-middle income countries including South Africa. Therefore, the study aimed at developing a Conceptual Framework to improve the Quality of Life in Patients with CKD on Dialysis in KwaZulu Natal Province, South Africa. A Mixed method sequential explanatory design which entails collection of quantitative data, followed by qualitative. A purposive sampling of 316 CKD patients for quantitative was initially selected. For qualitative, 17 healthcare professionals were theoretically sampled until data saturation. A structured questionnaire (WHO HRQOL–BREF) was utilized to collect numerical data for quantitative phase, while focus group discussions provided qualitative insights. The quantitative results indicated low quality of life (QoL) in several dimensions: economic (98 %), psychological (95 %), physical (70 %), and social (55 %). Grounded theory analysis of the qualitative data identified key predictors of QoL as the patients' geographic location, accessibility to haemodialysis centres, their ability to adapt and accept the condition, self-management practices, support from family members and caregivers including the presence of well-trained nursing staff.

A comprehensive conceptual framework was developed through identifying contextual factors, interventions and outcomes that is expected to improve the QOL. The study recommends the immediate intervention of the policy makers and health care providers in drafting and implementing policies to improve the QOL in patients with CKD.

1. Background

The World Health Organization (WHO) clearly stipulates the role of health in ensuring the availability of resources in caring for people with non-communicable diseases to prevent complications and reduce mortality [1]. Chronic kidney disease (CKD) is a non-communicable disease primarily caused by comorbidities such as diabetes and hypertension [2,3]. It is a disease that develops gradually affecting over 10 % of the global population thus equating to approximately 800 million people worldwide [4]. Despite the increasing number of deaths and years of life lost, the true burden of CKD is likely underestimated. According to information from the

* Corresponding author. College of Health Sciences, School of Nursing and Public Health, 5th floor Desmond Clarence Building, Howard College Campus, University of KwaZulu-Natal, Durban, 4041, South Africa.
E-mail address: gerrychironda@yahoo.co.uk (G. Chironda).

https://doi.org/10.1016/j.heliyon.2024.e37842
Received 31 March 2023; Received in revised form 8 September 2024; Accepted 11 September 2024
Available online 16 September 2024

Global Burden of Disease, the disease remains a significant public health issue which is fueling the prevalence of both non-communicable and communicable diseases [5,6]. Similarly, the International Society of Nephrology (ISN) estimated the prevalence of CKD in South Africa to be at 10.7 % [7]. This situation in South Africa is largely driven by the growing ageing population and the rising incidence of non-communicable diseases, particularly hypertension and diabetes mellitus [8].

The quality of life (QOL) as a concept has developed over time [9], initially appearing in 1920 with a definition that focused on a single dimension of QOL, depending on the context [10]. QOL is defined as an individual's perspectives in the context of their culture and value systems in comparison to their goals, expectations and standards as indicated by WHO [11]. Additionally, WHO outlines four dimensions of QOL as the physical, psychological, social, and environmental, the latter including economic factors [12]. In this study context, the participants perceived QOL as a universally desired outcome with a state of happiness or life satisfaction, being independent, living a normal life while adapting to disease challenges and positively striving towards goal-attainment.

Insufficient renal registries prove the fact that there are few reliable statistics on renal replacement therapies from Africa [13] which make the African governments unaware of renal failure as a debilitating disease of the African population [14]. The insufficient human resources and lack of coordination in healthcare systems in renal care results in delayed diagnosis of patients with renal failure at its early stages, leading to progression of disease to chronic renal failure [15,16]. This delay in diagnosis worsens the condition of the patient and it progresses to CKD stage 5 [17] thus compromising their functioning in life.

Few rigorous QOL frameworks on CKD have been reported in countries with disadvantaged economies [18,19]. While conceptual frameworks provide systematic and measurable changes in improving the service delivery and guide the greatest potential to quality of life [18]. Although the implementation of these models can be challenging, availability of models in CKD at primary health care (PHC) lessen the progression of renal disease [18,20]. Moreover, there is scarce of literature on similar studies conducted specifically for CKD QOL frameworks in LMIC. In the context of South Africa, there is still limited Quality of Life models on CKD to inform national campaigns that improves the QOL for individuals living with CKD.

2. Aim and objectives of the study

The study aimed at developing a Conceptual Framework to enhance the QOL for individuals living with kidney disease undergoing dialysis in South Africa. The specific objective were to.

- Describe the factors affecting the QOL for individuals on dialysis
- Investigate the predictors affecting the QOL in individuals on dialysis
- Triangulate the quantitative and qualitative findings and suggest comprehensive conceptual framework to be utilized to enhance the QOL in people living with CKD.

3. Methods

3.1. Research approach and design

The study framework emerged from the mixed-method approach [21]. A sequential explanatory design was implemented, which started with a descriptive survey to establish factors influencing the QOL in individuals undergoing dialysis. A qualitative descriptive exploratory design immersed in grounded theory approach, was employed to explore the perceived predictors of QOL in individuals living with CKD. Using the findings from both the quantitative and qualitative, a comprehensive conceptual framework which is expected to enhance the QOL for individuals with CKD was developed. All the information was collected from individuals with confirmed diagnosis and on dialysis from all districts in KwaZulu-Natal.

The structured questionnaire (WHO HRQOL – BREF) was used to elicit quantitative information and the focus group discussions to explore in-depth data to build up on the quantitative data obtained. Sequential mixed data analysis was adopted so as to obtain rich data to generate findings.

3.2. Stages of framework development

The conceptual framework development process was guided by a grounded theory approach which is recommended in developing models and theories [22]. A methodology proposed by Jarabeen was followed to guide the development of the framework through eight procedural phases [23]. These stages include: (1) mapping the chosen data sources, (2) thorough reading and categorization of the selected data, (3) identifying and labelling key concepts, (4) deconstructing and organizing the concepts, (5) integrating these concepts, (6) synthesis, re-synthesis, and ensuring coherence, (7) validating the conceptual framework, and (8) re-evaluating the conceptual framework [23]. Each phase is briefly explained within the corresponding methodological process.

3.2.1. Stage 1: mapping the chosen data sources

The initial sources of data were 316 participants from the total population of 418 patients. These participants were used for the quantitative aspect. In qualitative data collection, the initial group of participants were purposively selected followed by theoretical sampling as guided by the initial participants. Theoretical sampling continued till data saturation was reached. The initial sample size for qualitative data was six participants per focus group discussion which made a total of 17 participants.

The findings from both the quantitative and qualitative data were presented to the renal experts. This team was inclusive of nine

nephrologists, nephrology nurse were six and two pharmaceutical representatives for the renal product. This made a total of 17 participants.

The qualitative findings were putting more emphasis on the quantitative data to clearly understand the QOL inpatients with CKD on dialysis. This leads to number of phases that detail a systematic analysis process which was followed to generate a conceptual framework.

3.2.2. Stage 2: extensive reading and categorising of the selected information

QOL model intervention studies aim at improving quality of life of patients in general and specifically those with CKD. The categories of data that emerged for the quantitative and qualitative findings are used to create concepts which make meaning of the findings.

3.2.3. Stage 3: identification and naming of concepts

This phase included reading and recording data from the selected sources [23]. We further compare findings from both quantitative and qualitative data, making meaning out of those findings thereby generating concepts. The process was facilitated by using categories from the qualitative results on a starting point. Some other concepts emerged from literature, assisting the researcher to group the related categories and concepts accordingly. Strauss and Corbin refer to these as literature derived concepts [22]. This phase culminated in a list of concepts that emerged from the data sources and validated through literature.

3.2.4. Stage 4: deconstructing and categorising the concepts

In this stage, each concept is analysed critically with an intention to come up with the main characteristics, premises and roles which were further organised into categories according ontological, epistemological and methodological. See annexure 1 with a table which has four columns which names, describes, categorises lastly present the extracts of each concept.

3.2.5. Stage 5: integrating concepts

This stage aims at integrating the concepts with similarities. The manipulation and flexibility of concepts results to reasonable reduction. An example of integrated concept in this study is: Loneliness or isolation, change in social roles, family burden, being rejected were reduced to one concept which is social related-factors.

3.2.6. Stage 6: synthesis, re-synthesis, and making it all make sense

Concepts are synthesized to conceptual framework which is iterative showing relationships between and amongst concepts. The researcher continuously re-synthesizes the concepts until they create sense which made a recognizable initial draft of the conceptual framework. Selective literature review with specific focus to QOL models refined the conceptual framework.

3.2.7. Stage 7: validating the conceptual framework

The stage aims at validating the framework for scholars and practitioners to make sense on the research findings. Both quantitative and qualitative findings were presented to the renal experts who were the nephrologists, nephrology nurses and renal pharmaceutical representatives. The renal experts brought insight to some of the findings from the data collected.

3.2.8. Stage 8: Re-thinking the emerged framework

The conceptual framework is flexible and manipulative. The conceptual framework was revised after obtaining the feedback from the renal experts which gave new insights, comments and literature. The multi-disciplinary team which consisted of nurses, doctors, social workers, psychologists and dieticians gave input to the conceptual framework made a clear understanding of QOL in patients with ESRD. A well-describe and meaningful conceptual framework emerged as it was the main aim of the study.

3.3. Ethical consideration

Initially, the permission to carry out the study was given by the Biomedical research ethics of University of KwaZulu Natal (BEC506/17). The site approvals were obtained from the Provincial Departments of Health [KZ201709-72] and the Medical Managers of the four public hospitals in the Ethekwini and Umgungundlovu districts. Participants were given the opportunity to review the information sheet. For all the participants who agreed, informed consent was obtained voluntarily. Moreover, they consented to be audio-recorded during data collection. The rights of the participants were respected throughout the study.

4. Findings

The conceptual framework prescribed in this paper was generated from the quantitative and qualitative results of the first aim of this study which was to analyse the factors that contribute to the QOL of patients with ESRD on dialysis.

4.1. Quantitative findings on factors influencing QOL

A significant number of individuals on dialysis (91.7 %) exhibited poor quality of life, with economic (98.1 %), psychological (94.6 %), physical (70.3 %), and social factors (55.1 %) contributing to this outcome as indicated in Table 1 below [24]. Associated factors

included type of dialysis, with significant statistical differences observed in psychological and social aspects ($p < 0.0001$) [24].

4.2. Qualitative predictors of QOL

The qualitative grounded theory analysis of factors influencing QOL encompassed the physical location, accessibility of dialysis centres, individuals' adaptation and acceptance of the disease, self-management, family members and formal caregivers support as well as availability of trained nurses [25].

5. Triangulation of findings to develop the conceptual framework development

A concept is a term or label that describes a phenomenon or group of phenomena [26]. Conceptual models revise and transform nursing practice and are authenticated as evidence mount up in their transforming the way in which nursing is experienced and understood. It is used interchangeably with the conceptual model as the conceptual framework is defined as a network of interlinked concepts that facilitates a comprehensive understanding of a phenomena [23]. The conceptual framework was formed through a series of phases (See Table 2 below) with clearly defined goal/s, concepts forming the conceptual framework, conceptual relationship statements and assumptions [23].

5.1. Goal of the conceptual framework

(a) To guide the health service providers in the renal units on the strategies that can be implemented to enhance the QOL in dialysis population.
(b) To provide an evidence-based tool that may be used by policy makers, managers and leaders in developing policies advocating for the strengthening of renal care services.

The goals of this model were strongly supported by the group of experts as per the extracts below:

> "We need a framework that is research-based to assist us in convincing the leaders on the need for public-private partnerships and the possibility of sharing resources where possible …"

> "There is a need to decentralise renal care to other levels in the health care system and the recommendations from this research may provide some guidelines on what renal activities are expected to be done at different levels of care".

Bakas et al. asserted that health related QOL is a concern of policy makers, health care research practitioners as well as researchers conducting intervention studies [27]. Fig. 1 below indicates developed framework that is expected to enhance the QOL in dialysis population.

5.2. Components of the conceptual framework

5.2.1. Contextual conditions

Contextual conditions are referred to as those processes or actions that are implemented to attain specific goals. In this conceptual framework, contextual conditions are grouped under these concepts: individual domain, health care setting, health system and government (See Fig. 1). The concepts present the ontological assumptions which explain the knowledge of the nature of reality, real existence and action [23]. Contextual conditions are referred to as the causal conditions which exist prior to instruction that may relate to outcomes [22]. Contextual conditions are further viewed by Fawcett et al. as events that must be present for to trigger interventions [26]. Analysis causal relationships facilitates better understanding of interventions and outcomes from as it complements relationships between concepts [28]. In this study context, physical, social, psychological, economic and cultural were associated with QOL. These findings are almost similar to the findings by Artiz Medvedik and colleagues who indicated impact of CKD on QoL to be affected by medical, emotional, functional and social factors [29]. This is explained below:

Physical wellbeing:: Based on the study, physical wellbeing is defined as the ability of patients to carry out daily activities for the population of CKD undergoing dialysis. Self-efficacy relates to psychological constructs that relate to an individual's perceived competence to achieve desired goals. Patients with CKD on dialysis are restricted to self-sufficiency, perceived control, self-mastery, independence, and autonomy. Data sources revealed that the physical wellbeing is affected by swelling of lower limbs, shortness of breath, loss of weight, frailty as a result of bone weakness, and presence of comorbid conditions. The study revealed poor QOL(70 %) due to physical factors as they scored less than 50. In corroboration of the quantitative findings, one of the participants cited the

Table 1
Quality of life in individuals on dialysis.

Variable	Mean ± SD	Poor quality of life	Good quality of life
Economic factors	17.51 ± 11.95	98.1 %	1.9 %
Psychological factors	20.71 ± 14.83	94.6 %	5.4 %
Physical factors	43.24 ± 11.66	70.3 %	29.7 %
Social factors	42.24 ± 16.04	55.1 %	44.9 %

Table 2
Phases of conceptual development methodology.

Concepts	Description of concepts	Categorization
QOL in patients with ESRD		
Physical-related factors	Comorbid conditions, swelling of lower limbs, loss of weight, frailty, darker complexion, recurrent infections	Epistemological concept
Social related-factors	Loneliness/isolation, change in social roles, family burden, being rejected	
Psychological related factors	Denial, depression, anxiety, low self-esteem, lack of confidence	
Cultural factors	Use of traditional healers	
Environmental factors	Unemployment, financial dependency	
Contextual conditions		
Individual, Health facilities; Health system and Government-related factors	Knowledge, acceptance of illness, self-management	Ontological concept
Interventions		
Individual	Patient health education, acceptance of the condition, coping mechanisms, self-management, social Support, financial support	Methodological concept
Health care facilities' setting	Dialysis resources availability, Renal multi-disciplinary team availability, patient management System – monitoring and follow up, disease related health information sharing	
Health care system	Decentralized model of care, collaboration with traditional practitioners, provision for specific basic human needs, public private partnerships strengthening, Primary Health Care Approach	
Government	Reinforcing Legal and ethical frameworks, constitution of the country, National Health Act, Patient's Bill of Rights, Batho-Pele Principles	
Outcomes		
Outcomes	Positive perception of self and one's position in life, effective palliative care to patients with ESRD, efficient, adequately resourced and well -coordinated system	Epistemological concept

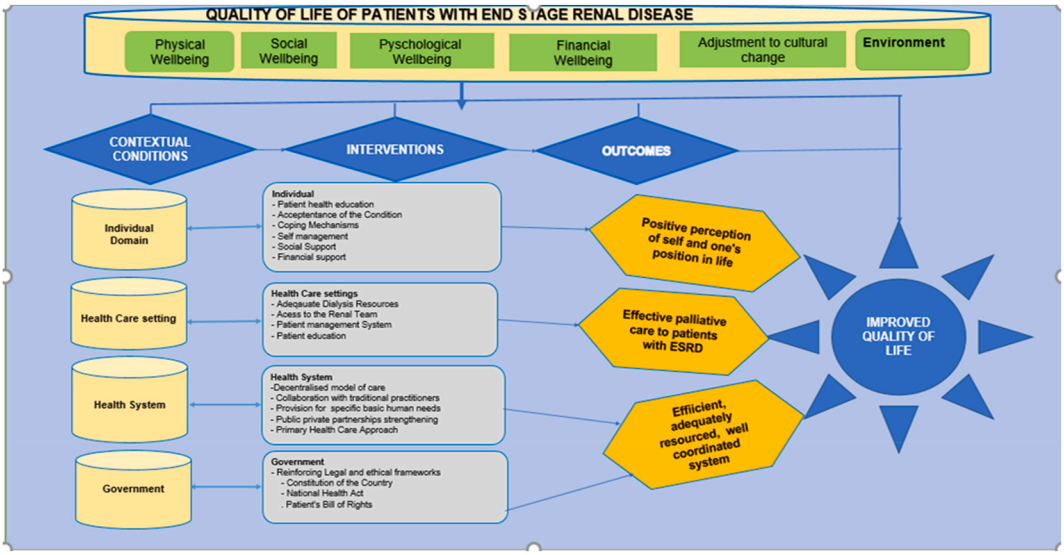


Fig. 1. A schematic presentation of framework to enhance the QOL in individuals with CKD (Authors, 2024).

following statement: The following statement was cited by one of the participants: *"… I can't walk faster because I easing become and tired and be short of breath …"*P11. Furthermore, physical factors are those elements that affect the physiological functioning of an individual which include self-care activities [30]. Mogotlane further explained that physical needs are "factors which are necessary for the optimum physical and physiological functioning of the body [31]. This confirms the concept of Maslow's hierarchy of needs theory which strongly emphasise on the basic needs of human being in a hierarchical order [32]. Thus, these factors influence the ability of the population with CKD to perform daily activities with negative consequences on their QOL.

Social wellbeing: In the context of this study, social wellbeing is defined as the capacity of patients with CKD on dialysis to engage effectively in their social roles and participate in valued social activities. Social networks are seen as the social relationships surrounding individuals, including their characteristics individual perspectives. Inadequate social support adversely affects the quality of life, as evidenced by 55 % of participants scoring below 50. The population on PD scored worse compared to those on haemodialysis ($p = 0.005$). Supporting these findings, one participant noted: "Family support …. is keeping me strong …" P7. Social functioning is described as the ability of individuals to communicate with family members, friends, and the society [29,30]. In this study, social

wellbeing is influenced by factors such as loneliness or isolation, family burden, and experiences of rejection.

Psychological wellbeing: Psychological wellbeing refers to a state of being psychologically stable, including a wide variety of cognitive, emotional and interpersonal factors [30]. In this conceptual framework, the findings included the concepts like self-confidence and esteem from perception of body image. Self-esteem is a component of mental health and satisfaction with life, hence affected by depression and loneliness. People with high self-esteem are likely to be risk takers in a positive way that allows them to cope better. The psychological domain in individuals od dialysis is a great concern as this study confirmed approximately 95 % to exhibit poor quality of life with patients on peritoneal dialysis scoring less than those on peritoneal dialysis ($p = 0.0004$) [24].

In justification of the quantitative findings, one participant verbalised the following statement: *"I feel so ashamed if I see people that know me …. as I use a walking frame because of bone disease …"* (P2)

Denial, depression, anxiety, low self-esteem and lack of confidence are the worst defence mechanisms in management of patients and denial proved to be the main cause of non-adherence which negatively affect their QOL [33–35].

5.2.1.1. Financial wellbeing. In the context of this conceptual framework, economic factors are defined as those dynamics that enable financial stability on patients. In this study findings, economic factors that emerged are unemployment and financial dependency. Data findings revealed that 98.1 % had poor QOL due to economic factors. Although there was no statistically significant difference, patients on peritoneal dialysis were the worst affected compared to those on haemodialysis. These quantitative findings are corroborated with the following extract from one of the participants: *"I lost my job and because of this illness and I depend on my grandmother's pension for survival …"* P6

Economic constraints and worsening financial dependency are main causes of poor QOL. This is aggravated by high in-patient and out-patient costs (dialysis, medication) which cannot be compromised by patients in order to survive [36,37].

General Health: General health in this study framework include attributes that influence the QOL in individuals with CKD in all dimensions of care. General health factors that emerged in this study are: comorbid conditions, frequent hospitalisation, recurrent infections and renal-related operations. This statement is validated by findings of the study where nearly 96 % had an outstanding score on QOL in relation to general health conditions. These quantitative findings are corroborated with the following statements from the participants: *"… I am always admitted with infections or poor drainage and end up in theatre that is why I'm always sick …"*P6

Good support system improves compliance and lifestyle adjustment thus impacting profoundly on QOL on individuals living with CKD [38].

Adjustment to cultural change: In the context of this framework, adjustment to cultural change refers to modification of the culturally ascribed social roles as a result of the impact of ESRD and dialysis on patients. In this study emerged when breadwinners in households become dependent to others for financial support. Some participants change their female roles to be the providers in the families. The elderly family members provide support to their grown up children instead of being supported by them and this contributed to loss of confidence and lack of self-esteem. The findings revealed that 66 % ($n = 177$) agreed to have adjusted to cultural change because of the impact of dialysis in their daily activities. These findings were substantiated by the following extract from the participant: *"… my wife had to look for a job and now I'm taking the role of cleaning and cooking since our kids are still young …."* P14.

The support offered by family, friends including relevant others were found to have an influence on compliance and lifestyle adjustment thus affecting the QOL in the kidney disease population [38,39].

Environment: Environment in this conceptual framework is referred to as the 'space' where patients do their peritoneal dialysis and the support structure in terms of the family and the community where the patient stays. A clean environment is the main "buzz word" when the patient is to commence peritoneal dialysis whether in the ward or at home to prevent infection. The support from the family structure as well as the acceptance by the community provides a therapeutic environment to dialysis population and improve their QOL. *"Hygiene is very important when you are on dialysis …..everything is to be clean, washing hands thoroughly and the surface where you do your PD change it has to be spotless clean …"* P10.

Self-management is an essential aspect to individuals on dialysis. With intensive knowledge, they are able to overcome dialysis-related challenges by prevention of infection and management of fluid overload [40]. The presence of supportive family members, caregivers and renal multidisciplinary team play a crucial part in enhancing the patients' QOL [41–44].

5.2.2. Interventions

In this conceptual framework, interventions are the combination of the strategies designed to improve health status (Fig. 1). In this study context the strategic interventions aimed are: (1) individual, (2) health care settings, (3) health system, and (4) government and are discussed below:

Individual related interventions: In this framework, individuals are the dialysis population. The individual interventions in the proposed framework are: giving health education to patients, acknowledging the disease, coping mechanisms, managing self, social and financial help. Patients on dialysis are given an intensive health education to ensure efficient self-management as they encounter challenges caused by dialysis which grossly affect their QOL. Acceptance of the condition is the main coping mechanism that facilitates adherence and improves self-management. Social support system provided by family, social support groups, village support as well as traditional healers, need to be strengthened to enhance the individual perceptions of CKD population on dialysis. This is supported by the following extracts: *"… If it wasn't for the support given by my family, I would have not coped through all the difficulties ….."* P16.

Orem's Self-Care theory involves activities performed by an individual to achieve an optimum level of life and improve well-being [45]. An individual is defined by Bryne et al. as the recipient of nursing care which is viewed in relation to the environment as influencing human wellbeing [46]. Knowledge about CKD brings about clear understanding of illness and appropriate

self-management to prevent associated complications [47].

Health care settings related-interventions: Health care settings, in a public sector perspective, are in this framework referred to as the selected health facilities for the purpose of the study. These health care settings were: one tertiary, two regional, and one provincial hospitals. It emerged from data sources that adequate dialysis equipment, access to renal team, patient management system and patient education are the interventions that are proposed to enhance the QOL of individuals living with dialysis. Health education on management of CKD and ESRD, given at all levels of care by the care providers, will increase knowledge on disease-related information. This is supported by one of the renal experts in this stated: *"Sufficient number of renal experts and dialysis equipment will play an important role in providing quality patient care thereby …"*

Fair patient management system will include patient monitoring and early detection of non-compliance. The primary prevention strategies include screening of risk population, monitoring of blood pressure and glucose levels, urinalysis, treatment adherence, hydration status assessment and history taking testing and appropriate referral procedures. Secondary prevention includes early identification and care of risk factors such as high blood pressure and diabetes mellitus, patients' monitoring for adherence to treatment and follow-up. Thorough screening of kidney disease facilitates early detection including management of patients before the condition complicates to CKD stage 5 which requires chronic dialysis [48].

Health System related interventions: Health care system in the context of this conceptual framework, involves decentralized model of care, collaboration with traditional healers, provision of specific basic human needs, public-private partnership strengthening and PHC approach. One of the participants made this statements: *" …. would like policymakers to intervene on decentralising the renal services to the district hospitals and even to PHC settings"*.

Decentralisation model of care emerged from the recommendations by the renal experts. This framework is supported by Stanifer et al. who agreed that decentralisation of renal services will ensure the involvement of more health workers in providing renal care within the diverse levels of the care system [49]. Additionally, decentralisation in the low-income countries is being encouraged, supported and promoted by WHO and UNICEF [50]. Decentralisation of renal services will strengthen primary health (PHC) care re-engineering as developed by the district health services which provides a structured health service delivery system thereby improving the QOL in individuals with renal disease.

Working together with traditional practitioners in this framework refers to their involvement in giving appropriate and efficient health care to patients. It emerged in this study that late presentation to health professional is sometimes caused by consultation with the THPs which delays intervention and negatively affect the QOL in individuals on dialysis. This is justified by the following extracts: *"When my condition worsened, my father took me to the traditional healer and I was using his muti …"* (P13)

> *"I started using the herbs from three traditional healers, one after the other, but it never helped, instead, after the 3rd one, my condition became worse …"* (P11).

In the context of this study, most individuals with renal diseases in the province of KwaZulu-Natal come from remote geographical areas where some believe in the use of traditional medicine. Hence, Collaboration with the traditional health practitioners will enable the health care professionals to intervene in the management of patients with CKD and early if referral will be done timeously to improve their QOL.

Public-private partnership, in this framework, involves collaboration with private sector renal health care providers in improving the QOL in patients with CKD. Strengthening collaborative services provide support of interventions jointly with an intention to enhance the positive health outcomes of individuals living with CKD. Most importantly, the objective of private-partnership is health oriented instead of curative focus which is supported by the statements below:

> "Integration of service delivery will strengthen collaboration of service agencies thereby improving health outcomes especially of patients with ESRD …."

To enhance health outcomes and quality of life, this collaboration is reinforced through several strategies which includes ensuring adequate and appropriate responses, clarifying areas of overlap, creating a unified plan for clients, fostering understanding and knowledge sharing, and establishing funding streams and budgets to support mutual efforts [44].

Government related interventions: Government related interventions in this framework include those activities that are aiming at improving the QOL in patients with CKD. Government has a role of reinforcing the legal frameworks that are in place such as the Constitution of the country. The governmental interventions that emerged in this framework are: legal and ethical frameworks, the constitution of the country, National Health Act and patients' Bill of Rights. In this study context, an access to health care is vital to render specialised care to patients with CKD on dialysis. On the other hand, access to treatment as promised by the SA constitution is not yet materializing and this remains a great concern [51]. This is substantiated by the following participant: *"It will be greatly appreciated of the government considers decentralisation and* supports *public-private partnership in renal services."*

Likewise, the Bill of Rights is again the most important section of the Act which binds the health care providers to ensure the access of patients while providing fair treatment [52]. Contrary, Naicker et al. stated that not all patients with CKD stage 5 in the South African public sector can access dialysis, only those patients that are eligible to transplantation programme are funded by government [4]. Moreover, the issue of accessibility of dialysis to population with kidney diseases is not only limited to South Africa but can extend to sub-Saharan region and beyond for various specific reasons which are country specific. For instance, patients with CKD stage 5 gain access to haemodialysis in state hospitals whether they qualify for kidney transplantation or not due to non-availability of kidney transplantation in most regions of Africa [53].

In low and middle income nations, long term dialysis becomes difficult to maintain due to its associated high costs hence criteria of rationing is applied to save the few [54]. Hence, involvement of government in equal distribution and access to health services will

improve patient satisfaction and quality care. There are ethical issues and dilemmas related to offering of RRT which include allocation of scarce resources [55]. In South Africa, this is further exacerbated by the strict selection criteria [56]. Moreover, the healthcare and patient perspective indicated doubts in getting the kidney transplantation as one of the crucial barriers in managing the CKD [57]. Development of tailored interventions will vastly contribute towards effective management of CKD thereby reducing the barriers caused by poor socio-economic status. Promotion of awareness campaigns for the society to clearly understand kidney failure and kidney donations is a good strategy to deal with waiting lists [57].

5.2.3. Outcomes

Outcomes are, in this framework, are referred to as the effects of implemented interventions which positively contribute towards an improved QOL for people living on dialysis. The emanated outcomes from the framework were: positive perceptions of self and one's position in life; effective palliative care to patients with ESRD; efficient, adequately, resourced and well-coordinated system (Fig. 1).

Consideration of the presence of comorbid conditions including visual impairment, financial problems, malnutrition, hearing loss, social issues is crucial when caring for an elderly. Advanced palliative care planning is therefore necessary in managing the elderly who require the end-of-life care [58]. Social support significantly improve QOL and better health outcomes in patients with ESRD. Under-resourced institutions negatively affect the QOL of patients. Timeous diagnosis and referral of patients with CKD slows progression to ESRD and reduces the risk of death [48]. Adequate resources and well-coordinated system effects early referral thereby decreasing the chances of developing fatal renal complications. In this study context, through active intervention of policy makers, sufficient haemodialysis machines and adequate renal experts will ensure even distribution of resources to the population in need.

Good quality of life: Quality of life is conceptualised as the normal lifestyle or a state of well-being where individuals are able to perform activities of daily living independently. QOL is also perceived as happiness and striving towards goal-attainment. Financial stability is also viewed as good QOL. It is also argued that QOL is the ability to maintain a well-balanced physical, social, emotional, social and environmental relationships. Maintaining emotional balance while encountering different challenges in life contribute towards good QOL. In a heath care institution, it also involves patient-centred approach which encompasses proper needs assessment and appropriate referral.

Nursing practice outcomes: Efficient renal nursing will facilitate towards the attainment of better QOL through rendering of specialised care when addressing the needs of the patients. The availability of renal specialised nurses will enable the nursing fraternity to be continuously updated on renal nursing issues and sharing knowledge obtained in seminars and conferences will improve patients' well-being and their QOL. This will facilitate the integration of theory and practice thereby further contributing towards holistic nursing through patient-centred care.

System related outcomes: Prevention and early detection of diseases is the core function of the PHC providers by the well-established District Health System. However, this can be achieved if the infrastructure including human resources is in place. Implementation of the South African National Health Priorities will assure the positive patient outcomes and efficient management of multi-morbidity which will minimise the number of patients with ESRD. Addressing the challenges faced by the SA health system will facilitate universal coverage through increasing the health care professionals and re-shaping the health services. Schneider and Nxumalo clearly articulated that the availability of evidence on the role of community-based health action, driven by the process of PHC re-engineering, indicates a smooth swift towards universal health coverage [59].

Transferrable skills: The training and retention of renal experts will ensure that skills of management of patients with ESRD will be transferred to all other health care services if skilled personnel are equally distributed to all other health care access facilities. Skills are not only transferred to other health professionals but also to the patients as they are expected to be knowledgeable on their illness and its challenges. This information sharing from the renal experts will facilitate proper self-care on patients and prevention of symptoms burden.

6. Limitations

The biggest population of patients with ESRD in KwaZulu-Natal is found in the private sector yet this study was done in the public sector which resulted to the findings being generalized to the province as the whole and the population of patients with ESRD. Inclusion of renal experts from the primary data collection, would have strengthened the theoretical propositions made.

7. Conclusion and recommendations

The comprehensive conceptual framework has drawn together the concepts that emerged during selective coding which is the last step of data analysis according to Strauss and Corbin (1990) thus serving as a foundation for scientific advances. Africa including South Africa is faced by a challenge of human resource with expertise in renal care as well as unavailability of dialysis resources. Hence, the present study forms the basis of the framework that will guide healthcare professionals to effectively manage CKD patients, thus improving their QOL. Future studies on QOL in chronic diseases including CKD will utilise the developed work as the conceptual frameworks guiding the study. Implementation of the proposed framework and collaborative partnership, will not only improve the QOL in patients with ESRD but will also enhance the principles of Batho-Pele in the whole society. Further recommendation include the immediate intervention of the policy makers and health care providers in drafting and implementing policies to improve the QOL in individuals living with kidney diseases.

Ethics statement

The permission to carry out the study was given by the Biomedical research ethics of University of KwaZulu Natal (BEC506/17). The site approvals were obtained from the Provincial Departments of Health [KZ201709-72] and the Medical Managers of the four public hospitals in the Ethekwin and Umgungundlovu districts. Informed written consent were obtained from the participants.

Funding

This study is part of PhD project sponsored by the College of Health Sciences in the University of KwaZulu-Natal, South Africa.

CRediT authorship contribution statement

Pretty N. Mbeje: Writing – review & editing, Writing – original draft, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Geldine Chironda:** Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation, Formal analysis, Conceptualization. **Ntombifikile G. Mtshali:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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