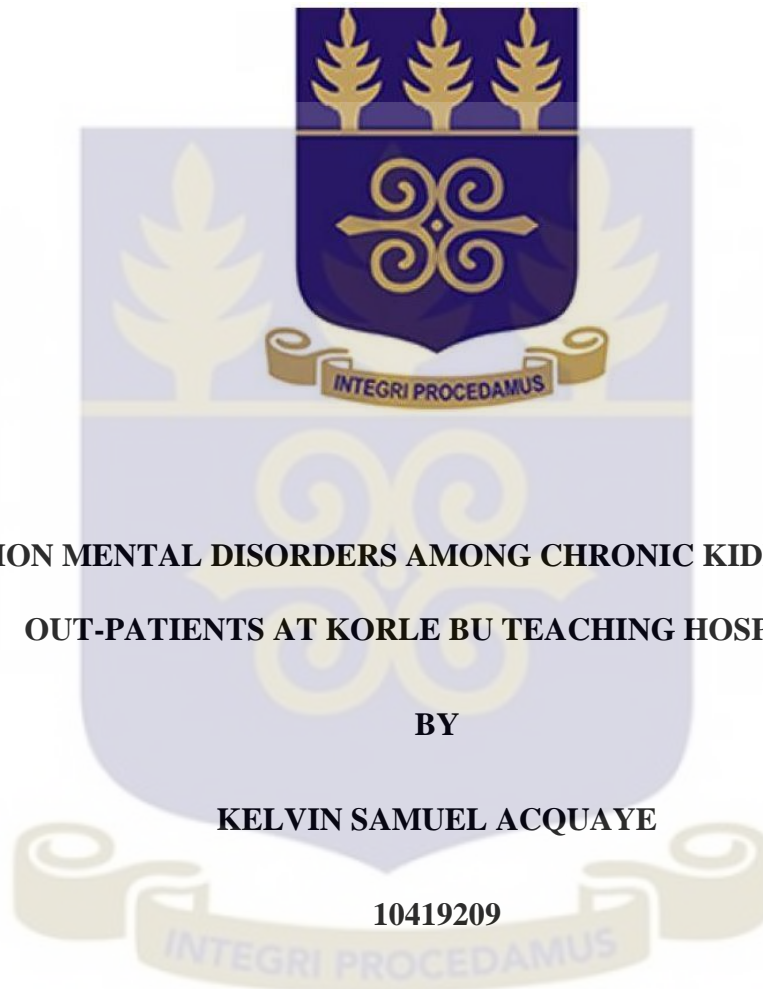


UNIVERSITY OF GHANA
COLLEGE OF HEALTH SCIENCES
SCHOOL OF PUBLIC HEALTH



**COMMON MENTAL DISORDERS AMONG CHRONIC KIDNEY DISEASE
OUT-PATIENTS AT KORLE BU TEACHING HOSPITAL**

BY

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**THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA,
LEGON IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE
AWARD OF MASTER OF PUBLIC HEALTH DEGREE.**

JULY, 2019

DECLARATION

I, KELVIN SAMUEL ACQUAYE, do hereby solemnly declare that, apart from references made to other sources, this work was done by, belongs to me, and to the best of my knowledge, has not been submitted by any other person for any other degree in any other institution. All sources of information herein used have been duly recognised and acknowledged.

Signature

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Signature

Date:

Dr Benedict Weobong

(Supervisor)

DEDICATION

I dedicate this work to all chronically ill patients in Ghana and all over the world. My heart is with you as you try to deal with daily stresses of the condition. May you continue to have hope to keep on fighting. God bless and keep you.

ACKNOWLEDGEMENT

I express my very great appreciation to the supervisor for this dissertation, Dr Benedict Weobong for his mentorship, and tremendously helpful assistance and guidance throughout my work. I am especially grateful for your prompt and constructive feedback at all times. I am grateful to all lecturers of the Master of Public Health 2018/2019 cohort of School of Public Health, especially from the department of the Social and Behavioural Sciences, for their tuition, valuable advice and encouragement in the area of research.

My profound gratitude goes to the head and nurses of the Renal Unit in the Korle Bu Teaching Hospital for their great assistance and co-operation during the data collection phase of my work. I am especially grateful to all the respondents who agreed to participate in this research and willingly provided the needed information. Without you, the study would simply be impossible.

I express my profound gratitude to Mr Bernard and Mrs Betty Acquaye for sponsoring my Master of Public Health education. I am eternally grateful to my parents Apostle Alex Acquaye and Charlotte Acquaye for their love, prayers and support all these years. I would also like to thank all family and friends for their constant encouragement, prayers, love and support. Thank you for always being my inspiration.

ABSTRACT

Background: The association between chronic conditions such as Chronic Kidney Disease (CKD), and common mental disorders (CMD) or psychological distress has been well established in studies all over the world. This is however expected to be moderated given the presence of social support both from literature and practice.

General Objective: The study aimed at determining the prevalence of CMD, identifying factors associated with increased levels of psychological distress, and determining the role of perceived social support in CKD outpatients at the Korle Bu Teaching Hospital.

Methods: The design of the study was cross-sectional and employed quantitative data and statistical methods. The study site was the Korle-Bu Teaching Hospital, specifically the out-patient department and the renal unit of the medical block. A sample of 349 CKD outpatients, upon giving consent, was consecutively recruited into the study in June, 2019. The Kessler psychological distress scale (K10) and the Multidimensional Scale for Perceived Social Support scale were used to assess participants, including socio-demographic information and clinical data.

Results: Using the Kessler (K10) scale, the prevalence of CMD is 67.91%. Again, it is expected that 25% of all patients seen within primary care will score above 20 on the K10, signifying presence of CMD. The proportion of respondents scoring 20 and over from the current study is far greater than this proposed proportion ($z= 19.28$, $p<0.0001$). The main predictors of CMD among CKD were Estimated Glomerular Filtrate Rate (eGFR) categories and whether or not an individual was on dialysis, with increased odds of CMD with respect to eGFR decline [Adjusted Odds Ratio = 0.998

(95% CI: 0.980 , 1.016), $p < 0.01$)] and CMD being more prevalent among patients on dialysis [Adjusted OR = 3.82 (95% CI: 1.29 , 11.32), $p = 0.016$].

Discussion: There was a high prevalence of CMD among CKD outpatients. CMD or psychological distress, also declined with decrease in renal function. For outpatients on dialysis, dialysis was a major source of psychological distress. Perceived social support did not significantly affect the relationship between either renal function or dialysis status and psychological distress.

Conclusion: CKD outpatients continue to be at an increased risk of major psychological ill-health as their kidney function further deteriorates. Further studies need to be done to explore issues concerning adjustment and resilience, in addition to the external social support that has been discussed as important in chronic disease management.

TABLE OF CONTENTS

DECLARATION	i
DEDICATION	ii
ACKNOWLEDGEMENT	iii
ABSTRACT	iv
LIST OF ILLUSTRATIONS	viii
LIST OF ABBREVIATIONS	ix
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background	1
1.2 Problem statement	3
1.3 Justification of study	6
1.4 Research questions	8
1.5 Research objectives	8
1.6 Conceptual framework	9
1.6.1 Narrative of Conceptual framework.....	10
CHAPTER TWO	12
LITERATURE REVIEW	12
2.1 Theoretical Framework	12
2.1.1 Biopsychosocial Model.....	12
2.1.2 Adjustment Theory.....	12
2.2 Related studies	14
2.2.1 Prevalence of CKD.....	14
2.2.2 Common Mental Disorders and mental health needs in patients.....	20
2.2.3 Importance of Social Support in Chronic conditions.....	24
2.2.4 Psychological Distress among CKD patients.....	27
2.2.5 Gaps identified in Literature.....	29
CHAPTER THREE	30
METHODS	30
3.1 Study site and population	30
3.2 Study design	30
3.3 Inclusion criteria, sampling strategy and sample size	30

3.4 Instruments	32
3.5 Ethical consideration	34
3.6 Data management and analysis	34
3.7 Statistical methods	34
CHAPTER FOUR	36
RESULTS	36
4.1 Background characteristics	36
4.2 Prevalence of CMD (psychological distress).....	40
4.3 Relationships.....	41
4.4 Associations	44
CHAPTER FIVE	47
DISCUSSIONS	47
5.2 Limitations	48
CHAPTER SIX	50
CONCLUSION AND RECOMMENDATIONS	50
6.1 Conclusion	50
6.2 Recommendations	50
6.2.1 Clinical Practice	50
6.2.2 Research.....	51
REFERENCES	52
APPENDICES	60
Appendix I: INFORMATION AND CONSENT SHEET	60
Appendix II: QUESTIONNAIRE.....	63
Appendix III: ETHICAL CLEARANCE.....	66

LIST OF ILLUSTRATIONS

Conceptual Framework	9
Table 4.1: Characteristics of Respondents by K10 score	27
Table 4.2: Characteristics of Respondents by CMD category	30
Table 4.3: Factors associated with CMD	35

LIST OF ABBREVIATIONS

ACR: Albumin to Creatinine Ratio

CKD: Chronic Kidney Disease

CMD: Common Mental Disorders

eGFR: Estimated Glomerular Filtrate Rate

ESRD: End Stage Renal Disease

GBD: Global Burden of Diseases

MSPSS: Multidimensional Scale for Perceived Social Support

NCD: Non-communicable Diseases

OPD: Out Patient Department

WHO: World Health Organisation

CHAPTER ONE

INTRODUCTION

1.1 Background

Chronic Kidney Disease (CKD) is a disease that is characterized by a progressive decline of kidney function over time. It is diagnosed by observing indicators of kidney damage via imaging and/or decreased levels renal function that are below certain cut-off points of Glomerular Filtrate Rates (eGFR) estimated from serum creatinine concentration) (National Kidney Foundation, 2017). According to Levey et al. (2011), CKD is defined as a reduced kidney function characterised by an eGFR of 60ml/min per 1.73m² or a urinary albumin-to- creatinine ratio of 430mg/g, and, classified into 5 stages of renal function from mild to end-stage renal disease . As kidney function deteriorates, it leads to a build-up of large amounts of waste in the blood and increases the risk of problems such as anaemia, hypertension, nerve damage and weak bones, according to the National Kidney Foundation (2017).

There has been a major challenge with the diagnosis of CKD, and this together with other correlates of the condition, has attracted the attention of Public Health practice over the past decade (Alkerwi et al., 2017). Although CKD has been a major public health problem in Sub-Saharan Africa, there is very limited data on its prevalence, and this gap is largely due to the problem of diagnosis (Osafo, Mate-Kole, Affram, & Adu, 2011). The most accurate procedure of diagnosing CKD has been to make estimates of the Glomerular Filtrate Rate (eGFR) using the serum creatinine

concentration, and these estimates are transformed using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation (Levey et al., 2009).

CKD has been found to have a bearing on psychological health due to a drastic change in lifestyle including changes in dieting as well as stress induced by having to take medications, financial difficulties associated with funding both haemodialysis treatment and medications, social and marital problems (Hill et al., 2016). In addition, loss of renal function is usually related to depression as well as problems with social role, sexual function, physical and intellectual capacity (Esen et al., 2015). Therefore in recent times, in the treatment of CKD, it is not only important to focus on therapeutic effects or physical health correlates, but it has also become necessary to attach importance to the patients' psychological health, which also involves an enhancement in quality of life (Zhou et al., 2017).

Common mental disorders (CMD) are defined as symptoms of depression, anxiety and somatization that are non-psychotic and significantly interfere with daily functioning (Endsley, Weobong, & Nadkarni, 2018; Goldberg, Oldehinkel, & Ormel, 1998). In addition to depressive, anxiety and somatic symptoms, CMD include adjustment and disorders of substance use (Steel et al., 2014), that can cause significant emotional distress and impact on daily function leading to social, occupational and physical disability (Zivin et al., 2015). CMD and psychological distress have been used interchangeably according to the definition in literature, and the two will be used interchangeably in this study. In literature, there is a strong association between stressors from significant life events (including illness), socio-economic status and mental health. Stress, negative life events and lower socio-

economic positions are seen to increase the chance of mental health problems (Dzator, 2013; Lantz, House, Mero, & Williams, 2005; O'Connor, Dohrenwend, & Dohrenwend, 1971). There have been several studies on the relationship between stress exposure, including health stressors, and mental health problems (Dzator, 2013; Helgesson et al., 2018; O'Connor et al., 1971). Unfortunately, most of these studies are focused on developed countries and there is therefore the need for more studies in this area within the context of developing countries.

1.2 Problem statement

According to the Global Burden of Disease (2015) Disease and Injury Incidence and Prevalence Collaborators (2016), a global survey of disease burden has shown that non-communicable diseases (NCDs) account for ninety percent of leading contributors to disability-adjusted life years. Due to the stressful nature, treatment costs and physiological effects of chronic conditions, their effects with respect to mental health of patients have been well known in literature (Lee et al., 2015; Myers et al., 2018). CKD is a condition that is both chronic and falls within the category of NCDs. In recent times, CKD has had a prevalence of 13.9% in Sub-Saharan Africa alone (Stanifer, 2014), and this is quite alarming in relation to the world-wide prevalence that is within a margin of 11% to 13% (Hill et al., 2016).

Further, a major concern with CKD in Ghana stems from the fact that it is usually asymptomatic until later stages when it becomes severe. This results in many of the patients being lost to mortality and creating a situation where management is not started early enough to curb the progression of the condition (Osafu et al., 2011)

thereby increasing demand and cost to health systems, as well as insufficient data for research purposes.

An increased risk of cardiovascular morbidity, reduced life expectancy and decreased quality of life are associated with every stage CKD. (Hill et al., 2016). Further, CKD is associated with poor psychological health due to drastic changes in lifestyle (for example dietary and fluid restrictions, and medications), financial difficulties associated with funding treatment, social and marital problems, as well as direct organic effects of the condition such as oedema and toxic build-up. (Hill et al., 2016; Theofilou, 2013).

A more effective approach towards CKD management would therefore be one that focuses on the importance of the psychological and socio-cultural components of health on the anatomical and physiological aspect of the condition. This seeks to suggest that the application of a biopsychosocial model that is dynamic and looks at the reciprocity of the relationship between the biological, psychological and socio-cultural dimensions (Lehman, David and Gruber, 2017), is relevant to the overall management of a medical condition such as CKD, as opposed to the popular biomedical praxis. Against the backdrop of an established relationship between chronic diseases and poor mental health, it is ideal to integrate psychological care into the management plan in order to improve treatment outcomes of life of patients (Myers et al., 2018).

Regardless of the need for this approach to CKD management, the current practice is dominated by a major focus on the biomedical markers of disease activity and progress, and health in general. At best, physical health and psychological health are

treated as two separate aspects of health that will never interact. This leads to a huge treatment gap in terms of psychological health. Thornicroft et al. (2017) propose that, based on analyses from the WHO World Mental Health Survey collected on the prevalence of major depressive disorder among other conditions within a 12-month period, between 2001 and 2015, only 20% of persons suffering from major depressive disorder get the needed professional intervention. Especially among the working population, this is problematic due to social climate issues which impact productivity at the workplace and economic cost due to undetected and potentially untreated mental health disorders that are seen to escalate due to lack of early intervention (Rothermund et al., 2018).

In Ghana, there is a wide treatment gap of 98% for mental health among the proportion of the country's population that are expected to be experiencing a mental health challenge (WHO, 2010). It is further proposed that about nine percent of disease burden in Ghana is made up of mental disorders (Menil et al., 2012). A mental health bill was enacted geared towards advancements in mental healthcare in the country in order to address the treatment gap by improving upon availability and access to facilities and other resources, and also to enhance mental health education and awareness in Ghana (Menil et al., 2012). Since there are already limited opportunities for professional attention due to limited number of mental health professionals and facilities, a more effective approach to addressing Ghana's mental health challenges would have been to intervene at the primary and secondary prevention levels. However, the poor attention currently given to psychological health

as part of general healthcare leads to mild and moderate common mental health challenges worsening with time.

Although a case is made about the increasing prevalence of mental illness on its own in Ghana, in addition to its social-economic correlates (Canavan et al., 2013), most of such researches done have overlooked the burden of CMD or psychological distress among chronic physical medical conditions. The study of psychological distress in CKD is relevant because there is an evidently high prevalence of psychological distress which gets worse with worsening kidney function (Zalai, Szeifert, & Novak, 2012). These high levels of psychological distress that are usually undetected and untreated are often associated with increased risks of treatment failures, and hence higher costs to health systems, and death (Evans et al., 2005).

1.3 Justification of study

Although psychological distress among CKD is an area of public health importance, it has not been sufficiently researched in Ghana. Most studies in CKD have focused largely on finances and other socio-economic factors. Given the high costs of haemodialysis treatment and medications for the chronic management of CKD, it is entirely reasonable to have such a focus. However, these can further be related to the prevalence of CMD and how to have leverage points for the current treatment gap in Ghana's mental health.

The purpose of this study is to determine the prevalence of CMD among CKD outpatients. In addition, it seeks to determine the relationship between certain socio-demographic and economic factors, and psychological distress in CKD. This seeks to

form the basis of an argument to incorporate routine screening for CMD into CKD as well as other areas of chronicity. In relation to findings from what has been discussed, this would enhance tracking and treating mental health conditions in order to address the current gaps in treatment. Although inpatients usually benefit from holistic care while in the health facility, outpatient attendants only come for review and/or treatment (e.g. haemodialysis, prescriptions), and return home to continue with the treatment. Given the relatively limited time spent at the outpatient department (OPD), certain factors (including psychological health) are overlooked during reviews. Studies have shown the well-established relationship between chronic conditions and mental health. However, from literature searches conducted, most of the studies done have focused mainly on only depression as an aspect of psychological distress (Nakash et al., 2014), and were done in developed countries (Dzator, 2013).

The current study seeks to explore the prevalence, correlates and associated factors of CMD among CKD patients who receive out-patient care. Ghana passed a Mental Health Act in 2012 to protect the rights of persons with mental disorder, to create a community-based system for mental health that is contemporary and effective, to create the Mental Health Authority and Fund, and to create an enabling environment that respects and protects the dignity of issues concerning mental health among other provisions in the Act (Walker & Osei, 2017). Consistent with the Mental Health Act, findings from the current study are aimed at ensuring that psychological health is given the required attention in other fields of health care in order to contribute towards enhancing mental health in Ghana.

1.4 Research questions

The research questions for the current study include the following

1. What is the prevalence of CMD among CKD outpatients?
2. What are the correlates of CMD among CKD outpatients?
3. What is the role of perceived social support in the psychological health of CKD patients?

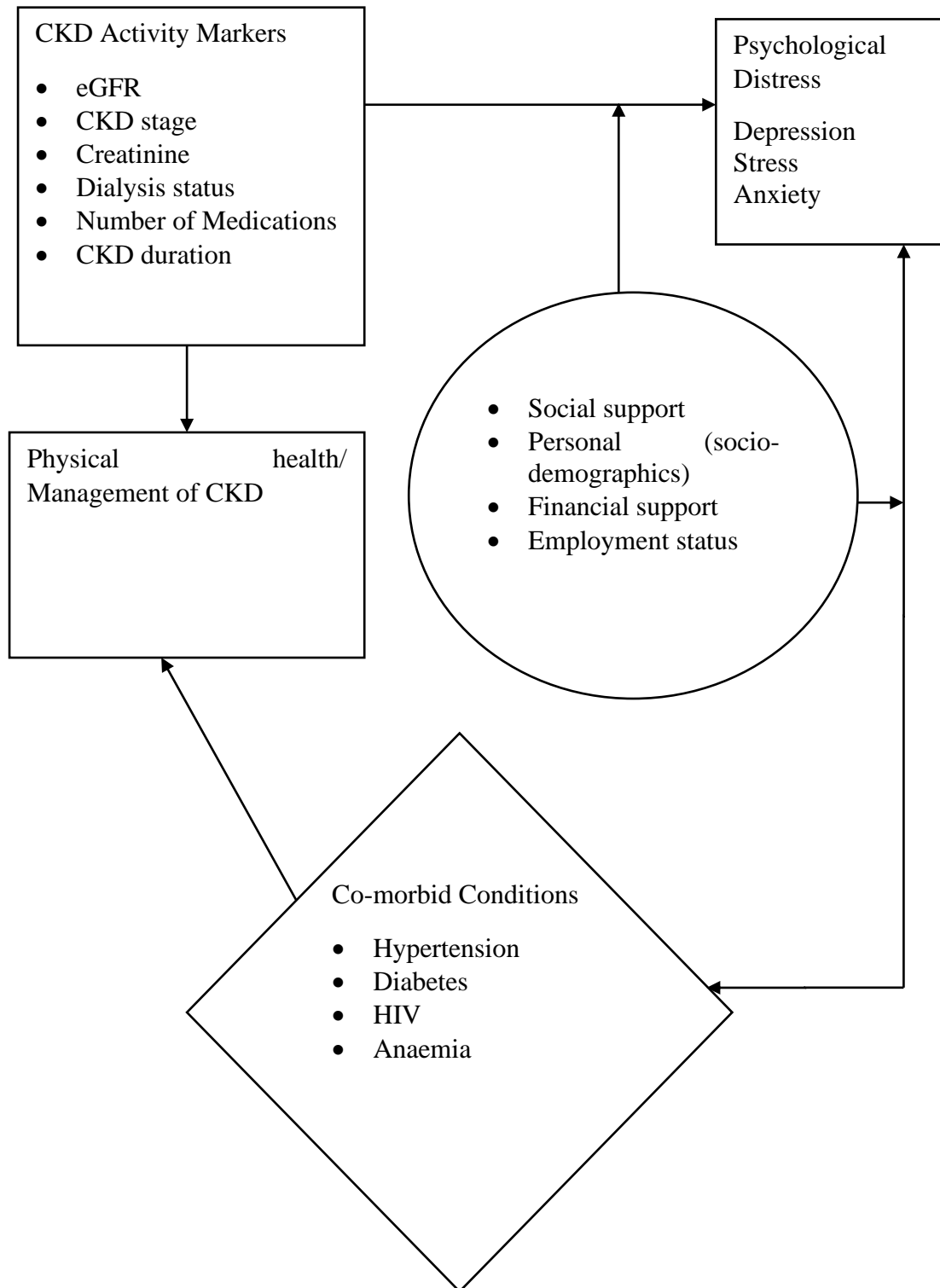
1.5 Research objectives

General objective:

The aim of the study was to determine the prevalence of common mental disorders (CMD) among CKD outpatients, identifying factors associated with increased levels of psychological distress, and determining the role of perceived social support among CKD outpatients. In addition, the study had 3 specific objectives that I wanted to achieve.

The primary specific objective was to determine the prevalence of CMD among CKD outpatients. The second specific objective was to identify factors associated with CMD among CKD outpatients. My last specific objective was to determine the moderating effect of perceived social support in CMD among CKD outpatients

1.6 Conceptual framework



This is a framework that represents the interrelationship between psychological, social and biological factors associated with CKD. It was adapted from Zalai et al. (2012).

1.6.1 Narrative of Conceptual framework

The main theory that underpins this study is the Biopsychosocial model. Applying the biopsychosocial model, psychological health is expected to deteriorate with CKD with respect to the biological effects of the declining renal function, the psychological dimension of stressors and social factors such as employment and reduced interactions with significant others.

The biological aspect of the condition is observed through markers of disease activity such as Glomerular Filtrate Rate (eGFR), creatinine levels, disease duration and whether or not an individual is on dialysis. The biological component of chronic diseases have been found to impact psychological health throughout literature (Moss-Morris, 2013).

Further, CKD is usually characterised by a strong association and increased risk of cardiovascular conditions in most cases (Alkerwi et al., 2017). In addition, Osafo et al. (2011) found that about 46.9% of hypertensive patients in four polyclinics in Accra, Ghana had CKD, and this prevalence also included some patients who had diabetes mellitus in addition. This increases the risk of deaths due to cardiovascular events among individuals with CKD.

Another comorbidity in CKD that leads to further deterioration of functional capacity is anaemia. In a study by Pereira et al. (2017), it was found that there was a statistically significant association between reduced quality of life and low levels of anaemia among CKD patients. It is therefore expected that comorbid anaemia will have impact on the biological and psychological aspects of health.

Studies have shown that CKD is characterised by an increase in psychological distress. This relationship is expected to be affected by financial support, social

support and other socio-demographic characteristics. These factors also mediate the bidirectional relationship between the presence of co-morbid conditions (e.g. high blood pressure, diabetes, HIV, anaemia) and psychological health in CKD patients. Disease activity, as well the presence of co-morbid conditions, impact on the overall physical health of the patients.

Psychological distress is associated with socio-economic factors such as unemployment and financial challenges (Canavan et al., 2013). An important socio-economic factor that influences psychological distress in CKD is the issue of loss of job due to the condition. Most organisations are unable to tolerate unproductivity due to absenteeism as a result of sick leaves and flares. As such, employers are left with no other option than to lay off such employees who are patients.

The nature of CKD requires that money will be expended in purchasing medications. Again, in patients requiring haemodialysis, the major source of worry and stress is the unavailability of funds for the procedure. Thus, many patients resort to complementary and alternative medicine, which in most cases seem affordable but mostly lead to complications in CKD management. Therefore, socio-economic factors do not only affect psychological health, but also cause major changes in biological or medical health.

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Framework

2.1.1 Biopsychosocial Model

The Biopsychosocial theory of health is a model proposed by Engel (1977) to explain health based on the interactions between the psychological, social and biological dimensions of life. In other words, Engel (1977) theorises that multiple factors apart from physiology accounted for health outcomes, and emphasised a holistic approach to health. The model has been beneficial to the field of health research, such that it has offered explanations in health that were lacking in the previously predominant biomedical reductionist approach (Pilgrim, 2015).

The Biopsychosocial model is made up of the biological dimension, which constitutes organs and their functions, injury, genetics and other issues of physical health. The psychological dimension of the model is made up of attitudes, health behaviours, personality traits, motivations, emotions, self-esteem, perceptions and appraisal, and intelligence. The social dimension of the model talks about one's identity and beliefs within the context of culture and society, relations and the value and nature of interactions, viz. social capital.

2.1.2 Adjustment Theory

In basic terms, adjustment in chronic illness refers to a state of being able to cope well with, or adapt to the condition, including efforts towards maintaining normal daily functioning and reducing distress or negative emotions. Stanton and Revenson (2012)

have described adjustment as a dynamic, multifaceted and context-bound process that may have outcomes along both positive and negative dimensions. Moss-Morris (2013), a proponent for a unified theory of adjustment, adds that although adjustment has been partly defined as preserving functional status, this may not always be realistic especially in view of the fact that chronic illness is associated with progressive decline in physical functioning. Moss-Morris (2013) further argues that there is no consistent definition of, or standard for assessing adjustment, thus to focus on the process of adjustment rather than the outcomes as these vary based on context.

Stanton and Revenson (2012) posit that the determinants of adjustment to chronic illness include dispositional factors, coping processes, cognitive appraisal (including perceived threat to life goals, disease-related expectancies and finding meaning), and social resources and interpersonal support. One very important adjustment theory is the stress and coping model by Lazarus and Folkman (1984). This deals with the individual's appraisal of stressors from the condition, the coping strategies available for managing these stressors, and the evaluation of how efficacious these strategies are. According to Lazarus and Folkman (1984), these are important dimensions along which adjustment can be understood. This theory focuses largely on cognitive appraisal processes of the individual, which was mentioned as a major determinant of adjustment. Thus, even in determining social resource (social capital) as an important determinant of negative or positive health outcomes with regards to adjustment to chronic illness, the individual's appraisal or perception of these resources is key. This implies that the study of the moderating effects of perceived social support in

psychological health among CKD outpatients is relevant and essential in improving upon the management of the condition.

2.2 Related studies

2.2.1 Prevalence of CKD

2.2.1.1 Global prevalence of CKD

A systematic review and meta-analysis by Hill et al. (2016) also sought to determine the prevalence of CKD globally in terms of stage, and by socio-demographic characteristics of age, geographical location and gender. This involved studies that estimated CKD prevalence in general populations in the 100 studies included, which comprised of 6,908,440 patients. From the study, there was a high global prevalence of CKD of between 11% to 13%.

CKD was also found to generally progress with increasing age. However, in Sub-Saharan Africa, it was found to be prevalent predominantly among the youthful population (35 to 46 years), compared to that of developed countries where patients are mostly 60+ (Hill et al., 2016). In addition, the prevalence of CKD was higher among women than in men. According to the authors, this may be due to a selection bias from the included studies (Hill et al., 2016). In addition, the relatively younger CKD population in Sub-Saharan Africa may be related to reduced life expectancy as well as socio-economic underpinnings which are generally expected to be different from the context of developed countries.

2.2.1.2 Prevalence of CKD in Western populations

Chartier et al. (2018) conducted a study in Manitoba, Canada, with the aims of establishing the Manitoba CKD Cohort, estimating the prevalence of CKD within that province, identifying individuals who have a high risk of progressing to end-stage renal disease (ESRD) or kidney failure and to determine the prevalence of comorbidities. The authors did these by utilising the administrative health and laboratory data from April 1996 to March 2012 extracted from the data repository at the Manitoba Centre for Health Policy. They estimated CKD prevalence from all CKD cases obtained from administrative and laboratory databases, and from data from only laboratory data; and through the capture-recapture method. Patients were then stratified according to risk by eGFR and albuminuria based on Kidney Disease Improving Global Outcomes (KDIGO) criteria.

The CKD Cohort included 55,876 people with CKD, out of which 18,342 were identified using administrative health data, 27,393 with laboratory data, and 10,141 in both administrative and laboratory databases. Chartier et al. (2018) found the CKD an average prevalence of CKD of 10.6%. They further found that about 46% of the cohort were at high risk of progression to ESRD. In addition, those with an increased risk of progression had a higher prevalence of comorbid conditions as compared to those who were at low risk (41%) and those who were not classified due to insufficient clinical data (13%). The comorbid conditions included ischemic heart disease, hypertension and diabetes. The study also found that CKD was highly prevalent among individuals aged above 65 years.

Chartier et al. (2018) proposed an innovative approach for population-based surveillances of CKD which make use of data from both administrative and laboratory databases. Again, the study was useful in determining higher risk of comorbidities among CKD. This makes a case for research and public health interventions in CKD with an inter-disciplinary approach.

Alkerwi et al. (2017) also aimed at determining the prevalence of CKD and identifying if there are any correlates of the condition, with an interest in cardiovascular risks. Data was obtained from 1361 individuals from ages 18 to 69 who participated in the Observation of Cardiovascular Risk Factors in Luxembourg study, in the year 2007/2008. In their study, CKD was defined as estimated glomerular filtration rate (eGFR) measures less than 60 ml/min/1.73m² and/or an ACR more than 30 mg/g from urinary albumin. The results showed that 6.3% of the participants had CKD, out of which 4.4% had moderately abnormal ACR, 0.7% had severe abnormality of ACR, and 0.1% had end-stage renal disease (ESRD) or kidney failure with eGFR less than 15 ml/min/1.73 m². From the regression analyses conducted, the risk of CKD increased significantly with age, with more than two times increased odds among participants from ages 50 to 69. There were about 3-times and 4-times increased odds of the condition among participants with hypertension and diabetes respectively. Further, increased physical activity was found to be significantly associated with decreased odds of CKD.

The implication for the results is that early detection in individuals living with hypertension and diabetes, among other cardiovascular conditions, is essential to prevent further or faster decline of kidney function and related costs of treatment to

health systems. Following that hypertension and diabetes were found to be strongly associated risk factors for CKD, a preventive approach could be used through healthier lifestyle options including exercise, diet, and adequate understanding, detection and management of stress levels and other aspects of psychological distress. For example, the study showed that those who exercised were less likely to have CKD. Against this backdrop, exercise could then be used as good coping mechanisms for dealing with physical and mental health stressors.

2.2.1.3 Prevalence of CKD in Sub-Saharan Africa

According to a study by Stanifer et al. (2014), the prevalence of CKD in the Sub-Saharan Africa is about 13.9%. The focus of the study was on the epidemiology of CKD in said region. The methods included searches on Medline, WHO Global Health Library databases and Embase for papers, as well as the reference lists of articles found. The authors conducted meta-analyses of data that were of medium-quality and high-quality. They also explored differences in CKD burdens across countries, urban and rural contexts, comorbidities, as well as criteria for CKD diagnosis.

The results from Stanifer et al.(2014) showed that measurement of urine protein was the most common method of determining the presence of CKD from about 69% of the studies, alongside the Cockcroft-Gault formula which was used in 24% of studies and Modification of Diet in Renal Disease formula used to determine CKD presence from 19% of studies. The overall prevalence of CKD from the 21 studies of medium-quality and high-quality was 13.9%, with a 95% confidence interval of 12.2% to 15.7%. This proposes that CKD is an important health burden with risk factors of

communicable and non-communicable diseases (HIV, hypertension, diabetes) in Sub-Saharan Africa.

The limitation of this study was the minimum availability of quality of data. This calls for more studies to provide accurate information on the epidemiology of CKD, as well as the need to have a standard criterion for measuring kidney function and hence the diagnosis of CKD.

2.2.1.4 Prevalence of CKD in Ghana

A study by Osafo et al. (2011) conducted a multicentre screening to determine the general prevalence as well as the prevalence by stage of CKD in 712 patients aged 16 years and above, with known hypertension. The study was conducted in four polyclinics in Accra, Ghana. The eGFR was measured using the six-variable modification of diet in renal disease equation and proteinuria by the protein-to-creatinine ratio among Ghanaian participants. They found the median age as 59 years, with an interquartile range of 19–90 years. Majority of the patients included in the study (78.7%).

The overall prevalence of CKD among the study population was 46.9% (95% CI: 43.2–50.7%), with 19.1% within stages 1 and 2 and 27.8% within stages 3 to 5 of CKD. They further found that 14.7% of subjects had pre-existing comorbid diabetes mellitus and the prevalence of CKD among these was 55% (95% CI: 42.4–62.2). In addition, they found that patients with the more advanced stages of CKD were significantly younger than patients with the earlier stages of CKD advancement.

Although this was an important study in the direction of the epidemiology of CKD in Ghana, specifically regarding risk factors and prevalence, the study participants were made up of mostly females. As such, this compromises the external validity of the study.

Ephraim et al. (2015) sought to determine the prevalence and risk factors of CKD among individuals within Sekondi-Takoradi using the 2012 Kidney Disease Improving Global Outcomes (KDIGO) definitions. This area forms part of the south-western part of Ghana, and the study was done among a population identified as high risk. The authors recruited 208 adults consecutively from the Effia-Nkwanta regional and the Takoradi Government hospitals in the South-Western part of Ghana. These were individuals with hypertension, diabetes or both conditions. The serum creatinine levels were measured, and the urine albumin-creatinine ratios determined for each individual. The authors then used the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation to determine the eGFR of each participant.

Ephraim et al. (2015) found the general prevalence of CKD to be 30%, and 27%, 22% and 74% in patients with diabetes only, hypertension only and in patients with both diabetes and hypertension respectively. Majority (9%) of the participants were within stage 3a of CKD. Among the participants with diabetes was the highest (39 %) prevalence of albuminuria.

The study was useful in providing some information on the prevalence of CKD. In addition, it was relevant among the population among which it was conducted because of the strong association between CKD, diabetes and hypertension established in literature. The main limitation of the study is that it did not sufficiently

address socio-demographic factors associated with increased risk of CKD, mainly because it was not designed to do so.

In determining the burden of CKD, there has been a considerably large number of studies providing some basis for public health action. What was not clear from the studies, however, was which psycho-social factors played an important role in coping with CKD. Although this has been expected anecdotally, it has not had enough attention in research.

2.2.2 Common Mental Disorders and mental health needs in patients

Nakash et al. (2014) aimed at studying the presence of common mental disorders (CMD) in cancer patients among residents of a community who had active cancer, others who had survived cancer and respondents who never had cancer in thirteen high-income and eleven low- and middle-income countries. The authors used data extracted from the World Mental Health Surveys. Results showed that twelve-month prevalence rates of CMD were higher among active cancer patients than among those who did not have cancer after having adjusted for sociodemographic factors and other chronic conditions experienced in their lifetime with an adjusted odds ratio (AOR) of 1.44, and 95% confidence interval from 1.05 to 1.97). CMD rates among those who had survived cancer compared with those who never had cancer did not differ significantly.

From this study, the relationship between decline in health and CMD is clearly seen. Again, this is expected, especially in patients with chronic conditions like cancer and CKD, due to basically having to live their whole lives with these conditions, having to cope with pain and to consistently adhere to treatment regimens, dieting plans, and

consultation schedules. Socially, it is also expected that there will be some undesirable changes in one's social capital as a result of certain restrictions for example, as well as issues concerning stigma. All these will have an effect on the psychological health and increase levels of CMD in patients. In addition to establishing the difference in psychological health of cancer patients as compared to individuals without cancer and those who survived cancer, Nakash et al. (2014) again indicated that socio-demographic factors were controlled for in their study. However, it would have been interesting to know the extent to which these characteristics influence the relationship between the disease activity and CMD, and this was not sufficiently dealt with owing to the focus of the authors for the study reviewed.

Myers et al. (2018) purported to explore patient perceptions of mental health counselling integration into primary health care in facilities within Western Cape, South Africa. Qualitatively, they conducted interviews on 30 patients receiving treatments for HIV or diabetes at the facilities selected purposively, and who were either depressed upon screening with the Centre for Epidemiological Studies Depression Scale, or indulged in risky alcohol use having been tested with the Alcohol Use Disorders Identification Test. The results indicated high levels of the need for mental health care that were unmet, as well as strong relationships between poor mental health and experienced challenges in chronicity.

Participants expressed approval for the inclusion of mental health screening and counselling in the care programme for chronic illness and asserted that these would help patients to cope well with stress and negative emotions. Again, Myers et al. (2018) proposed that patients across the various conditions preferred that lay

counsellors would serve these mental health needs, rather than being offered by the physicians themselves. These further confirm the need for mental health counselling services as part of care for chronic disease in South Africa, as expressed by the patients themselves. Again, the results indicated that patients agree with and are aware of their psychological needs to a large extent. However, one main limitation of this study was that it did not reveal the social factors associated with mental health of patients with chronic conditions.

Menil et al. (2012) sought to examine physical and social factors associated with mental illness among adult women in Accra, Ghana. The study involved 2,814 adult women living in Accra, who were had been participants of a population-based survey on women's health. The K6 forms, SF-36 and 4 added psychosis questions were administered to respondents in three languages. The results obtained showed low education level, poverty, being unemployed, as well as physical illnesses, were associated with mental illness.

Of all the women, 0.4% reported having sought for mental health care from a professional in the previous year. About 58.6% reported of having visited a health centre. These imply that more could be done in closing up the treatment gap in mental health in Ghana. Again, the results implied that employment and high level of education are strong protective factors for ill-mental health.

Although the focus has mostly been on addressing stigma when it comes to the mentally ill, it is also important to improve upon efforts towards educating the public on mental health issues. Consequently, individuals will better appreciate the importance of applying psychological knowledge and techniques to the field of health,

while eradicating self-stigma so as to motivate persons to seek professional help regarding their mental health. Further, these will be effective by enhancing the inclusion of psychotherapy as part of a holistic primary health care. There is the need for future studies not only to make a strong case for effect of mental health on other aspects of health, but also to explore the readiness to offer and receive mental health care on the part of practitioners and clients and/or patients respectively.

Menil et al. (2012) were again able to establish that both the SF36 and K6 tests for screening for CMD are valid in the Ghanaian population. However, their study was limited to the female population. It is therefore important to conduct further studies in mixed-gender populations, as well as within the context of managing chronic health conditions, in order to address the treatment gap of mental health in Ghana.

Canavan et al. (2013) argue that low- and middle-income countries like Ghana are not sufficiently resourced to address the increasing burden of disorders in mental health, which currently make up 13% of the global burden of disease. Using data from the Ghana Socioeconomic Panel Survey, their study sought to explore the association between psychological distress and socio-economic factors, specifically employment and productivity.

The findings from their study indicated that the prevalence of moderate to severe psychological distress among the 5391 adults in the survey was 21%. It is also indicated that psychological distress was strongly associated with unemployment, although causation could not be established. Further, sex was identified as a moderating factor for the association between having severe psychological distress and being unemployed, with men having greater odds compared to women.

Canavan et al. (2013) further propose that from their results, about 7% of Ghana's gross domestic product is accounted for by lost productivity due to moderate to severe psychological distress. This is of great importance to the socio-economic development of Ghana, and further necessitates efforts towards addressing the treatment gap of psychological distress.

2.2.3 Importance of Social Support in Chronic conditions

The nature of chronic conditions makes them stressful and can greatly interfere with normal daily functioning. Generally, illness periods are characterised by reduced competence for activities that could have been carried out unaided in the absence of illness. As such, individuals that have ill-health often depend on family members, friends or significant others for numerous activities at varying extents of dependence. However, in individuals who are chronically ill there is, in practical terms, no hope of ending the illness and returning to the desired usual optimal daily functioning. This implies that the patient, as well as the significant others have to make a lifetime commitment to managing the chronic condition.

The role of social support in the management of chronic conditions has been well known both from literature (Heisler, Rosland, and Piette, 2012) and anecdotal evidence. Heisler et al. (2012) conducted a systematic review to study the effect of specific behaviours and communication patterns of family members on clinical outcomes in the management of chronic illness in adults. They included thirty studies among adults with chronic cardiovascular diseases, arthritis, end stage renal disease, and/or diabetes.

The authors found that behaviours of family members that enhanced self-reliance and personal achievement, family cohesion, and being responsive were associated with improved patient outcomes. On the other hand, family members being critical, overprotective, manipulative or having distracting responses to the management of the illness were related to with negative clinical outcomes.

The implication of this study is that in exploring correlates of social support in managing chronic illness, it is important to focus on both the behaviours and patterns of communication between the patient and the source of support, and the availability of social support. Although this study had important findings, it was limited to social support derived from the family and focused solely of family relationships. It is important to explore other aspects of social capital of the patient and how they affect treatment outcomes.

Consistent with this study, Kristjansdottir et al. (2018) also found that not only external factors/strengths related to social support played a role in chronic illness management. Although social support is undoubtedly instrumental, how this support is perceived is what matters. This then leads to internal strengths such as a positive outlook, kindness and courage which are enhanced in an environment of unconditional positive regard, viz. social support.

It is important to focus on perceived social support specifically in exploring the importance of social support in managing chronic conditions. Further, social support (perceived social support), is seen to affect clinical outcomes along psychosocial pathways. Ozaki et al. (2018) aimed at assessing the effects of social capital on mental health of Japanese in two main groups based on whether or not they had experienced

a natural disaster. The study design was cross-sectional, and it involved collecting data on social capital, psychological state, whether individuals had experience a natural disaster within a period of ten years before the study, and socio-demographic information of individuals within the ages 15 to 79 years old.

Components of social capital were measured, namely cognitive social capital made up of perceptions of support, reciprocity and trust, participation in social activities and social support, in relation to mild mood or anxiety disorder. Mood or anxiety disorder was the main outcome of the study, and it was defined by a score of 5 or more on the Kessler Psychological Distress Scale with six items (K6). The study involved data on 1,183 individuals.

The authors found that only social support was significantly related with mood or anxiety disorder with a p-value of 0.019. Among those had not experienced any natural disaster, high social support was associated with reduced odds of having mood or anxiety disorder (Odds Ratio= 0.45, 95% CI 0.28-0.73). The authors however found no such significant association among individuals who had experienced a natural disaster.

It was concluded from the study that the moderating effect of social support in reducing risk of mood or anxiety disorder varies in relation to whether individuals have experienced a disaster, among the Japanese population. There is therefore the need to carry out further research to investigate further the role of social support in the mental health of individuals who have experienced a known and significant stressful or traumatic event, while observing how social support serves as a protective factor.

2.2.4 Psychological Distress among CKD patients

Zalai et al. (2012) propose that about one in four CKD patients on haemodialysis experience depressive symptoms, and clinical depression among these patients is associated with low quality of life and increased risk of mortality. They further propose that although depression is a risk factor for poor treatment outcomes in CKD, it has not been sufficiently studied especially in patients who eventually undergo renal transplant.

Zalai et al. (2012) further suggest that the high prevalence of severe psychological distress and its bearing on treatment outcomes among CKD patients indicate that there is the need to incorporate regular screening and prompt provision of psychotherapy into the routine management regimen for CKD. The authors opine that biological factors such as uremic toxins, oxidative stress of the hypothalamic–pituitary–adrenal (HPA) axis and chronic inflammation, psychological changes such as changes in lifestyle, hopelessness, decreased autonomy, low self-esteem and fear, and sociodemographic or socio-economic factors such as low perceived social support, unemployment, younger age and the feminine gender, are all contributing factors to depression and psychological distress generally in CKD patients (Zalai et al., 2012).

Although the authors identified low perceived social support as a factor associated with psychological distress among CKD patients, it is not clear how perceived social support quantitatively interacts with the main sources of psychological distress in CKD. This is one area that the current study seeks to address.

Pereira et al. (2017) in Brazil sought to determine the prevalence of depression, stress, fatigue, anxiety, social support and quality of life in CKD patients, as well as their

caregivers. They used cross sectional methods and assessed 21 patients and their caregivers who were sampled conveniently within a six-month period in 2015. The study units were patients who were aged above 18 years, had been on haemodialysis for 6 months or more, and their caregivers who were family members of the patients.

The results showed that 38.1% of patients had anxiety and depressive symptoms. From the analysis, about 14.3% of the patients reported that they experienced fatigue and 14.3% reported that they still carried out usual activities they did before the illness. From the assessment of stress, 57.1% were experiencing significant stress, with 66.7% of the 57.1% at resistance stage and experiencing symptoms of psychological distress.

The authors found a positive statistically significant relationship between haemoglobin level and the functional capacity domain of quality of life and ($r = 0.581$, $p = 0.006$). This showed that patients with higher haemoglobin level had relatively better functional capacity. Psychological distress was prevalent among about 33.3% of caregivers. This included depressive and anxiety symptoms. The authors did a comparison between the patient group and the caregiver group and found no significant difference between the two groups in terms of symptoms of anxiety, depression, and fatigue. However, they found that caregivers received less social support than patients. In addition, the authors found that patients experienced psychological symptoms more predominantly.

Patients and caregivers experienced similar levels of social, vitality, and mental health domains of quality of life. This was an important finding of the study owing to the fact that both patients and their caregivers were included in the study. However, one

major challenge with this study was the small sample size used. In addition, patients on haemodialysis were assessed while the treatment was in progress and this may have biased their responses. Further, the study was unable to address the case of patients without caregivers in comparison with patients without caregivers, as this could be a measure of social support received.

2.2.5 Gaps identified in Literature

In response to the recent increase in the burden of chronic non-communicable diseases globally, there have been considerably many studies in this area, specifically looking into aspects regarding coping, quality of life and risk factors. However, these have not sufficiently looked at the psychosocial correlates of these conditions.

Further, most studies have been done in western countries where the socio-economic and cultural contexts are bound to be different from that of Sub-Saharan Africa, and specifically Ghana. This dearth of research is in part due to the lack of sufficient and accurate data, especially in the area of CKD. It is against this backdrop that the current study purports to portray the picture of the impact of CKD and its possible ripple effects on our socio-economic development as a nation.

CHAPTER THREE

METHODS

3.1 Study site and population

The study population comprises of CKD outpatients at the Renal Unit and Medical OPD in the Korle Bu teaching Hospital. The Renal Unit at Korle Bu has 250 CKD patients at the dialysis unit, 65 CKD patients at the National Cardiothoracic Unit, and the remaining patients visit the Medical OPD unit. In total, there are about 3000 CKD outpatients registered at the Korle Bu Teaching Hospital (Tannor, Awuku, Boima, & Antwi, 2018).

3.2 Study design

The study design employed was cross-sectional, using the quantitative approach, alongside retrospective information that were retrieved from folders.

3.3 Inclusion criteria, sampling strategy and sample size

The inclusion criteria include all outpatients diagnosed with CKD, and are aged 18 and above. This is because the study is focused on adult CKD patients, although there are minors with renal conditions.

The exclusion criteria for this study includes patients who were on admission during the study, and those who had co-morbid dementia, stroke and/or other neurological problems during the period within which the study was carried out. These are because the focus of the study is CKD outpatients. In addition, patients who had neurological

conditions were excluded in order to avoid neurological effects from confounding the findings from the study.

The sample size for the current study was chosen using Cochran's formula for sample size calculation:

$$n \geq [(Z_{(1-\alpha/2)})^2 p(1-p)] / E^2$$

From the literature search, the prevalence of the main outcome (CMD) among the population of CKD outpatients could not be identified. However, averagely, the global lifetime prevalence of CMD among the general adult population is between 25.9% and 32.6% (Steel et al., 2014). In a survey by Canavan et al.(2013), about 21% of adults in Ghana experience moderate psychological distress, using the Ghana Socioeconomic Panel Survey. At a 95% confidence level (giving a $Z_{(1-\alpha/2)}$ equal to 1.96), an error (E) of 5%, and assuming that the proportion of CMD or psychological distress among CKD patients will be between 21% and 32.6%, a sample size of 338 or more is sufficient. Thus, anticipating a non-response rate of not more than 5%, a sample of 355 was obtained for the study. However, after data cleaning, information on 349 patients was retained.

Respondents were selected from the Medical OPD of the Korle Bu Teaching Hospital and Renal Dialysis Unit by consecutive sampling, and based on clinic days for CKD. These were Mondays and Wednesdays at the Medical OPD, and all other days at the Renal Unit.

3.4 Instruments

Data were collected through interviews with the help of structured questionnaires. The study purported to determine the burden of CMD in CKD and to identify its correlates. As such, the cross-sectional design was used, and the most appropriate data collection tool was the questionnaire. The questionnaire included *inter alia* questions about age and age range, sex, marital status, level of education, occupation, religion, nationality, National Health Insurance status, source of funding for treatments, occupation, monthly income and known comorbid conditions. In addition, clinical and anthropometric information were obtained from the folders of respondents. Some of these include glomerular filtrate rates, serum creatinine levels, blood pressure readings, as well as number of medications taken, and whether or not they are on haemodialysis treatment.

The second part of the questionnaire was made up of the Multidimensional Scale for Perceived Social Support (MSPSS) by Zimet, Dahlem, Zimet and Farley (1988), and the Kessler Psychological Distress Scale (K10) (Kessler, Andrews, & Colpe, 2002).

The MSPSS is a brief 12-item tool designed by Zimet et al. (1988) to assess the perception of support from Friends, Family and Significant Others. Thus, the scale has three subscales for three subdomains of social support. Each subscale is made up of 4 items or statements to which respondents must state the extent to which they agree with each statement on a 7-point Likert scale. Scoring of the scale is done by computing the mean for all items. This is also done within each subscale. The authors state that there are no population norms for the scores on the scale, as the total score could vary based on diverse socio-cultural factors. However, they propose that

categories could be made such that total mean scores from 1 to 2.9 are considered as low perceived social support, 3 to 5 for moderate and 5.1 to 7 as high perceived social support (Zimet et al., 1988).

The K10 scale was developed by Kessler et al. (2002) as a screening tool for psychological distress and CMD. The questionnaire is made up of ten items with responses that are on a 5-point Likert scale regarding self-reported psychological distress the past 30 days. The scoring is done by recording the score for each item and adding them up to obtain a composite score. Composite scores range from 10 to 50. Any respondent that obtains a score 20 or above is likely to have CMD. Scores above 20 are further sub-divided into mild (20-24), moderate (25-29) and severe (above 30) CMD. Sampasa-Kanyinga, Zamorski, and Colman (2018) propose that a score of 10 and above on the K10 scale is ideal for screening, with associated sensitivity of 0.86 and specificity 0.83. They further opine that as composite score from 17 is optimal in determining prevalence of clinically significant psychological distress with associated specificity of 0.97 and sensitivity of 0.53.

Interviews and assessments were conducted by the researcher together with two research assistants from the dialysis unit at the Korle-Bu Teaching Hospital, who had been well trained in the administering of mental health screening scales. The data collection was done under constant supervision and involvement of the researcher. Interviews were conducted in a designated office in order to ensure confidentiality and privacy.

3.5 Ethical consideration

Ethical Clearance was sought from the Scientific and Technical Committee and the Institutional Review Board of the Korle-Bu Teaching Hospital with the ID KBTH-STC 00032/2019. All respondents provided informed consent before participating in the study. Identity numbers were generated and used as the only means of identification on the questionnaires, and the questionnaires were kept under lock and key. Throughout the entire period of the study, all ethical principles of beneficence, non-maleficence and justice, including all other ethical principles relevant to this study were strictly adhered to. Only the student researcher and the academic supervisor for this dissertation had access to data from the study.

3.6 Data management and analysis

Data collected from questionnaires were organised and cleaned using the SPSS version 22. Further data analyses were done using Stata version 15 (StataCorp, College Station, TX, USA). Chi square tests, Student t tests, One-way ANOVA and Pearson's correlation were done to assess the association between variables as and when appropriate for each case. Logistic regressions were also conducted to compute odds ratios, while conducting interaction analyses to determine the effect of moderating variables.

3.7 Statistical methods

The data obtained was cleaned and managed using the SPSS version 22. The data was then transported into Stata version 15 and further analyses were done. The data was explored by using the *inspect* and *browse* commands in Stata, so as to identify

missing values and possible errors. Before moving on to analyse the data, the Kessler (K10) and the Multidimensional Scale for Perceived Social Support (MSPSS) questionnaires were assessed for their reliability and validity, using the SPSS. The results showed that the reliability (Internal Consistency) for the K10 was a Cronbach's Alpha of .86 and that of the MSPSS was .79. Both questionnaires had good Discriminant Validity within the sample obtained. There was a nonresponse rate of 3.72% on the questionnaires administered.

The explanatory variables include age, sex, level of education, employment and marital status, type of occupation, religion, National Health Insurance status, source of funding for treatments, average monthly income, estimated glomerular filtrate rates, serum creatinine levels, systolic and diastolic blood pressure readings, number of medications taken, haemodialysis status and perceived social support. The outcome variable of interest in the study is the presence of Common Mental Disorders, measured as the severity of psychological distress with the K10 scale.

CHAPTER FOUR

RESULTS

4.1 Background characteristics

The median age of respondents was 42 years (IQR= 14). The sample was made up of 182 males (52.15%) and 167 females (47.85%). 29.6% of the respondents were single, 58.33 were married, and 12.07% were divorced, separated or widowed. Overall, 58.33% of the respondents were married and 41.67% were unmarried. In terms of religion, majority (87.32%) reported to be Christians, with the remaining 12.68% reporting to be Muslims. Majority of respondents reported to have had formal education, with less than 1% (0.29%) having no formal education. 99.71% of the respondents had had at least primary school level of education. There were 2 Liberians, 14 Nigerians, and the rest Ghanaians. 76.44% of the respondents were employed, and the remaining 23.56% were unemployed. Majority of the respondents 33.21% are in the services and sales workers' category of the International Standard Classification of Occupations proposed by the International Labour Office (2008). The median monthly income was GHS 2000 (IQR= 1500). The sources of funding for treatment included self, family, friends and work or organisation. Respondents were asked to indicate as many as applied to them.

The median systolic blood pressure was 142mmHg (IQR= 24) and that of the diastolic blood pressure was 94mmHg (IQR= 20). There was a median serum creatinine of 215 (IQR= 620). Median haemoglobin level was 9.9 (IQR= 1.9). Chronic kidney disease is diagnosed and categorised according to severity on the basis of estimated

Glomerular Filtrate Rates (eGFR). At the time of being interviewed, about 20.93% of respondents had eGFR in the normal reference range, that is, above 89 ml/min/1.73m². 23.55% had mildly decreased kidney function with eGFR from 60-89 ml/min/1.73m², 6.98% had mildly to severely decreased kidney function with eGFR between 30 and 59 ml/min/1.73m², 2.62% had severely decreased kidney function with eGFR from 15 to 29 ml/min/1.73m², and 45.93% had end-stage renal disease (eGFR less than 15 ml/min/1.73m²). 64.47% of the respondents had comorbid medical conditions. Comorbid conditions included diabetes (19.77%), hypertension (56.73%), and asthma (7), hepatitis B (9), HIV (10) and gout (1) together having a prevalence of 2.58% among the sample for this study. 46.42% of the respondents were on haemodialysis, and the remaining 53.58% were either on medications only or were waiting for lab results before treatment could be started.

The mean score on the MSPSS was 4.66 (SD= 0.74, 95%CI: 4.58, 4.74). For the subscales of the MSPSS, mean perceived social support from Family was 5.05 (SD= 0.079, 95%CI: 4.97, 5.14), that of Friends was 4.57 (SD= 0.93, 95%CI: 4.47, 4.67) and 4.31 (SD= 1.15, 95%CI: 4.18, 4.43) was obtained for mean perceived social support derived from Significant other. About 1.43% scored between a total mean of 1.0 to 2.9, 67.05% had scores from 3.0 to 5.0, and 31.52% scored 5.1 to 7.0 on the scale.

The K10 scale was used to obtain composite scores for each respondent. The mean total score on the K10 was 22.37 (SD= 5.04, 95%CI: 21.83, 22.91). The K10 results were obtained in three ways. The first was to compute total scores for each respondent. In addition, these scores were further categorised into 4 categories of

CMD severity, and then finally dichotomised. Twenty-eight point three-seven percent (28.37%) of respondents scored below 20, 35.53% scored from 20 to 24, 18.05% scored from 25 to 29 and 14.33% scored 30 and above. About 67.91% of the respondents scored 20 and above, and 28.37% scored below 20. The remaining 3.72% accounted for complete non-response on the scale. Kessler et al. (2002) propose that scores of 20 and above indicate the presence of CMD is highly probable and scores below 20 indicate that there is no CMD present or that patients are likely to have good/averagely normal psychological health.

Table 4.1: Characteristics of Respondents by K10 score

Characteristics	Number, N (%)	Mean K10	S.D.	95%CI	P-value
Age group (Years)					0.046[®]
18-24	20 (5.8)	19.9	6.5	16.9 , 22.9	
25-34	72 (20.7)	21.8	5.6	20.5 , 23.2	
35-44	137 (39.4)	22.3	4.6	21.5 , 23.0	
45 and above	119 (34.2)	23.2	4.8	22.3 , 24.0	
Sex					
Male	182 (52.2)	22.9	5.0	22.1 , 23.6	0.029*
Female	167 (47.9)	21.8	5.1	21.0 , 22.6	

Characteristics	Number, N (%)	Mean K10	S.D.	95%CI	P-value
Marital Status					0.024*
Unmarried	145 (41.7)	23.1	5.4	22.2 , 24.0	
Married	203 (58.3)	21.9	4.8	21.3 , 22.6	
Education Level					0.017[⊗]
No formal education	1 (0.3)	31.0	0.0	-	
Primary	5 (1.5)	27.0	4.6	22.9 , 31.1	
Middle/JSS/JHS	39 (11.4)	23.7	5.1	22.1 , 25.4	
SSS/SHS/Vocational/Technical	131 (38.2)	22.6	5.2	21.6 , 23.5	
Tertiary	167 (48.7)	21.8	4.8	21.1 , 22.6	
Employment Status					0.004*
Unemployed	82 (23.6)	23.8	5.6	22.6 , 25.1	
Employed	266 (76.4)	21.9	4.8	21.3 , 22.5	
Diagnosis Duration					0.001[⊗]
Less than a year	118 (34.4)	20.9	5.0	19.9 , 21.8	
1-5 years	209 (60.9)	23.0	5.0	22.4 , 23.7	

Characteristics	Number, N (%)	Mean K10	S.D.	95%CI	P-value
6-10 years	14 (4.1)	24.9	4.2	22.7 , 27.1	
Above 10 years	2 (0.6)	22.5	3.5	17.6 , 27.4	
Comorbid Condition					0.015*
No	124 (35.5)	21.6	5.0	20.7 , 22.5	
Yes	225 (64.5)	22.8	5.0	22.1 , 23.5	
Active NHIS					0.348*
Yes	307 (92.8)	22.5	5.0	21.9 , 23.0	
No	24 (7.3)	21.3	5.6	18.9 , 23.7	

⊗p-value from ANOVA; *p-value from Student t test with unequal variances and Welch's approximation

4.2 Prevalence of CMD (psychological distress)

The proportion of respondents that scored 20 and above on the K10 is 67.91%. At a 95% confidence level, the prevalence of CMD according to the K10 scale is greater than 50% ($z= 7.53$, $p<0.0001$). The data further shows that the proportion of respondents scoring 20 and over, is greater than the 25% ($z= 19.28$, $p<0.0001$) proposed by Kessler et al. (2002).

4.3 Relationships

From preliminary analyses, total score on the K10 was statistically significantly correlated with mean Systolic blood pressure ($r = .216, p < 0.001$) and Diastolic blood pressure ($r = .173, p = 0.002$). Further, K10 scores had a negative statistically significant correlation with Haemoglobin level ($r = -.211, p < 0.001$) and eGFR ($r = -.301, p < 0.001$). Family ($r = -.223, p < 0.001$) and Friends subscales ($r = -.134, p = 0.014$), and the total mean score of the MSPSS ($r = -.132, p = 0.014$) had negative statistically significant correlations with total K10 score. These were factors identified to have a statistically significant relationship with scores on the K10 scale.

Table 4. 2 Characteristics of Respondents by CMD category

Characteristics	Total* (N= 336)	No CMD (n= 99)	CMD (n= 237)	p-value
Age Category				0.057
18-24	18 (5.4)	9 (9.1)	9 (3.8)	
25-34	70 (20.9)	26 (26.3)	44 (18.6)	
35-44	134 (40.0)	37 (37.4)	97 (41.1)	
45 and above	113 (33.7)	27 (27.3)	86 (36.4)	
Sex of respondent n (%)				0.040
Male	175 (52.1)	43 (43.4)	132 (55.7)	
Female	161 (47.9)	56 (56.6)	105 (44.3)	
Marital Status n (%)				0.016

	Total*	No CMD	CMD	
Characteristics	(N= 336)	(n= 99)	(n= 237)	p-value
Single	99 (29.6)	33 (33.7)	66 (27.9)	
Married	196 (58.5)	61 (62.2)	135 (57.0)	
Separated/ Divorced/				
Widowed	40 (11.9)	4 (4.1)	36 (15.2)	
Employment Status n (%)				0.132
Unemployed	79 (23.6)	18 (18.2)	61 (25.9)	
Employed	256 (76.4)	81 (81.8)	175 (74.1)	
Diagnosis Duration n (%)				
Less than a year	113 (34.2)	45 (45.9)	68 (29.3)	0.020
1-5 years	201 (60.9)	51 (52.0)	150 (64.6)	
6-10 years	14 (4.2)	2 (2.0)	12 (5.2)	
Above 10 years	2 (0.6)	0	2 (0.9)	
Active NHIS				0.040
Yes	297 (92.8)	82 (88.2)	215 (94.7)	
No	23 (7.2)	11 (11.8)	12 (5.3)	
eGFR Category n (%)				<0.001
Normal	69 (20.9)	27 (27.5)	42 (18.0)	

	Total*	No CMD	CMD	p-value
Characteristics	(N= 336)	(n= 99)	(n= 237)	
Mildly decreased	80 (24.2)	35 (35.7)	45 (19.3)	
Mildly to severely decreased	22 (6.6)	8 (8.2)	14 (6.0)	
Severely decreased	9 (2.7)	4 (4.1)	5 (2.2)	
End Stage Renal Disease	151 (45.6)	24 (24.5)	127 (54.5)	
Comorbidity				0.182
No	121 (36.0)	41 (41.4)	80 (33.8)	
Yes	215 (64.0)	58 (58.6)	157 (66.2)	
Dialysis Status	n (%)			<0.001
No	181 (53.9)	75 (75.8)	106 (44.7)	
Yes	155 (46.1)	24 (24.2)	131 (55.3)	
Perceived Social Support				
n (%)				0.750
Low support	5 (1.5)	1 (1.0)	4 (1.7)	
Moderate	224 (66.7)	64 (64.7)	160 (67.5)	
High support	107 (31.9)	34 (34.3)	73 (30.8)	

* Respondents with K10 scores =336 (No CMD =99, CMD present =237); all p-values are from Chi-square tests.

4.4 Associations

Using the dichotomised total scores of the K10 scale as the outcome variable, logistic regression analyses were performed. The model with perceived social support as predictor variable was not statistically significant. Women had a 0.39 reduced odds of experiencing CMD than that of men [COR= 0.61 (95% CI: 0.38 , 0.98), p= 0.04]. Marital status, employment status, education level and average monthly income were not significant predictors for CMD.

Diagnosis duration was a significant predictor for CMD. Patients who had been diagnosed for between 1-5 years had an odds of 0.95 more than that of patients who had been diagnosed for less than a year [COR= 1.95 (95% CI: 1.19 , 3.19), p= 0.01]. Patients who had been diagnosed for between 6-10 years has an odds of experiencing CMD that is 2.97 greater than the odds of experiencing CMD for those who had been diagnosed for less than a year [COR= 3.97 (95% CI: 0.85 , 18.59), p= 0.01]. It was further found that those who were on dialysis had an odds of experiencing CMD which was 2.86 more than the odds of experiencing CMD for those who were not on dialysis [COR= 3.86 (95% CI: 2.28 , 6.54), p< 0.01]. A unit increase in haemoglobin was associated with a reduced odds by 0.27 of experiencing CMD [COR= 0.73 (95% CI: 0.60 , 0.88), p< 0.01]. A unit rise in systolic and diastolic blood pressures were associated with increased odds of CMD by 0.02 [COR= 1.02 (95% CI: 1.00 , 1.03), p< 0.01] and 0.02 [COR= 1.02 (95% CI: 1.00 , 1.05), p= 0.03] respectively. Every unit increase in eGFR (kidney function) was also associated with a reduced odds of experiencing CMD by 0.01 [COR= 0.98 (95% CI: 0.98 , 0.99), p< 0.01].

After controlling for age, sex, marital status, diagnosis duration in years, haemoglobin level, systolic and diastolic measures of blood pressure, and perceived social support, and eGFR, being on dialysis treatment was associated with increased odds of experiencing CMD than those who were not on dialysis treatment [Adjusted Odds Ratio = 8.68 (95% CI: 1.73 , 43.52), $p= 0.009$]. Patients who had been diagnosed for between 1-5 years had increased odds of CMD relative to patients who had been diagnosed for less than a year [Adjusted Odds Ratio = 1.97 (95% CI: 1.08 , 3.62), $p= 0.028$]. High scores on the “friends” subscale of the MSPSS were associated with reduced odds of CMD [Adjusted Odds Ratio = 0.52 (95% CI: 0.32 , 0.86), $p= 0.011$]. In addition, females had reduced odds of CMD as compared to males with CKD [Adjusted Odds Ratio = 0.55 (95% CI: 0.32 , 0.94), $p= 0.030$]. The interaction terms were not statistically significant. This implies that there were no statistically significant moderating factors for the relationship between kidney function (eGFR) and dialysis status, and CMD. Interaction effects were not statistically significant.

Table 4.3: Factors associated with CMD

Characteristics	Crude Odds Ratio (95% CI)	Unadj. P-value	Adj. Odds Ratio (95% CI)	Adjusted P-value
Sex				
Male	Reference		Reference	
Female	0.6 (0.4-1.0)	0.04	0.6 (0.3-0.9)	0.03
Marital status				
Single	Reference		Reference	
Married	1.1 (0.7- 1.9)	0.70	0.9 (0.5-1.7)	0.76
Divorced/Separated/Wid.	4.5 (1.5- 13.7)	<0.01	2.8 (0.8-10.4)	0.12
Are you on dialysis?				
No	Reference			
Yes	4.0 (2.3-6.5)	<0.01	8.7 (1.7-43.5)	<0.01
Diagnosis duration				
Less than 1 year	Reference		Reference	
1-5 years	2.0 (1.2-3.2)	<0.01	2.0 (1.1-3.6)	0.03
6-10 years	4.0 (0.9-18.6)	0.08	1.1 (0.2-6.6)	0.91
eGFR category				
Normal	Reference		Reference	
Mildly decreased	0.8 (0.4-1.6)	0.57	0.7 (0.3-1.6)	0.41
Mildly to severely decreased	1.1 (0.4-3.0)	0.82	1.2 (0.3-4.3)	0.81
Severely decreased	0.8 (0.2-3.3)	0.76	0.4 (0.1-2.2)	0.27
ESRD	3.4 (1.8-6.5)	<0.01	0.4 (0.1-2.7)	0.37
Haemoglobin	0.7 (0.6-0.9)	<0.01	0.9 (0.7-1.2)	0.54
Systolic blood pressure	1.0 (1.0-1.1)	<0.01	1.0 (1.0-1.1)	0.69
Diastolic blood pressure	1.0 (1.00-1.1)	0.03	1.0 (0.9-1.0)	0.14
Total mean MSPSS	0.7 (0.5-1.0)	0.06	1.2 (0.7-2.2)	0.52
Friends Subscale	0.7 (0.6-1.0)	0.03	0.5 (0.3-0.9)	0.01

CHAPTER FIVE

DISCUSSIONS

The aim of the study was to determine the prevalence of CMD among CKD outpatients, as well as to identify factors that are associated with CMD in the population of interest, and also to ascertain which of these factors are good predictors of the prevalence of CMD among CKD outpatients. The results showed that there is a high prevalence of CMD among CKD outpatients. More than half of the respondents were experiencing psychological distress. This is especially alarming because of the association of psychological distress among CKD patients with increased risk of treatment failures and death (Zalai et al., 2012).

The main socio-demographic factors associated with CMD from this study were age, sex, education level, marital status and employment. Tendencies for psychological distress increased generally with age. This implies that older adults were more likely to experience CMD than younger adults. It was also observed from the data that females were more likely to experience CMD than males. In terms of marriage, individuals who were unmarried experienced higher level of psychological distress than married individuals. In addition, patients who were unemployed tend to experience increased levels of psychological relative to those that were employed. This could be explained by the availability of a source of income to cater for treatment costs, and generally increased opportunities to make healthier choices in terms of diet and other factors.

The relationship between chronicity and psychological distress is well known. From the current study, psychological health was seen to further deteriorate as the condition got worse and progressed. This is consistent with literature that has shown that when individuals with chronic conditions were not able to adjust properly, it led to increased negative effects especially on psychological health (Stanton & Revenson, 2012). The third research question was to determine what was the role of perceived social support in the psychological health of CKD outpatients. As such, social support was expected to improve on psychological health generally and moderate the relationship between predictors of CMD and CMD. However, the analyses conducted to test for this were not statistically significant. This may be due to the fact that the study explored the types of relationships available for social support rather than the quality of such relationships and the frequency or how long these relationships offer the needed social capital or support. In addition, a challenge in using standardised instruments to assess perceived social support is that there may be varying sociocultural factors that influence what is the norm, for example, and what is unacceptable.

5.2 Limitations

A major limitation of this study was with the design, being a cross-sectional study. This implies that causality could not be established in the study. A more appropriate study design would have been to have a cohort study where an intervention would have been introduced and then respondents screened again within a six-month period. This would give the opportunity to reveal and understand behaviours as well as how individual psychological differences influenced psychological distress in CKD.

Again, the study failed to assess the role of adjustment and coping with respect to CKD.

Further, there was a major challenge with obtaining the sample. This was due to the fact that prospective respondents were frustrated and angry because they had to spend long hours in queues before being attended to.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The prevalence of CMD among CKD patients is high. CMD gets worse with declining kidney function. Although causation could not be established in this study, dialysis patients tend to experience higher levels of psychological distress. It could not be established from this study that perceived social support was a significant moderator for psychological distress among CKD outpatients. This is because there was insufficient information to conclude that the relationship between CMD and CKD depends on perceived social support. Haemoglobin level and blood pressure were significant predictors for CMD. However, upon conducting regression analyses, it was further observed that this relationship was due to the actual effect of a decline in kidney function.

6.2 Recommendations

6.2.1 Clinical Practice

The main recommendation from this study is that stakeholders at the decision-making level of medical practice will incorporate screening of psychological health as part of regular OPD care especially within the management of CKD as well as other chronic conditions. It is further recommended that the Government, through the Mental Health Authority will ensure that there are increased employment opportunities for clinical and health psychologists in order to effectively and practically address the

wide treatment gap in Ghana's mental health. In addition, Health psychology as a discipline needs to be introduced in clinical care. This can be done by training staff to be competent in understanding and applying the Biopsychosocial model.

6.2.2 Research

In the area of research, there is the need for researchers to conduct qualitative studies to probe further into the psychosocial dimensions, as well as adjustment in CKD as a chronic illness, that could not be captured quantitatively. Generally, research in the area of CKD is lacking. It is also recommended to have comparative or case-control studies to compare adjustment between CKD and other chronic conditions. This would help to establish the main factors that increase psychological distress in chronic conditions.

Considering the socio-economic burden of CKD, it is an area that needs to be explored further than it has been. This is important not only for its biomedical praxis but also to adopt an effective and dynamic biopsychosocial model that looks at the reciprocal relationship between the medical, psychological and sociocultural factors that influence the management of CKD (Lehman et al., 2017).

Again in the area of research, it is important to determine the readiness of not only policy makers, but also the patients themselves, with regards to incorporating routine psychological assessment just like, and in addition to physical examination (for example, measuring temperature, blood pressure), which is distinct from a physician deciding to refer patients for clinical psychological attention largely based on instinct, for want of a more appropriate expression.

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APPENDICES

Appendix I: INFORMATION AND CONSENT SHEET

Title of Study: Common Mental Disorders among Chronic Kidney Disease Outpatients at Korle Bu Teaching Hospital

Name of Student Investigator: Kelvin Samuel Acquaye

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The aim of the study is to explore the common mental disorders (CMD's) among CKD outpatients, identify resilience factors, and determine the impact of perceived social support on quality of life and treatment outcomes. It is an academic requirement. Participants will be assessed on psychological health and how much social support they have through structured interviews (questionnaires) in a designated consulting room. Each interview takes up to 30 minutes in order to enable participants to fully understand questions asked and provide needed information within a comfortable environment. There are no potential risk factors or consequences from participating in this study.

The benefit derived from participating is to have an assessment of psychological health as well as a free professional attention for persons who are experiencing some level of significant psychological distress. This study goes to inform the decision to integrate psychological screening and supportive therapy as part of out-patient care and the overall treatment plan. There will be no cost incurred by participants of this

study. In addition, there will be no remuneration or compensation for participants. Participation in this study is completely voluntary, and participants are able to withdraw at any time if they so please. Participants will be given feedback upon completion of scoring of questionnaires. The funding of this study is solely by the student investigator. The Principal Investigator declares no conflict of interest.

CONSENT FORM FOR PATIENTS

I certify that I agreed to participate in the study voluntarily, and that I fully understand what the study entails. All my concerns have been addressed, and I am aware that I am free to discontinue participation at any time if I please. I hereby consent to the administration of the questionnaire.

Signature or thumbprint of Participant

.....

Date:

I witness that the benefits, risks and procedures were read to participant and issues clarified. The participant has thus agreed to partake in the research.

Signature or thumbprint of Witness

.....

Date:

INVESTIGATOR

I certify that the study has been thoroughly explained to participant and all matters arising addressed and clarified.

Signature of PI

.....

Date:

Appendix II: QUESTIONNAIRE

SECTION 1: DEMOGRAPHIC/CLINICAL INFORMATION OF RESPONDENTS

Kindly tick the appropriate option and where applicable fill in the blank space.

1. Age: Age group: a) 18 – 24 [] b) 25 – 34 [] c) 35 – 44 [] d) 45 and above []
2. Sex: a) M [] b) F []
3. Marital Status: a) single [] b) married [] c) divorced [] d) separated [] e) widowed []
4. Religion: a) Christian [] b) Muslim [] c) Traditional [] d) Other [] specify.....
5. Highest level of education: a) primary [] b) JHS [] c) SHS [] d) tertiary [] e) other [] specify.....
6. Nationality: a) Ghanaian [] b) Other African [] c) Other [] Specify.....
7. Occupation/Profession:
8. Rank (if applicable):
9. Level of income (range):
10. How long since your diagnosis? Year of diagnosis:
a) Less than 1 year [] b) 1-5 years [] c) 6-10 years [] d) Above 10 years []
11. Do you have an active NHIS card? a) yes [] b) no []
12. What is your source of funding for treatment?
 - a. Family
 - b. Friends
 - c. Work
 - d. Self
 - e. Other (specify) _____

CLINICAL DATA

1. Blood Pressure (mm/hg) i. _____ ii. _____ iii. _____
2. Haemoglobin level (from last time checked) _____
3. Creatinine level _____
4. Estimated GFR _____
5. Any comorbid conditions? If yes, please specify _____
6. How many different medications do you take everyday?

7. Are you on haemodialysis treatment? _____

K10 Test

These questions concern how you have been feeling over the past 30 days. Tick a box below each question that best represents how you have been.

1. During the last 30 days, about how often did you feel tired out for no good reason?

- [1] None of the time [2] A little of the time [3] Some of the time [4] Most of the time
[5] All of the time

2. During the last 30 days, about how often did you feel nervous?

- [1] None of the time [2] A little of the time [3] Some of the time [4] Most of the time
[5] All of the time

3. During the last 30 days, about how often did you feel so nervous that nothing could calm you down?

- [1] None of the time [2] A little of the time [3] Some of the time [4] Most of the time
[5] All of the time

4. During the last 30 days, about how often did you feel hopeless?

- [1] None of the time [2] A little of the time [3] Some of the time [4] Most of the time
[5] All of the time

5. During the last 30 days, about how often did you feel restless or fidgety?

[1] None of the time [2] A little of the time [3] Some of the time [4] Most of the time
[5] All of the time

6. During the last 30 days, about how often did you feel so restless you could not sit still?

[1] None of the time [2] A little of the time [3] Some of the time [4] Most of the time
[5] All of the time

7. During the last 30 days, about how often did you feel depressed?

[1] None of the time [2] A little of the time [3] Some of the time [4] Most of the time
[5] All of the time

8. During the last 30 days, about how often did you feel that everything was an effort?

[1] None of the time [2] A little of the time [3] Some of the time [4] Most of the time
[5] All of the time

9. During the last 30 days, about how often did you feel so sad that nothing could cheer you up?

[1] None of the time [2] A little of the time [3] Some of the time [4] Most of the time
[5] All of the time

10. During the last 30 days, about how often did you feel worthless?

[1] None of the time [2] A little of the time [3] Some of the time [4] Most of the time
[5] All of the time

Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet & Farley, 1988)

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement. Circle the “1” if you **Very Strongly Disagree**, “2” if you **Strongly Disagree**, “3” if you **Mildly Disagree**, “4” if you are **Neutral**, “5” if you **Mildly Agree**, “6” if you **Strongly Agree**, and “7” if you **Very Strongly Agree**

- | | | | | | | | | |
|-----|--|---|---|---|---|---|---|---|
| 1. | There is a special person who is around when I am in need. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. | There is a special person with whom I can share my joys and sorrows. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. | My family really tries to help me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. | I get the emotional help and support I need from my family. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. | I have a special person who is a real source of comfort to me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. | My friends really try to help me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. | I can count on my friends when things go wrong. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. | I can talk about my problems with my family. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. | I have friends with whom I can share my joys and sorrows. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. | There is a special person in my life who cares about my feelings. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. | My family is willing to help me make decisions. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. | I can talk about my problems with my friends. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Appendix III: ETHICAL CLEARANCE