ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF NURSING AND MIDWIFERY

PREVALENCE OF ANEMIA AND ITS ASSOCIATED FACTORS AMONG CHRONIC KIDNEY DISEASE PATIENTS ATTENDING SELECTED PUBLIC HOSPITALS OF ADDIS ABABA, ETHIOPIA

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A THESIS SUBMITED TO ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES, SCHOOL OF NURSING AND MIDWIFERY, DEPARTMENT OF NURSING IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR MASTERS OF SCIENCE DEGREE IN ADULT HEALTH NURSING

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I hereby certify that I have read and evaluate this Thesis entitled "prevalence and associated factors of Anemia among Chronic kidney disease patients attending renal Clinic at selected governmental Hospitals, Addis Ababa, Ethiopia, 2020". I recommend that it is submitted as fulfilling the thesis requirement.

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STATEMENT OF DECLARATION

By my signature below, I declare and affirm that this thesis is my own work. I have followed all ethical principles of scholarship in the preparation, data collection, data analysis and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I affirm that I have cited and referenced all sources used in this document. Every effort has been made to avoid plagiarism in the preparation of this thesis.

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ACRONYMS AND ABBREVIATION

BMI	Body Mass Index
BP	Blood Pressure
BUN	Blood Urea Nitrogen
CKD	Chronic Kidney Diseases
DM	Diabetic mellitus
eGFR	Estimated Glomerular Filtration Rate
ETB	Ethiopian Birr
GFR	Glomerular Filtration Rate
HCT	Hematocrit
HGB	Hemoglobin
HIV	Huma Immune Virus
KDOQI	Kidney Disease Outcomes Quality Initiative
RBC	Red Blood Cell
UK	United Kingdom
USA	United States of America
WHO	World Health Organization

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ABSTRACT

Background: Anemia is a global public health problem with high mortality and morbidity. It is becoming more prevalent in Ethiopia, but there are very limited researches regarding the prevalence and associated factors of the disease in general and particularly among Chronic Kidney Disease (CKD) patients. Understanding the situation in Addis Ababa would help to use as an input for the country level efforts.

Objectives: The aim of this study was to assess prevalence and associated factors of Anemia among chronic kidney disease patient that attend public hospitals of Addis Ababa between February 15- May 15/2020.

Methods: Hospital based cross sectional study was conducted at 3 public hospitals in 387 CKD patients. The hospitals were Tikur Anbessa Specialized Hospital, Zewditu Memorial Hospital and St. Paul Hospital. Proportion to population size was applied to determine the proportion of participants from the study areas based on the number of chronic kidney disease patients that attended the hospitals in the month of November. The bivariate analysis was exported to multivariate analysis when $P<0.2$ to control the possible effect of confounders.

Result: Out of 387 respondents, more than half (56.8%) were females. From the age category one third 126(32.6%) of participant fell into 46-60 age group with age range between 19-85 years and median age of 55. More than half (54.8%) and two hundred eighty five (73.6%) respondents were urban dwellers and married respectively. Overall, prevalence of anemia at diagnosis of CKD was 53.5% in all CKD stages, and higher anemia prevalence was noted in stage 3 (34.80 %%) and stage 4 (33.33%). Sex, CKD stages, presence of proteinuria, hemodialysis, DM and HTN history were significantly associated with the occurrence of anemia.

Conclusion: The current study reveals that a high prevalence of anemia was present in patients with CKD at selected public hospitals of Addis Ababa, Ethiopia. It is more common at higher stages of CKD. There is a need to improve multiple aspects of CKD management, including early diagnosis and treatment of anemia.

Key Words: Chronic kidney disease, Anemia, Prevalence, Ethiopia

1. INTRODUCTION

1.1 Background

Chronic kidney disease (CKD) is a progressive, irreversible deterioration of renal function in which the body's ability to maintain metabolic, fluid electrolyte and balance fails, which results in uremia or azotemia and can be classified into stages 1 to 5 based on deterioration of glomerular filtration rate (GFR), with each increasing number indicating a more advanced stage of the disease (1).

Anemia is a global public health problem of all developing and developed countries which affects not only human health but also both social and economic development and occurs at all age group of the population (2). Anemia is defined as a state in which the quality and/or quantity of circulating red blood cells is below normal or the established cut off point as defined by the World Health Organization (3). According to the World Health Organization (WHO) diagnostic criteria, Patients are classified as anemic when hemoglobin (Hgb) is < 12 mg/ dl for females and < 13mg/dl for males (4).

Anemia with CKD is defined as a situation in which the concentration of hemoglobin in the blood is below the mean Hg level, corrected for age and sex and the main cause of anemia in CKD is the inadequate production of endogenous erythropoietin (5). The prevalence of anemia was high in non-dialysis chronic kidney disease patients from stage 1 to the last stage. Certain factors that contribute the development of anemia in patients with CKD includes; diabetic nephropathy (DN), chronic kidney disease (CKD) stages, body mass index (BMI), smoking, leukocyte count and serum albumin (6). The occurrence of anemia was higher for patients with both end stage renal disease and CKD. It has also greater prevalence among older persons, persons with diabetes, cardiovascular disease and hypertension than persons without these conditions (5).

Anemia is the commonest complication of CKD that contributes significant burden for risk of cardiovascular disease and contributes to decreased quality of life and other factors may also contribute to anemia(7). Anemia had also significant association with left ventricular dysfunction and heart failure, in addition to a reduction in exercise capacity and quality of life.

It suggested that CKD had significant association with anemia and considered as a possible cause of when the glomerular filtration rate (GFR) is <60ml/min/1.37m2 and It is more likely to be the cause if the GFR is <30ml/min/1.73m2. The use of iron therapies and erythropoiesis stimulating agents (ESAs) has allowed improvement in patients with anemia of CKD (8).

A study done in Korea showed that, as CKD stages increase the anemia has also direct relation with the stages. Current smoker showed lower risk of anemia compared to previous smoker and lower body mass index (BMI) had higher risk of anemia but there is not significant association between gender and age with anemia (6).

1.2 Statement of the problem

Anemia has a moderate to severe public health problem in above 140 countries among 195 countries around the world (4). Anemia is common in CKD patient and has significant adverse outcomes (9).The main common causes of anemia in chronic kidney disease are deficiencies of iron, vitamin B12, and folate (10).

Globally, around 10% of the population (11), in Sub Saharan Africa countries around 13.9% (12) and in Ethiopia around 18.2% are affected by CKD (13). Due to this the occurrence of anemia also increased when renal cases increase and has associated with significant morbidity and mortality with prevalence of, over 90% of patients receiving renal replacement therapy, while its pathogenesis is typically multifactorial and the predominant cause is failure of the kidneys to produce enough endogenous erythropoietin (14).

An estimated glomerular filtration rate (eGFR) of less than 60 ml/min/1.73m2 is the best indication for investigation of anemia due to CKD. Otherwise, if the GFR is greater than or equal to 60 ml/min/1.73m2, the anemia is maybe related to other causes (15). National Health and Nutrition Examination Survey(NHANES) data demonstrated that the prevalence of anemia patients who has eGFR level of 60, 30 and 15ml/min/1.73m2 are 1%, 9% and 33% respectively (14).

Anemia of CKD is normochromic and normocytic that is morphologically difficult to distinguish from the anemia of chronic illness like, chronic infections or various systemic disease and initial assessment of anemia in CKD patients should aim at identifying other factors that may influence the response to treatment (14). Prevalence of anemia progressively

increases with advancing stages of CKD and which is higher in diabetic patient than matched non-diabetic CKD patients (16).

According to study done in sub-Saharan African hospitals, as kidney function deteriorated the prevalence of anemia increased and patients with CKD (GFR < 90 ml/min/1.73 m2) of any degree were about two times more likely to have anemia (12).

A study which is conducted at University of Gondar Hospital revealed that, the prevalence of anemia in CKD patients was 64.5% , and rural residence, non-obese body habitus and having hemodialysis history were found to be predictors of anemia in CKD patients so that continuous follow up, periodic screening and intervention for anemia in CKD patients should be considered to decrease its prevalence (9).

Guidelines recommend that blood transfusion is rarely an acute requirement except in emergencies condition anemia in patients with chronic kidney disease but treatment with Erythropoiesis Stimulating Agents (ESAs) should be offered to patients with anemia of CKD to avoid blood transfusion (17).

Despite the fact that CKD patients were more likely to have anemia, and thus extra morbidity and mortality than those without the disease; there were no virtually published studies on the prevalence and associated factor of anemia among CKD patients in Addis Ababa. Determining the prevalence and associated factor of anemia among CKD patients in Addis Ababa is helping to excel the effectiveness and efficiency of effort on prevention of further expansion of the disease in Addis Ababa and will be used as an input for the country level effort. In addition, it is intend to provide additional timely and objective information about current situation of anemia and its associated factors among CKD patients. Therefore, the aim of this study was to assess the prevalence and associated factor of anemia among CKD patients that attend the public hospitals of Addis Ababa.

1.3 Justification of the study

Because of lack of adequate evidence on the magnitude of anemia among CKD in Ethiopia, especially in Addis Ababa, this study is useful to assess the prevalence and associated factors of anemia in patients with CKD visited in renal clinics. There were some hospitals that provide a service related to kidney problem in Addis Ababa which were beneficial from the

outcome of this research. Tikur Anbessa Specialized Hospital, St Paul Hospital and Zewditu Memorial Hospital were study area among those hospitals.

1.4 Significance of the study

The result of this study is help to:

- Health care service provider (Nurses and Doctors), who work at renal clinic as a baseline in their counseling/health education session.
- Health manager by providing relevant information for future planning and interventions of appropriate strategies to prevent anemia in CKD patient.
- As a baseline data for those who are interested in carrying out further research with this regard.
- It also helps to policy makers to give information that help to formulate appropriate implementation tool.

2. LITERATURE REVIEW

2.1 Prevalence of Anemia among Chronic kidney disease

As reported data by National Health And Nutrition Examination Survey (NHANES), the prevalence of anemia among people with CKD was 15.4% and when the stage of CKD increases from stage1 to stage 5, the prevalence of anemia also increased from 8.4% to 53.4% (18). A cross-sectional study conducted in United States showed that anemia was present in approximately 15% of CKD patients and was more frequent at higher stages of CKD and relatively few CKD patient were being treated for anemia (18). Likewise, a study in UK, the prevalence of anemia accounts around 6.76% (19).

A study conducted in Catalonia reported that among stages 3-5 CKD not on dialysis patients, the prevalence of anemia was 58.5% and 40.5% of all patients were receiving some form of treatment for anemia at the time of the visit (20). A cohort study for outcomes in patients with chronic kidney disease in Korea stated that the prevalence of anemia among 2,198 all stage of CKD patient was 44.9% and the prevalence was increased with derangement of renal function; in all CKD stages i.e. in stages 1, 2, 3a, 3b, 4, and 5 of CKD and accounts for 10.0%, 15.9%, 32.8%, 46.6%, 78.9%, and 96.5% respectively (6).

A study conducted in China revealed that the prevalence of anemia among none dialytic CKD patient was around 51.5% and an increasing prevalence of anemia was associated with CKD stage that increased from stage 1 to 5, that is 22.4%, 30.0%, 51.1%, 79.2%, and 90.2%respectively (21).

A hospital based cross-sectional study from Nepal reported that when GFR and progression of CKD decline, prevalence of anemia was found to be increased progressively and accounts 7.64% , 27.78% , 48.38% , 74.19% , 80% for stages 1 to 5 CKDs respectively and 47.85% of all CKDs had anemia and 38.04% of patients had sever stages of CKD i.e. stage 4 and 5 CKDs (22).

According to a study done in Nigeria, the prevalence of anemia was 77.5% among pre dialysis CKD patients (23). According to a retrospective study conducted in Tanzania, anemia was present in about 33% of the total 792 patients with kidney disease and the leading cause of anemia was CKD (7). Kenyan study on correlates and management of anemia of chronic

kidney disease has shown that the prevalence of anemia among CKD patients was 67%. It increased with worsening of kidney function and majority of the patients with mild anemia were in CKD stages 1-3. Severe and life threatening anemia was most prevalent among patients in stage five of CKD patient (24).

A hospital-based cross sectional study conducted at the University of Gondar hospital revealed that the overall prevalence of anemia was 64.5% and it was significantly prevalent in glomerular disease and increased prevalence with worsening kidney function: stage 1, 2, 3A, 3B, 4 and 5 CKD were 20%, 44.8%, 46.4%, 81.1%, 93.8% respectively and around 96% among the study population presented between stage 3 and stage 5of CKD patients (25). A cross-sectional study at Dessie Referral Hospital (DRH) stated that prevalence of anemia among CKD was 39.5% and higher than those without CKD (17.0%) and prevalence increased progressively with stage of CKD, from 22.6% at stage 1 to 100% at stage 4 (26).

2.2 Factors associated with anemia in patients with CKD

2.2.1 Socio-demographic factors

As mentioned by World Journal of Nephrology, female gender was associated with decreased risk for anemia occurrence (16), but the degree of anemia was worse in women at all stages of CKD according to study conducted in Nigeria (23). A hospital based cross-sectional study in Nepal has shown that anemia in female was more prevalent than male among CKD patients, i.e. 25% of female and11.11% of male were in stage I CKD, 37.5% of female and 20% of males were in stage II CKD, 53.84% of females and 44.44% of male were in stage III CKD, 85.7% of females and 61.11 of male were in stage IV CKD, 83.33% of female 77.78% of male were in stage V CKD and 54.29% of females and 42.39% of male with CKD had anemia (22). Gender and age was not significantly associated with anemia as reported in Korea study (6). As a Clinical Kidney Journal, 2019 report states, the prevalence of anemia was higher among CKD female patients when compared to males (27). Anemia is independently associated with higher risk of pre-dialysis mortality in male patients with CKD Stages 3–5 not yet on dialysis (28), and it is a common feature of CKD associated with poor outcomes (29).

According to study conducted at the University of Gondar hospital, being from rural residence was significantly associated with anemia (9).

2.2.2 Behavioral factors

In a study conducted in Korea, current smokers showed lower risk of anemia as compared to former smokers (6). Furthermore, smoking and alcohol consumption had less significant association with anemia among CKD patient (24).

2.2.3 Clinical factors

According to a systematic review and meta-analysis study in England, anemia is common among CKD patients and has association with cardiovascular diseases and prescription of drugs which may precipitate anemia like NSAID (49.1%) and aspirin (46.2% (19). A study done in Korea shown that, low body mass index (BMI) was associated with increased risk of anemia (6). As mentioned study in Kenya, presence of pre-existing illness such as; diabetes mellitus had statistically significant associations with severity of anemia among CKD patients(24). Likewise, study conducted in Tanzania showed that nearly half of CKD patients who presented with anemia had another disorder like, blood disorders, and other medical conditions (7). A case control prospectively assembled database of a Nephrology states that, the prevalence of anemia among CKD patients was 40.5%, among those 47.8% of the patients were CKD with DM (30). In addition, anemia of CKD develops earlier in patients with diabetes compared with non-diabetics CKD patients (17). A study conducted in China revealed that among all participant CKD patients with anemia, 44.9% of the patients reported being treated for anemia and the percentage of patients receiving anemia treatment was 19.4% in stage 1, 11.4% in stage 2, 26.9% in stage 3, 46.3% in stage 4, and 73.0% in stage 5 (21). A study done in Korea showed that, among the study participants 7.9% were managed by intravenous iron agents, and 42.7% were managed by erythropoiesis stimulating agents (6)..

A hospital-based cross sectional study conducted at the University of Gondar hospital stated that among CKD patients with low body weight habitus and having previous hemodialysis history had higher risk of anemia as compared to those with high body weight habit and non-dialysis history respectively. On the other hand, those CKD patients with diastolic blood pressure between 80 mmHg and 89 mmHg were free from anemia of CKD (9). A retrospective cohort study, conducted at Dessie Referral hospital revealed that the prevalence of anemia among HIV- infected patients with CKD were higher (74%) as compared to HIV negative patients (31).

2.3 Conceptual Frame work

Literatures shows that concepts that were directly and indirectly related to the outcome variable of the study. Among these, clinical factors, socio-demographic factors and behavioral factors are expected to affect the dependent variable of the study (6, 7, 16, 18, 19, 21, 22, and 23)

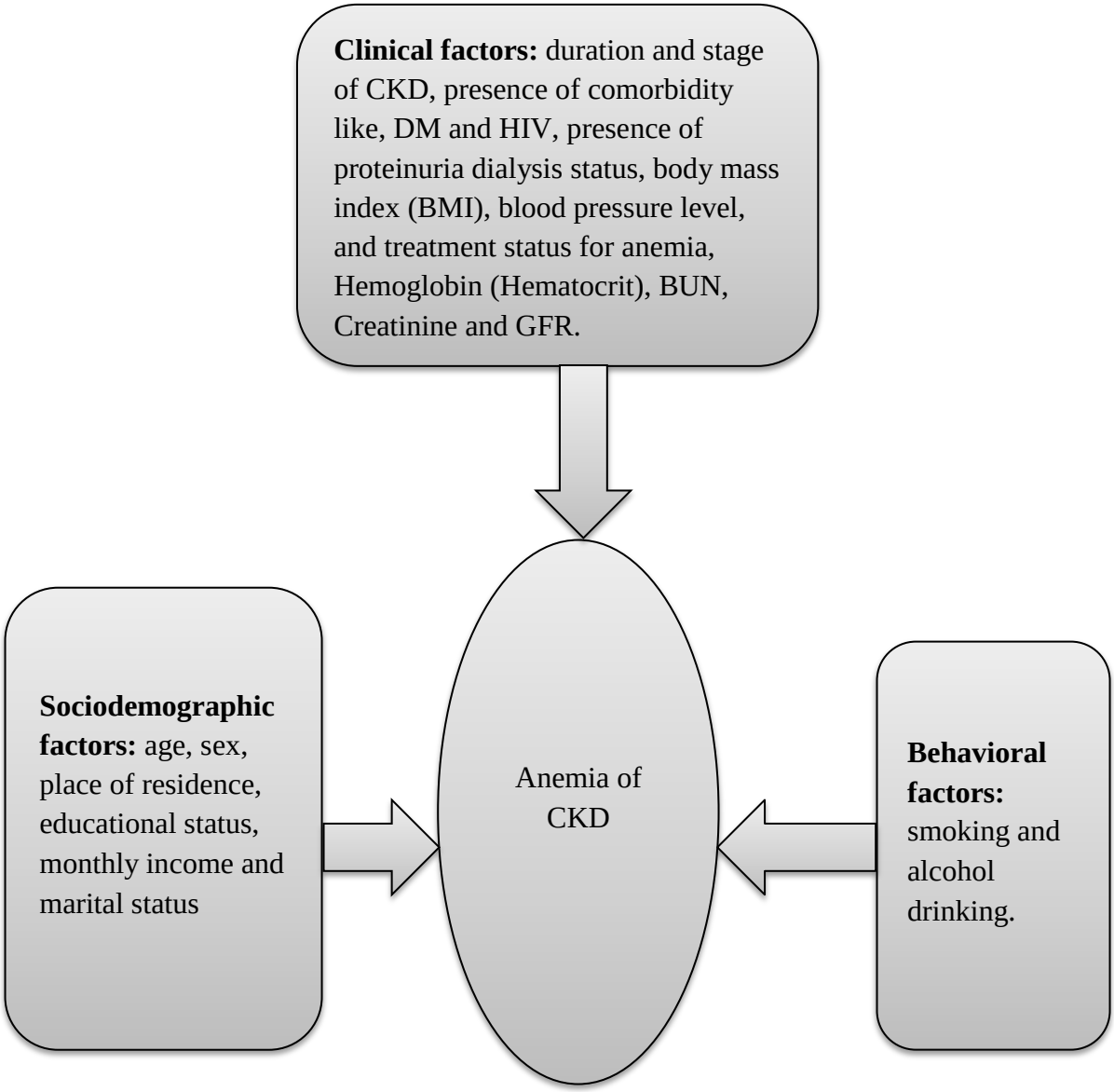

Figure 1: Conceptual frame work for association of anemia with other factors other than chronic kidney disease developed for study on adult CKD patients attending outpatient department at Addis Ababa public Hospital, Addis Ababa, Ethiopia, 2020.

3. OBJECTIVES

3.1 General Objective

- To determine the prevalence and associated factors of anemia among chronic kidney disease patients attending selected public hospitals in Addis Ababa.

3.2 Specific Objectives

- To determine the prevalence of anemia among chronic kidney disease patients attending selected public hospitals in Addis Ababa, and
- To identify associated factors of anemia among CKD patients attending selected public hospitals in Addis Ababa.

4. METHODS AND MATERIALS

4.1 Study Setting

According to the data obtained from Addis Ababa City Administration Health Bureau there are 11 public hospitals in Addis Ababa, which were giving different services for the public. Three hospitals (St Paul Hospital, Tikur Anbessa Specialized Hospital, and Zewditu Memorial Hospital) were purposely selected to be the study areas among the public hospitals.

The reason for this selection was:

- Due to diverse socio economic background of the patients attending the mentioned hospitals and,
- Specialization on the areas of study that is CKD and also high load of CKD patients.

4.2 Study Period

The study was conducted from November 15 to May 15/ 2020.

4.3 Study Design

An institutional based cross sectional study was conducted on selected public hospitals in Addis Ababa.

4.4 Source Population

All CKD patients (age >18 years old) who were visiting outpatient department for follow-up at the selected hospitals and attending renal clinic.

4.5 Study Population

All CKD patients (age >18 years old), who were visiting the selected hospitals attending renal clinic outpatient department for follow up purpose that fulfill the inclusion criteria during the study period.

4.5.1 Inclusion Criteria

CKD patients (age >18 years old) who were attended the hospitals' outpatient department for follow up purpose at the time of data collection and who were willing to participate in the study were included.

4.5.2 Exclusion Criteria

Patients with known cause of anemia other than renal disease, pregnant women, and renal transplant patients were excluded.

4.6 Variables

4.6.1 Dependent variables

Anemia among CKD patients.

4.6.2 Independent variables

- **Sociodemographic factors** including age, sex, occupation, place of residence, educational status, monthly income and marital status;
- **Behavioral factors** including smoking and alcohol drinking;
- **Clinical parameters** such as, duration and stage of CKD, comorbidity like DM and HIV, dialysis status, proteinuria, body mass index (BMI), blood pressure level and treatment status for anemia, Hemoglobin (Hematocrit), BUN, GFR and Creatinine were independent variables of the study.

4.7 Operational Definition

- **CKD:** CKD is defined as kidney damage or glomerular filtration rate (GFR) of less than 90 mL/min/1.73 m2 for three months or more, irrespective of cause or evidence of kidney damage (32).

- **Stage of CKD**: is classified as stage 1, 2, 3, 4 and 5 based on GFR category (Stage 1 CKD: eGFR 90 or Greater, Stage 2 CKD: eGFR between 60 and 89, Stage 3 CKD: eGFR between 30 and 59, Stage 4 CKD: eGFR between 15 and 29, Stage 5 CKD: eGFR Less than 15) (33).

- **Anemia:** Anemia was defined as serum hemoglobin levels <12 g/dL in women and < 13 g/dL in men age >18years old, as recommended by the National Anemia Action Council and the World Health Organization (3).

- **Cigarette smoking**: participants who have current and previous Cigarette smoking history at the start of the study (34).

- **Alcohol consumption**: Excessive Alcohol Consumption in this study is defined as

consumption of ≥6 drinks and ≥4 drinks on a single occasion in men and women respectively (35).

- **BMI:** is a person's weight in kilograms (kg) divided by his or her height in meters squared. <18.5kg/m^2 for underweight, 18.5-24.9 for normal-weight, and ≥ 25.0 kg/m^2 for overweight (36).

- **GFR**: can be estimated from calibrated serum creatinine and estimating equations, such as the Cockcroft-Gault formula (normalized for the body surface area [BSA]): (140 - Age [years]) x weight (kg) x (0.86, if female) x 1.73/72 x serum creatinine (mg/dl) x BSA (m2) (37).

- **Diabetes:** is diagnosed, when the fasting glucose value was >125 mg/dl, or random blood glucose >200 mg/dl or patients on treatment for diabetes. The diagnosis of diabetes was based on the "Definition and description of diabetes mellitus" from American Diabetes Association 2010

4.8 Sample Size Determination and Sampling Method

4.8.1 Sample Size Determination

To determine the required data, the representative of sample size was determined by using formula for a single population proportion based on the study conducted at university of Gondar hospital, on prevalence of anemia and its associated factors among chronic kidney disease northwest Ethiopia. According to the study, the prevalence of anemia in CKD patient was 64.5%(9). This study extracts the prevalence and set the contingency of study unit 10% with confidence interval of 95%.

Where, Z = 1.96

ME (d) = 0.05

ṕ = 0.645%

$n = (Z_{a/2})^2.pq/d^2$

$n = (1.96)^{2.}0.645.0.355/ (0.05)^2$

n = 351.16 then +10% contingency (35.16) =387

4.8.2 Sampling Method

Among the CKD patients that were attend the 3 hospitals i.e. Tikur Anbessa Specialized Hospital, St Paul Hospital and Zewditu Memorial hospital, 387 patients were selected by simple random sampling method. Proportion to population size was used to determine the proportion of participants from each hospital. (Table1).

Table 1: Number of Participants Obtained from selected hospital patients flow data on November, 2019

S.N (A)	Study area (B)	On the month of November CKD attends (C)	Rate (D)	Sample Size (E) = C*D
1	Tikur Anbesa	180	40.6%	157
2	St Paul	158	33.8%	130
3	Zewditu Memorial	132	25.6%	100
Total		460	100	387

*Obtained from selected hospital patients flow data on November, 2019

4.9 Data Collection tool

Interviewer structured questionnaire and the patients chart review were used to collect data from participants during the study period and the associated factors questions were adopted from previous study in University of Gondar Hospital, North West Ethiopia (9) in order to have valid and reliable questionnaire.

The data collection tool consisted three sections

I. Sociodemographic variables
II. Questions about associated factors
III. Chart reviewing parts

4.10 Data collection procedures and Quality Control

4.10.1 Data collection procedures

The data were collected through interviewer administered questionnaires, and document review before they get the service at the outpatient department by separating with screen to prevent

patient privacy. The data collection was done by six BSc nurses and the investigator was played a supervisory role. Document review was used to gather the necessary data that enabled to estimate the anemia status. The value of laboratory parameters that were routinely screened with laboratory technicians of the hospitals and stage of CKD among the participants. The data was captured when patients visited their physician with their result.

The research's data collection mechanisms were pre-tested before proceeding to the research participants with the objective of checking the validity and appropriateness. The pre-test was conducted in 19 patients (5% of the sample size) from Yekatite12 hospital.

4.10.2 Data Quality control

To ensure the quality of data, Six BSc staff nurses and one supervisor who had experience of data collection were recruited to collect data and the principal investigator was also make continuous follow up and supervision throughout the data collection period. Structure questionnaire were translated to local language (Amharic) and then back to English by two people for consistency. The questionnaires were pretested in 5 % (19) adults CKD patients from Yekatite12 hospital to assess the content and approach of the questionnaire and subsequent correction and modification were done. The collected data was reviewed and checked for completeness every day and before data entry.

4.11 Data analysis and Presentation

Data was entered into EPI Info version 4.4.1 and exported to SPSS version 24 for analysis. Descriptive statistics, such as median was used to compute continuous variables, and counted with percentage for categorical variables. Both bivariate and multivariate logistic regression analyses were used to identify independently associated factors of anemia in CKD patients. The bivariate analysis were exported to multivariate analysis when $P<0.2$ to control the possible effect of confounders. Adjusted odds ratio (AOR) with 95%CI and P-value <0.05 were used to select variables associated with anemia in CKD patients. Finally, the result will be present using text, table and graph.

4.12 Dissemination of the result

The finding of this study will be submitted and presented to Addis Ababa University College of health sciences, department of nursing. Findings from this study will be delivered to the

studied area such as, St. Paul Hospital, Tikur Anbesa Specialized Hospital and Zewditu Memorial Hospital. In addition the result of this study will be provide to, A.A health bureau, Federal Ministry of Health (FMOH) and other concerned bodies. The manuscript of this study will submitted to a national or international peer reviewed journal for possible publication and it will also be presented on scientific conferences.

4.13 Ethical Consideration

Ethical approval for the research was obtained from Addis Ababa University, college of health sciences, department of nursing and midwifery research and ethics committee to Tikur Anbessa specialized hospital, Zewditu memorial hospital and St. Paul hospital. Participants were informed about the potential risk and benefit of the research and its findings, preceding the data collection. They were informed about the confidentiality of the information they give and write consent was obtained from each participant immediately. The participants were not requiring writing their names on the questionnaires. The respondents were also notifying that they have the right to refuse or terminate at any point of the interview.

5. RESULT

5.1 Demographic, Clinical and Behavioral Characteristics of Participants

5.1.1 Socio-demographic characteristics of the participants

In the present study about 387 participants were included. Out of these more than half, 220 (56.8%) of the participants were females. Regard to their age, about one third of (32.6%) participants fill into 46 - 60 years of age group with range between 19-85 years and median age of 55. Two hundred twelve (54.8%) and two hundred eighty five (73.6%) participants were urban dwellers and married respectively. More than twenty seven percent of the respondents were self-employed and 88 (22.7%) participants were civil servants. Around twenty five percent of the respondents were completed collage (Table 2).

Table 2: Socio-demographic characteristics of adult CKD patients attending outpatient department at Addis Ababa public Hospital, Addis Ababa, Ethiopia, 2020 (n= 387**).**

Variables		Frequency	Percentage,%
Sex	Male	167	43.2
	Female	220	56.8
Age	19-30	29	7.5
	31-45	109	28.2
	46-60	126	32.6
	61-75	107	27.6
	> 75	16	4.1
Residency	Urban	212	54.8
	Rural	175	45.2
Marital status	Married	285	73.6
	Single	26	6.7
	Divorced	12	3.1
	Widowed	64	16.5
Level of education	Unable to read and write	81	20.9
	able to read and write	91	23.5
	primary school	67	17.3
	High School	52	13.4
	Collage/ University	96	24.8
Occupation	Civil Servant	88	22.7
	Merchant	36	9.3
	Farmer	94	24.3
	House wife	24	6.2
	Self employed	106	27.4
	Daily labor	10	2.6
	Student	5	1.3
	Others	24	6.2
Monthly income	0-3200	173	44.7
	3201-10900	193	49.9
	>10901	21	5.4

5.1.2 Clinical characteristics of Respondents

One hundred fifty four (39.8%) and two hundred twenty two (57.4%) of respondents were hypertensive and diabetes mellitus patients respectively. From all participants more than half (54.0%) of the respondents had CKD duration less than one years. About two third (66.1 %) of the participants had BMI label of between 18.5-24.9 (Table 3).

History of hemodialysis was present in sixty four (16.5 %) of the respondents. Twenty (5.2 %) of the respondents were HIV positives lab result (Table 3).

Table 3 : Clinical Characteristics of adult CKD patients attending outpatient department at Addis Ababa public Hospitals, Addis Ababa, Ethiopia, 2020 **(**n=387).

Variables		Frequency	Percent %
BMI	<18.5	93	24.0
	18.5-24.9	256	66.1
	25-29.9	32	8.3
	≥ 30	6	1.6
Duration of CKD	< 1 year	209	54.0
	1-2 years	132	34.1
	>2-3 years	23	5.9
	greater than 3 years	23	5.9
HTN	Absent	233	60.2
	Present	154	39.8
Hemodialysis status	No	323	83.5
	Yes	64	16.5
Had DM	No	165	42.6
	Yes	222	57.4
HIV status	Negative	278	71.8
	Positive	20	5.2
	Unknown	89	23

One hundred seventy five (45.2 %) and ninety five (24.5%) of the participants were stage 3 and stage 4 CKD patients respectively (Figure 2).

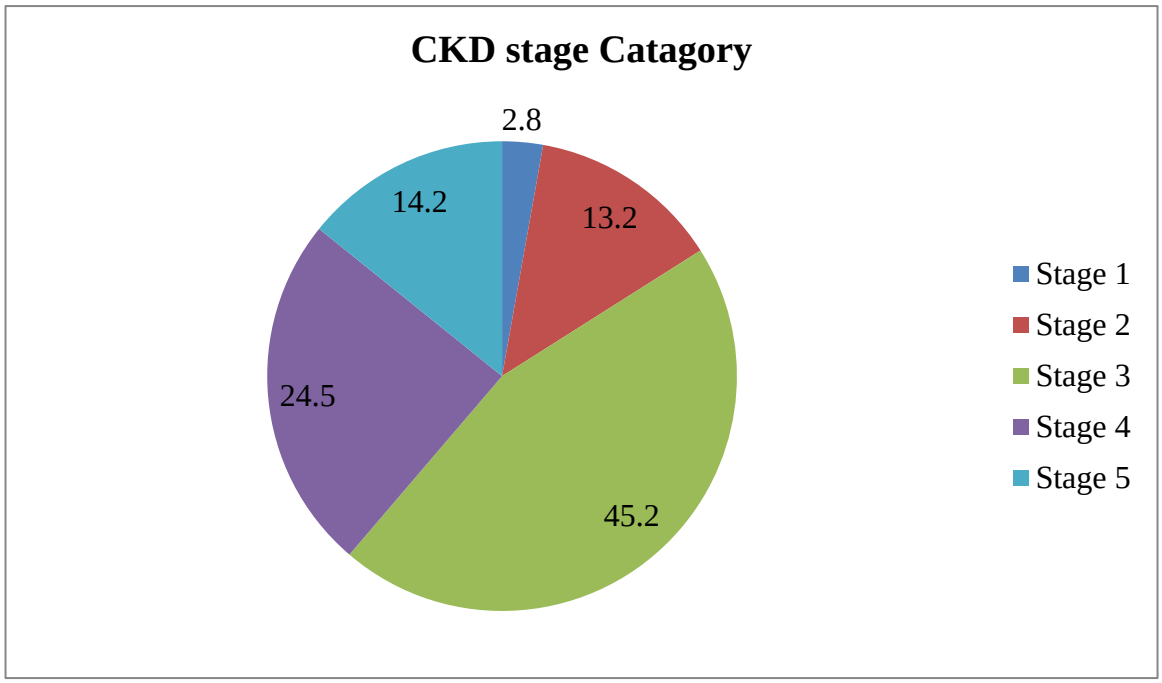

Figure 2: CKD stages of adult CKD patients attending outpatient department at Addis Ababa public Hospital, Addis Ababa, Ethiopia, 2020 (n= 387**).**

5.1.3 Behavioral Characteristics of Respondents

Three hundred thirty two (85.8%) of the respondents were not smoker currently. Seventy two (18.6 %) of the respondents were smokers previously. Sixty four (16.5 %) of the participants were current alcohol consumer (Table 4).

Table 4 : Behavioral Characteristics of adult CKD patients attending outpatient department at Addis Ababa public Hospital, Addis Ababa, Ethiopia, 2020 (n=387).

Variables		Frequency	Percent %
Smoking currently	**No**	**332**	**85.8**
	Yes	**55**	**14.2**
Current Use of Alcohol	**No**	**323**	**83.5**
	Yes	**64**	**16.5**
Smoking Previously	**No**	**315**	**81.4**
	Yes	**72**	**18.6**
Previously	**No**	**177**	**45.7**
Use of Alcohol	**Yes**	**210**	**54.3**

5.2 Prevalence of Anemia

A total number of 387 CKD patients, who were on follow-up at Zewditu Memorial, St. Paul and Tikur Anbessa specialized hospitals Addis Ababa Ethiopia during February - May, 2020 were searched and enrolled for analysis. The numbers of the respondents included in each hospital were 157,130 and 100 patient from Tikur Anbessa Specialized Hospital, St Paul Hospital and Zewditu Memorial hospital respectively. According to this study overall, prevalence of anemia at diagnosis of CKD was 53.5% (Figure 3).

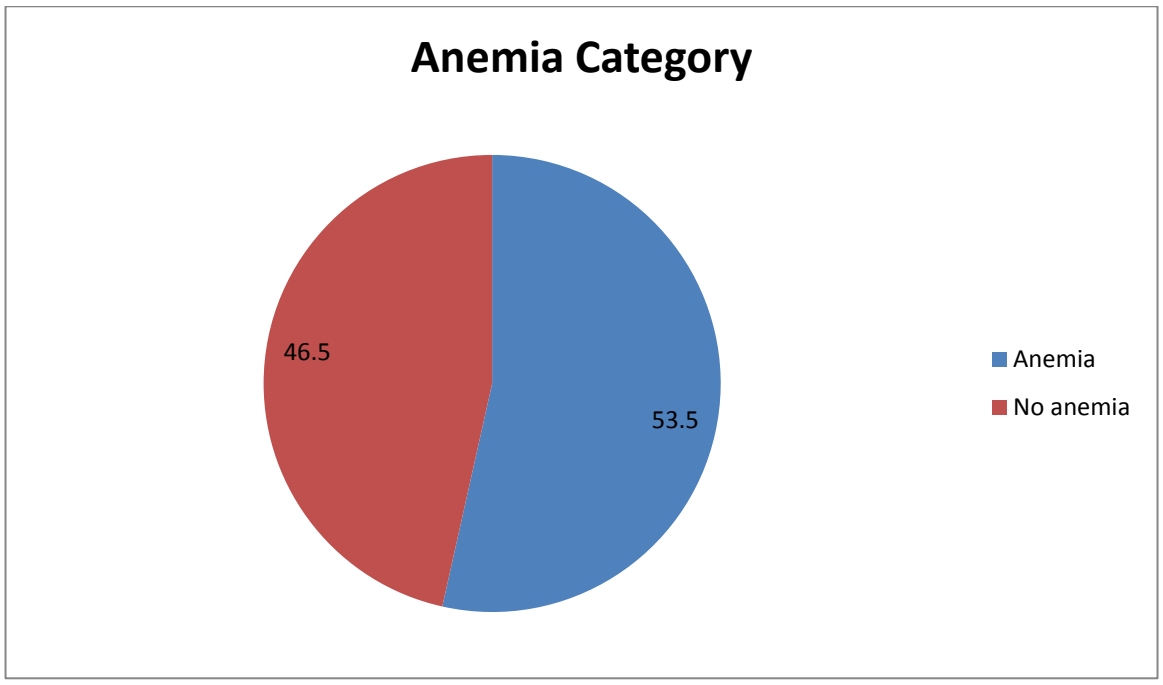

Figure 3: General Prevalence of Anemia among adult CKD patients attending outpatient department at Addis Ababa public Hospital, Addis Ababa, Ethiopia, 2020 (n=387).

5.3 Factors associated with anemia

5.3.1 Demographic factors

The prevalence of anemia with respect to age was 33.3 % for those aged 46–60 years. The prevalence of anemia with respect to marital status of the respondents is found to be 76.3% for married. Out of the respondents who attended college and above, 28.0% were affected by anemia (Table 5).

Table 5: Distribution of Anemia by demographic characteristics among adult CKD patients attending outpatient department at Addis Ababa public Hospital, Addis Ababa, Ethiopia, 2020. (n= 387**)**

		Anemia				Total	
		Yes		No			
Variables	**Category**	**N**	**%**	**N**	**%**	N	%
Sex	Male	69	33.3	98	54.4	167	43.2
	Female	138	66.7	82	45.6	220	56.8
Age	19-30	11	5.3	18	10.0	29	7.5
	31-45	66	31.9	43	23.9	109	28.2
	46-60	69	33.3	57	31.7	126	32.6
	61-75	51	24.6	56	31.1	107	27.6
	>75	10	4.8	6	3.3	16	4.1
Residency	Urban	105	50.7	107	59.4	212	54.8
	Rural	102	49.3	73	40.6	175	45.2
Marital Status	Married	158	76.3	127	70.6	285	73.6
	Single	9	4.3	17	9.4	26	6.7
	Divorced	8	3.9	4	2.2	12	3.1
	Widowed	32	15.5	32	17.8	64	16.5
Educational status	Unable to read& write	47	22.7	34	18.9	81	20.9
	Abel to read &write	43	20.8	48	26.7	91	23.5
	Primary school	30	14.5	37	20.6	67	17.3
	High school	29	14	23	12.8	52	13.4
	Collage &above	58	28	38	21.1	96	24.8
Monthly income	0-3200	104	50.2	69	38.3	173	44.7
	3201-10900	95	45.9	98	54.4	193	49.9
	>109000	8	3.9	13	7.2	21	5.4
Occupational Status	Civil servant	60	29	42	23.3	102	26.4
	Merchant	16	7.7	20	11.1	36	9.3
	Farmer	46	22.2	34	18.9	80	20.4
	Housewife	13	6.3	11	5.1	24	6.2
	Self employed	49	23.7	57	31.7	106	27.4
	Daily labor	7	3.4	3	1.7	10	2.6
	Student	4	1.9	1	0.6	5	1.3
	Other	12	5.8	12	6.7	4	6.2

5.3.2 Clinical Factors

Figure 4 clearly shows that the prevalence of anemia is increasing as the stage of CKD is increasing. Out of 55 stage 5 CKD patients, fifty (90.9%) and from the total of 95 stage 4 CKD patients 69(72.6%) were anemic (Figure 4).

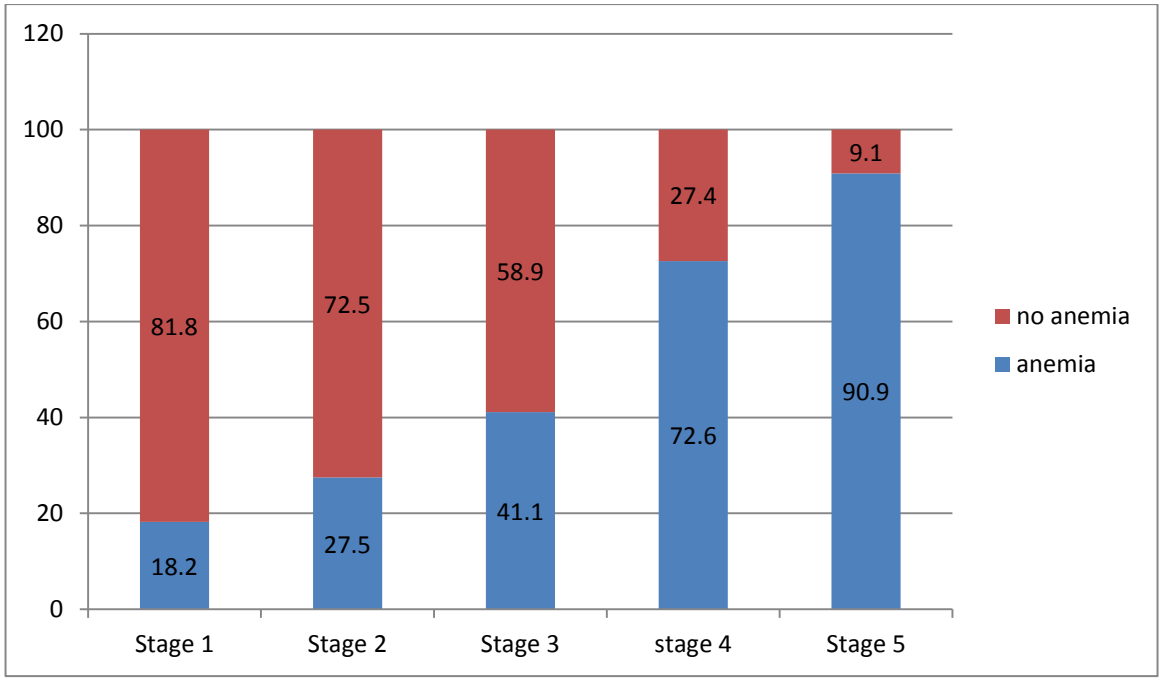

Figure 4; Distribution of Anemia across each CKD stages among adult CKD patients attending outpatient department at Addis Ababa public Hospital, Addis Ababa, Ethiopia, 2020 (n=387)

Among the respondents with hypertension and DM, 68.8% and 59.5% respectively were found anemic (Figure 5).

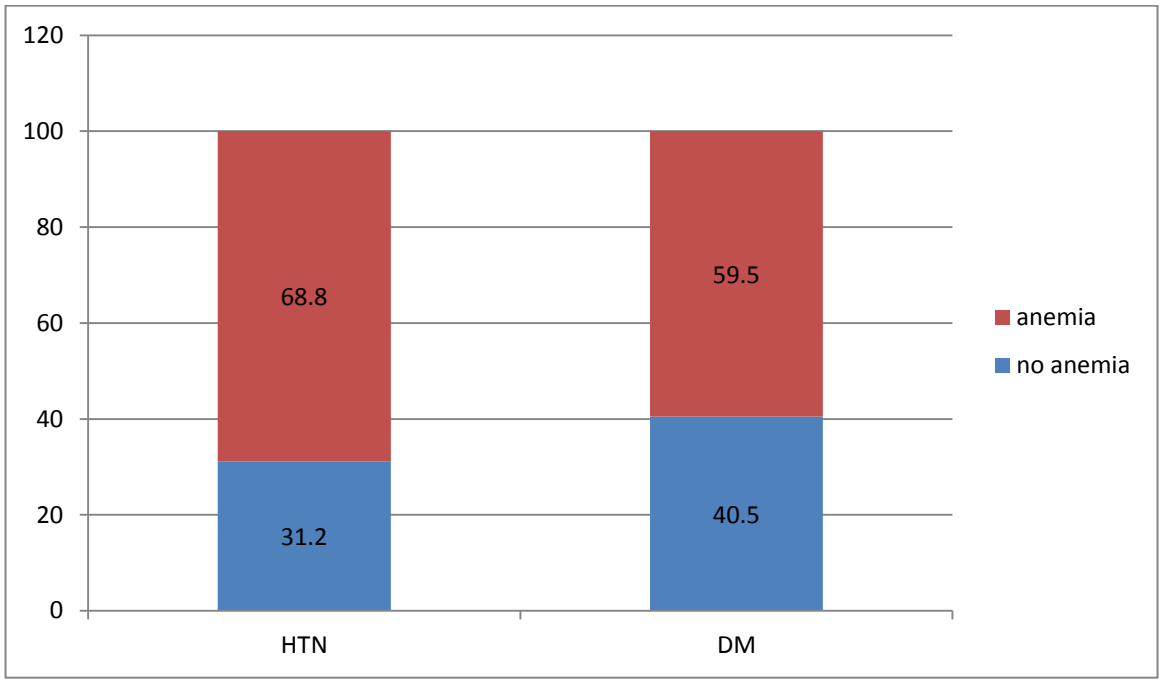

Figure 5: Distribution of Anemia in HTN and DM patient among adult CKD patients attending outpatient department at Addis Ababa public Hospital, Addis Ababa, Ethiopia, 2020 (n=387).

Regarding to BMI, 30.4% of the respondents with underweight (BMI value < 18.5) and 63.3 % of the respondents with normal BMI (BMI value 18.5-24.99) were developed anemia. Among all stages of CKD respondents, 34.80 % of the respondents with stage 3 and 33.3 of the respondents with stage 4 were developed anemia. This study also indicates that 17.9% of CKD patients with anemia were treated. Among the respondents with history of hemodialysis and presence of proteinuria, 25.6% and 59.9% respectively were found anemic (Table 6).

Table 6: Distribution of anemia by clinical characteristics among adult CKD patients attending outpatient department at Addis Ababa public Hospital, Addis Ababa, Ethiopia, 2020 (n=387)

		Anemia				Total	
		Yes		No			
Variables	**Category**	**N**	**%**	**N**	**%**	N	%
BMI	<18.5	63	30.4	30	16.7	93	24
	18.5-24.99	131	63.3	125	69.4	256	66.1
	25-29.99	11	5.3	21	11.7	32	8.3
	≥30	2	1	4	2.2	6	1.6
CKD stages	Stage 1	2	1	9	5	11	2.8
	Stage 2	14	6.8	37	20.6	51	13.2
	Stage 3	72	34.8	103	57.2	175	45.2
	Stage 4	69	33.3	26	14.4	95	24.5
	Stages 5	50	24.1	5	2.8	55	14.3
Duration of CKD	≤ 1 year	86	41.5	123	68.3	209	54
	2 years	86	41.5	46	25.6	132	34.2
	3 years	16	7.7	7	3.9	23	5.9
	> 3 years	19	9.3	4	2.2	23	5.9
Anemia treatment	No	170	82.1	179	99.4	349	90.2
	Yes	37	17.9	1	0.6	38	9.8
Hemodialysis history	No	154	74.4	169	93.9	323	83.5
	Yes	53	25.6	11	6.1	64	16.5
Presence of proteinuria	No	83	40.1	142	78.9	225	58.1
	Yes	124	59.9	38	21.1	162	41.9
HIV status	Negative	136	65.7	142	78.9	278	71.8
	Positive	16	7.7	4	2.2	20	5.2
	Unknown	55	26.6	34	18.9	89	23
Value of proteinuria	Negative	82	39.6	142	78.9	224	57.9
	+1	22	10.6	13	7.2	35	9
	+2	29	14.1	9	5	38	9.8
	+3	74	35.7	16	8.9	90	23.3

5.3.3 Behavioral Factors

Regarding cigarette smoking, 12.1% of the respondents who smoke currently and 13% of the respondents who used to smoke cigarette have developed anemia. With regard to alcohol consumption, 49.3% of the respondents who had history of alcohol consumption and 14.5% of the respondents who are currently taking an alcohol developed anemia (Table 7).

Table 7: Behavioral factors related to anemia among adult CKD patients attending outpatient department at Addis Ababa public Hospital, Addis Ababa, Ethiopia, 2020 (n=387)

		Anemia				Total	
		Yes		No			
Variables	**Category**	**N**	**%**	**N**	**%**	N	%
Smoking before	No	180	87	135	75	315	81.4
	Yes	27	13	45	25	72	18.6
Smoking currently	No	182	87.9	150	83.3	332	85.8
	Yes	25	12.1	30	16.7	55	14.2
Alcoholic before	No	105	50.7	72	40	177	45.7
	Yes	102	49.3	108	60	210	54.3
Alcoholic currently	No	177	85.5	146	81.1	323	83.5
	Yes	30	14.5	34	18.9	64	16.5

5.4 Bivariate and Multivariate analysis for the occurrence of anemia

In Bivariate analysis, sex, CKD stage, previous history of alcoholic and smoking, presence of protein urea, HTN, DM, BMI, Hemodialysis and duration of CKD significantly predict occurrence of anemia with p-value < 0.2. When multivariate analysis was computed for these variables, sex, presence of protein urea, HTN, DM, CKD stages, and hemodialysis remained statistically significant for the occurrence of anemia with p-value < 0.05 (Table 8).

Table 8: Bivariate and Multivariate analysis for the occurrence of anemia among adult CKD patients attending outpatient department at Addis Ababa public Hospital, Addis Ababa, Ethiopia, 2020. (n= 387**)**

Variable		Anemia					
				COR(95% CI)	P-value	AOR(95% CI)	P-value
		Absent	Present				
Sex	Male	98(58.7%)	69(41.3%)	1	<0.001	1	
	Female	82(37.3%)	138(62.7%)	2.390(1.583-36.08)		2.047(1.182-2.468)	0.011*
BMI	<18.5	30(32.3%)	63(67.7%)	4.200(0.728-24.222)	0.108	1.569(0.188-13.091)	0.678
	18.5-24.9	125(48.8%)	131(51.2%)	2.096(0.377-11.647)	0.398	1.045(0.132-8.294)	0.967
	25-29.9	21(65.6%)	11(34.4%)	1.048(0.165-6.646)	0.961	0.824(0.087-7.817)	0.866
	> 30	4(66.7%)	2(33.3%)	1		1	
CKD stages	Stage- 1	9(81.8%)	2(18.2%)	1		1	
	Stage-2	37(72.5%)	14(27.5%)	0.378(0.202-0.700)	0.002	1.928(0.311-11.942)*	0.480
	Stage-3	103(58.9%)	72(41.1%)	0.699(0.515-0.945)	0.020	3.355(0.591-19.033)*	0.172
	Stage-4	26(27.4%)	69(72.6%)	2.654(1.690-4.166)	<0.001	8.124(1.381-47.798)*	0.021
	Stage-5	5(9.1%)	50(90.9%)	10.00(3.988-25.075)	<0.00	34.165(4.660-250.502)*	0.001
Duration of CKD	≤1 year	123(58.9%)	86(41.1%)	1	1	1	
	2 years	46(34.8%)	86(65.2%)	1.870(1.307-2.674)	0.001	1.463(0.826-2.591)	0.197
	3 years	7(30.4%)	16(69.6%)	2.286(0.940-5.556)	0.068	3.048(0.982-9.457)	0.0.054
	> 3 years	4(17.4%)	19(82.6%)	4.750(1.616-13.962)	0.005	3.501(0.993-12.347)	0.051
Smoking before	No	135(42.9%)	180(57.1%)	1		1	
	Yes	45(62.5%)	27(37.5%)	0.600(0.372-0.967)	0.036	0.588(0.282-1.227)	0.157
Alcoholic before	No	72(40.7%)	105(59.3%)	1		1	
	Yes	108(54.1%)	102(48.6%)	1.456(1.080-1.968)	0.14	0.963(0.539-1.719	0.897
Presence of protein urea	No	142(63.1%)	83(36.9%)	1		1	
	Yes	38(23.5%)	124(76.5%)	3.263(2.296-4.693)	<0.00	2.320(1.323-4.067)*	0.003
HTN	No	132(56.7%)	101(43.3%)	1		1	
	Yes	48(31.2%)	106(68.8%)	2.208(1.570-3.106)	<0.00	2.776(1.597-4.827)*	<0.001
DM	No	90(54.5%)	75(45.5%)	1		1	
	Yes	90(40.5%)	132(59.5%)	1.467(1.122-1.917)	0.005	2.156(1.231-3.776)*	0.007
Hemodialysis statues	No	169(52.3%)	154(47.7%)	1		1	
	Yes	11(17.2%)	53(82.8%)	4.818(2.517-9.224)	<0.00	2.754(1.218-6.229)*	0.015

Note: Constants are indicated by 1; whereas * indicates statistical significant association

6. DISCUSSION

In this institutional based cross sectional study, prevalence and associated factors of anemia among CKD patients that attend public hospitals of Addis Ababa, 387 CKD patients have been studied. According to this study, the overall prevalence of anemia among CKD patients was 53.5%, which is higher than reported data by National Health And Nutrition Examination Survey (15.4%), study conducted in United States (15%), UK (6.76%), Korea (44.9%), Nepal (47.5), Tanzania (33%) and Dessie Ethiopia (39.5%) (6,7,18,19,22,26). However, our finding is lower than the reports made by other researchers that showed, 77.5%, 67% and 64.5% in Nigeria, Kenya and University of Gondor Ethiopia respectively(23–25). The low prevalence in our study is because of difference in study population and study period. The variation of the prevalence may be due to differences in the methodology, variation of quality of care and quality of reporting, policy and strategic difference.

This study showed six factors were significantly associated with the occurrence of anemia; those were sex, CKD stages, presence of proteinuria, hemodialysis, DM and HTN history. Current studies showed that stage 5 CKD patients were 34 times more likely to develop anemia as compared to patients with stage1 CKD (AOR = 34.165; 95% CI: 4.660, 250.502).

This study demonstrated that 18.2%, 27.5%, 41.1%, 72.6% and 90.9% of stag1, 2, 3, 4 and stage 5 patients were anemic respectively (Figure 4). Comparable trend was also observed from recent Korean cohort with prevalence of 10% at stage 1 to 96.5% at stage 5 (24), NHANES survey in the United States with prevalence of anemia from 8.4% at stage 1 to 53.4% at stage 5(18). Similar studies also conducted in USA, Catalonia, China (22.4% at stage 1 to 90.2% at stage 5), Nepal (17.64% at stage 1 to 80% at stage 5), Nigeria(68.2% at stage 3 to 90.2% at stage 5) and University of Gondor Ethiopia (20% at stage 1 to 93.8% at stage 5 CKD)(5,20–23,25). It indicates that an increasing prevalence of anemia was associated with CKD stage that increased from stage 1 to 5. This is because the deterioration of renal function due to reduction in erythropoietin production by the kidneys, and the loss of erythropoietin that results in decreased red blood cell production and increase the risk of anemia development. It may also due to changes in erythropoiesis, decrement the survival rate of red blood cells and insufficient bone marrow response to hemolysis.

Most patients (92.2%) in the current study presented in advanced stage of CKD (stage 3–5). Similar studies was also conducted in University of Gondor Ethiopia reports 96% of the participants presented in stage 3-5(25). The reason is that delaines for renal medical care due to insufficient detection and treatment rate of CKD risk factors like hypertension and diabetes.

Current study indicated that patients with presence of diabetes mellitus were 2 times more likely to develop anemia as compared to patients with non- diabetes (AOR = 2.156; 95% CI: 1.231, 3.776) and patient with HTN had 3 times more likely to develop anemia as compared to patients with non- hypertensive (AOR = 2.776; 95% CI: 1.597, 4.827). Similar study was conducted in Kenya (24). The result indicates that the prevalence of anemia among hypertensive and DM CKD respondents is higher than those who are not. This finding suggests that any CKD patient who presents with HTN and DM should be more closely monitored for anemia.

In this study, patients with hemodialysis history had two times higher odds for anemia (AOR=2.754, 95%CI: 1.218–6.229, P=0.015) compared to patients without hemodialysis history which is similar to study in university of Gonder Ethiopia (25). This is because hemodialysis requiring patients those with advanced renal disease, in which presence of anemia was prevalent.

The present study demonstrated that female were 2 times more likely to develop anemia as compared to their counterpart (AOR=2.04, 95%:1.18, 2.46). This finding is supported by previous studies conducted in World Journal of Nephrology, Nepal, and Nigeria (16,22,23). This would suggest that female patients had lower HGB concentrations than male patients, which likely explain why females had greater risk of developing anemia. However sex was not significantly associated with anemia as reported in Korea study (6)

Current study revealed that those patients who had urine protein were 2 times more likely to develop anemia as compared with patients who do not have proteinuria (AOR 2.320 1.323, 4.067). This finding is in agreement with Korea (38). Evidence further supports that low serum albumin due to protein malnutrition and/or inflammation.

This study has clinical implications in that the high magnitude of anemia in patients with CKD should guide healthcare professionals to minimize the risk of anemia by providing guidance to

the patient who could be detected in health checkups, give information about possible risk factors during routine patient care, and provide knowledge about potential risk of anemia. In addition, identifying associated risk factors may help health care professionals treat anemia patients with CKD during their clinical care.

7. STRENGTHS AND LIMITATIONS OF THE STUDY

7.1 Strengths

The research finding and clinical significance is highly correlated. The study finding may be served as a base line data and has provided some data to inform decision-makers to improve current care and management of CKD persons.

7.2 Limitations

This study lacks control groups and did not assess the causes of anemia in CKD patients. The cross-sectional nature of the study prevents assessment of whether identified associated factors caused or resulted from CKD, so a longitudinal study is needed to assess the relationship over time.

8. CONCLUSION AND RECOMMENDATION

8.1 Conclusion

Prevalence of anemia in CKD patients was high (53.5%). Sex, CKD stages, hemodialysis, presence of proteinuria, HTN and DM were significantly associated with the occurrence of anemia. Periodic screening and intervention for anemia in CKD patients should be practiced to prevent its complication.

8.2 Recommendation

The prevalence of anemia among patients on different stage of CKD needs attention for next researcher. Periodic screening and intervention programs for anemia of CKD should be practiced to change the existing situation in the setting.

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10. ANNEXES

10.1 Information Sheet

Good morning/Good afternoon. This questionnaire is prepared for research work to be conducted on the prevalence and determinants of Anemia among Chronic Kidney Disease patients that attend public hospitals of Addis Ababa. The research is conducted to fulfill the thesis requirement of MSc degree in Adult Health Nursing: Addis Ababa University, School of Nursing and midwifery. Dear respondents, below are questions, which are designed to assess the determinants of Anemia among Chronic Kidney Disease patients. Knowing the determinants will help us at a city level as well as country level to work on the prevention of further expansion of the disease. You are selected for you are a Chronic Kidney Disease patient and your participation depends on your voluntariness only. Although you are sacrificing your time there is no benefit in personal or payment that you get for your participation in this study. But your honest response to these questions will help us to better understand the determinants of Anemia in chronic kidney disease patients and will also help as the contribution for the countries level effort to prevent the disease. You are not required to write your name, and it will never be used in connection with any of the information you provide. We would like to express our heartfelt appreciation for your collaboration and thank you in advance.

In case you need to contact the investigator you may use the following address:

Name: Birhie Alemu

Tel: 0947395263

Email: solbirhanu2019@gmail.com

Consent Form

Do you agree to participate in this study?

☐ **Yes**, I agrees to participate in the study, ☐ **No**, I don't want to participate in the study

I certify that I have read the above consent procedure to the participant

Name and signature of data collector ----------

Date of consent_____

Name of study cite (hospital name)_____

10.2 QUESIONNAIRE

10.1.1 English Version

Section 1: Distribution of Participants by their Demographic Characteristics

NO	Questions	Alternative Responses(coding category)	Skip to
101	Sex	1. Male 2. Female	
102	Age	---------- years	
103	Level of education	1. Unable to read & write 2. Able to read & write 3. Primary School 4. High school 5. College/University Graduate School	
104	Residency	1. Urban 2. Rural	
105	Marital status	1. Married 2. Single 3. Separated 4.Divorced 5. Widower/widowed	
106	Occupation	1. Civil servant 2. Merchant 2. Farmer 4. Housewife 1. Self-employed 6. Daily laborer 7. Student 8. Others	
107	Monthly income	…….ETB	

Section 2: Association factor of the participant

2.1: Physical Condition of Participants

No	Questions	Alternative responses (coding category)	Skip to
201	Height	……..cm	
202	Weight	…….. kg	
203	Body mass index (BMI)	……	

2.2: History of CKD, Diabetes, Hypertension, Cardiovascular and Other Chronic Disease

No	Question	Alternative responses (coding category)	Skip to
301	How long is it since you got kidney disease (CKD)?	…… months/years	
302	Hemodialysis status	1. Yes 2. No	
303	Are you diagnosed to have diabetic?	1. Yes 2. No 3. I don't know	
305	Do you have other chronic diseases?	1. Yes 2. No 3. I don't know	If 'no' skip to the next section
306	If yes to Q 307 please specify	……	

2.3: Smoking Habit and Alcohol Consumption

No	Questions	Alternative responses (coding category)	Skip to
401	Do you smoke cigarette currently?	1. Yes 2. No	
402	Have you been a smoker before?	1. Yes 2. No	
403	Do you consume alcohol currently?	1. Yes 2. No	
404	Have you been alcohol consumer?	1. Yes 2. No	

Section 3: Data collection sheet for patient record review

3.1 Complete Blood Count (CBC)

SN	HGB	HCT
501	……	……

3.2 HIV serology status

SN	HIV test
502	1. Reactive 2. Nonreactive 3. Unknown status

3.2 Renal function test, urinalysis, stage of CKD and blood pressure result

SN	Creatinine	BUN	GFR	Urinalysis (proteinuria)	CKD stage (1-5)	BP
503						

3.3 Medications

SN	Questions	Alternative responses	Skip to
504	Has patient treated with anemia?	1. Yes 2. No	If 'yes' skip to question 605
505	Write the specific medication name	…….	

Key: HGB = Hemoglobin, HCT = Hematocrit, MCHC = Mean Cell Hemoglobin Concentration, MCV = Mean Corpuscular Volume, MCH = Mean Cell Hemoglobin, BUN= Blood Urea Nitrogen GFR = Glomerular Filtration Rate, CKD= Chronic kidney disease, BP= Blood Pressure HIV=Huma Immune Virus

Thank You!

10.1.2 Amharic Version

የጥናቱ መግለጫ

ጤና ይስጥልኝ፡፡ ይህ መጠይቅ የተዘጋጀው በአዲስ አበባ ዩኒቨርሲቲ የነርሲግ ትምህርት ክፍል

በአዋቂወች ጤና አጠባበቅ ለድህረ ምረቃ ዲግሪ መመረቂያ በኩላሊት ሕመምተኞች ላይ ያለውን ስር የሰደደ

የደም ማነስ ስርጭትና አጋላጭ ሁኔታዎች ላይ ለሚደረግ ጥናት ነው፡፡ ክቡር መላሻችን ከዚህ በታች ስር የሰደደ የደም ማነስ ሕመም ስርጭት እና አጋላጭ ሁኔታዎችን ለማወቅ የሚረዱ የተለያዩ ጥያቄዎች ይገኛሉ፡፡

እነዚህን ሁኔታዎች ማወቅ በአዲስ አበባም ሆነ በአገር አቀፍ ደረጃ የበሽታዎቹን ስርጭት ለመግታት ለሚደረገው ጥረት ከፍተኛ የሆነ አስተዋጽዖ ይኖረዋል፡፡ በዚህ ጥናት ላይ ተሳታፊ እንዲሆኑ የተደረገው የኩላሊት ህመምተኛ በመሆኖ ሲሆን ጥናቱ ላይ የሚሳተፉት ፈቃደኛ ከሆኑ ብቻ ነው፡፡ምንም እንኳን ጊዜዎትን መሰዋእት ቢደርጉም በዚህ ጥናት ላይበመሳተፎት በግለሰብ ደረጃ የሚያገኙት ጥቅምም ሆነ ክፍያ አይኖርም፡፡ሆኖም ግን የእርስዎ ቀና እናትክክለኛ መልስ ከላይ የተገለጹትን ነገሮች ይበልጥ እንድንረዳ የሚያግዘን ሲሆን በተጨማሪም በሀገር ደረጃበሽታውን ለመከላከለል ለሚደረገውን ጥረት አስተዋጽኦ ያደርጋል ::ይህን ቃለ መጠይቅ ሲሞሉ ስምዎን እንዲጽፉ አይፈለግም፡፡በመሆኑም ለሚያደርጉልን ቀና ትብብርበቅድሚያ ከልብ እናመሰግናለን፡፡አጥኚውን ማነጋገር ከፈለጉ ይህንን አድራሻ መጠቀም ይችላሉ፡

ስም፡ ብርሄ አለሙ

ስልክ፡ 0947395263

ኢሜይል፡ solbirhanu2019@gmail.com

የፈቃደኝነት መግለጫ

እኔ የጥናቱ ተሳታፊ የጥናቱን አላማ እና ጥቅም እንዲሁም ከእኔ የሚጠበቁትን ነገሮች ተረድቼአለሁ፡፡ ስሜ

እና የምሰጣቸው መረጃዎች ለሶስተኛ ወገን ተላልፈው እንደማይሰጡም ተረድቼአለሁ፡፡

ስለዚህም በጥናቱ ላይ ለመሳተፍ፡ ☐ፈቃደኛ ነኝ ☐ፈቃደኛ አደለሁም

የመረጃ ሰብሳቢዉ ስም እና ፊርማ.....

መረጃ የተሰበሰበበት ሆስፒታል ስም.....

የአማርኛ መጠይቅ ፎርም

ክፍል 1፡ የተሳታፊዎች አጠቃላይ መረጃ

ተ.ቁ	ጥያቄዎች	አማራጮች	ይለፍ
101	ጾታ	1. ወንድ 2. ሴት	
102	እድሜ	……..	
103	የጋብቻ ሁኔታ	1. ያገባ 2. ያላገባ 3. የተለያየ 4.የተፋታ 5. የሞተበት(ባት)	
105	የትምህርት ደረጃ	1. ማንበብ እና መጻፍ የማት(ይ) ችል 2. ማንበብ እና መጻፍ የሚትችል/የምትችል 3. የመጀመሪያ ደረጃ 4. ሁለተኛ ደረጃ 5. ኮሌጅ/ዩኒቨርሲቲ 6. ድህረ ምረቃ	
106	የመኖሪያ ቤታ	1. ከተማ 2. ገጠር	
107	ስራ	1. የመንግስት ሰራተኛ 2. ነጋዴ 2. ገበሬ 4. የቤት እመቤት 5. የግል ስራ 6. የጉልበት ሰራተኛ 7. ተማሪ 8. ሌላ	
108	የወር ገቢ	……ብር	

ክፍል 2፡ የተሳታፊዎች ተጨማሪ ኢጋላጭ ምክናየቶች

2.1 የተሳታፊዎች አካላዊ ሁኔታ

ተ.ቁ	ጥያቄዎች	አማራጮች	ይለፍ
201	ቁመት	---------- ሴ.ሜ	
202	ክብደት	--------ኪ.ግ	

203	የሰዉነት ቁመና አመላካች መረጃ	…….	

2.2 ፡የስኳር፣ የግፊት፣ የልብ ሕመምና ሌሎች ተላላፊ ያልሆኑ በሽታዎች ሁኔታ

ተ.ቁ	ጥያቄዎች	አማራጮች	ይለፍ
301	የኩላሊት ሕመምተኛ ከሆኑ ስንት ጊዜ ሆነዎት?	……	
302	የኩላሊት እጥበት አርገዉ ያቃሉ	1. አዎ 2. አይ	
303	የስኳር ሕመም አለብዎት ?	1 አለብኝ 2. የለብኝም 3. አላውቅም	
304			
305	ሌሎች ስር የሰደዱ በሽታዎች አለብዎት ?	1 አለብኝ 2. የለብኝም 3. አላውቅም	የለብኝ ካሉ ወደሚቀጥለው ክፍል ይለፉ
306	እባክዎን ግለጹ	……	

2.3 የማጨስና አልኮል የመጠቀም ልምድ

ተ.ቁ	ጥያቄወች	አማራጮች	ይለፍ
401	ሲጋራ ያጨሳሉ?	1. አጨሳለሁ 2. አላጨስም	
402	በፊት ያጨሱ ነበር ?	1. አዎ 2. አይ	
403	አልኮል መጠጥ ይጠቀማሉ ?	1. አዎ 2. አይ	
404	አልኮል መጠጥ ይጠቀሙ ነበር ?	1. አዎ 2. አይ	

ክፍል 3፡ ከታካሚ ካርድ ላጥ የሚሞላ የደም ናሙና ዉጤት

አጠቃላይ የደም ምርመራ ዉጤት

ተ.ቁ	ሄሞግሎቢን	ሄማቶክሪን
501	…… ……..	……..

3.1 የኤች.አይ.ቪ የምርመራ ዉጤት

ተ.ቁ	ኤች.አይ.ቪ
502	1. ፖዘቲቭ 2. ነጋቲቭ 3. አይታወቅም

3.2 የኩላሊት እና የሽንት ምርመራ፣ የኩላሊት የማጣራት አቅም፣ የኩላሊት ህመም ደረጃ እና የደም ግፊትዉጤት

ተ.ቁ	ኬራቲኒን	ቢ.ዩ.ን	የኩላሊት የማጣራት አቅም	የሽንት ምርመራ፣	የኩላሊት ህመም ደረጃ	የደም ግፊት
503	…….	…….	……	…….	…….	…….

3.3 የደም ማነስ መዳኒትን በተመለከተ

ተ.ቁ	ጥያቄወች	አማራጮች	ይለፍ
504	ታካሚዉ የደም ማነስ መዳኒት ወስዶ/ዳ ያቃል/ታቃለች	1.አዎ 2. አይ	አወ ከሆነ መልሰወ ወደ ጥያቄ 605 ይሂዱ
505	ካለ የመዳኒቱ ስም ይጠቀስ	……	

እናመሰግናለን!