Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Medicine

Clinical Features of Patients with Chronic Kidney Diseases- A Single Center Study

Dr. Sayeda Moni Chowdhury[1*], Dr. Tanzila Ferdous[1], Professor Dr. S M Hafiz[2], Dr. Sayat Quayum[3], Dr. Faisal Bin Yousuf[4], Dr. Debabrata Das[5]

[1]Assistant Professor, Department of Medicine, International Medical College & Hospital, Tongi, Bangladesh
[2]Ex Head of the Department of Internal Medicine, Dhaka Medical College Hospital, Dhaka, Bangladesh
[3]Specialist, Internal Medicine, Evercare Hospital Dhaka, Bangladesh
[4]Junior Consultant, Medicine, Upazila Health Complex, Singair, Manikgonj, Bangladesh
[5]Consultant (Medicine), Upazila Health Complex, Gazaria, Munsiganj Bangladesh

DOI: 10.36347/sjams.2023.v11i12.014 | **Received:** 25.10.2023 | **Accepted:** 05.12.2023 | **Published:** 20.12.2023

***Corresponding author:** Dr. Sayeda Moni Chowdhury
Assistant Professor, Department of Medicine, International Medical College & Hospital, Tongi, Bangladesh

Abstract **Original Research Article**

Background*:** *Chronic kidney disease* **(**CKD) is defined as abnormalities of kidney structure or function, present for more than 3 months, with health implications. Preconceptions regarding the clinical features of chronic kidney diseases (CKD) may be helpful for physicians as well as suspected patients, may help manage CKD patients. But in Bangladesh, we have very limited data regarding this issue. ***Aim of the study: This study aimed to acquire a clear concept of the clinical features of chronic kidney diseases. ***Methods*:** This descriptive cross-sectional study was conducted in the Department of Medicine and Nephrology, Dhaka Medical College & Hospital (DMCH), Dhaka, Bangladesh, from March 2018 to September 2020. In total, 150 diagnosed cases of chronic kidney disease (CKD) were enrolled in this study as the study subjects. Properly written consent was taken from all the patients before data collection. All data were processed, analyzed, and disseminated by using the MS Excel program. ***Results:*** The mean age of the patients was 53.31±10.28 years; 64% were male and 36% were female. In this study, 34% of patients had CKD stage 5, 28% had CKD stage 4, 25.3% had CKD stage 3, 9.3% had CKD stage 2 and only 3.3% had CKD stage 1. Among our patients, 80% patients had nausea, 74.7% had fatigue and weakness, 65.3% had oliguria, 50.7% had oedema, 28% had fever and 18% had confusion. In 69.3% of cases, hypertension and in 40.7% of cases, diabetes was found as comorbidities. ***Conclusion*:** Middle aged male people may be major prone to chronic kidney diseases (CKD). The frequency of hospital admission among stage 1 and 2 are very lower. Nausea, fatigue, weakness, oliguria, and oedema are very common symptoms, whereas hypertension and diabetes are very common comorbidities for patients with CKD.

Keywords: Clinical features, Presentations, Chronic kidney diseases, CKD, Nephrology.

Copyright © 2023 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution **4.0 International License (CC BY-NC 4.0)** which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Chronic kidney disease (CKD) is defined as a reduced glomerular filtration rate, increased urinary albumin excretion, or both [1]. Worldwide, CKD has become a global epidemic with an estimated prevalence of 5% to 15%. [2]. Early identification of CKD is needed to prevent disease progression and reduce the risks of cardiovascular mortality and morbidity. The kidneys play a vital role in the regulation of electrolytes as well as acid-base balance. With the progressive loss of kidney function, derangements in electrolytes and acid-base inevitably occur and contribute to poor patient outcomes [3]. In another study [4], it was reported that worldwide the prevalence of chronic kidney disease is approximately 13.4%, revealed by meta-analysis with a 95% confidence interval of 11.7%-15.1%. In the US, 37 million people, approximately 15% of the total US population, are estimated to have chronic kidney disease [5]. For South Asia, 1 to 4 out of every 10 individuals are suffering from chronic kidney disease. Pakistan is reported as having the highest prevalence, approximately 21.2% and India has the lowest prevalence, approximately 10.2%. The country-specific prevalence of Bangladesh, India and Nepal is similar to the global prevalence of chronic kidney disease (13.4%) [6]. Most chronic kidney disease patients die due to cardiovascular events before they reach end-stage renal disease. Among the events of chronic kidney disease, this cardiovascular event is associated with mineral disorders [7]. CKD is associated with alterations in physiological and metabolic function, like worsening and eventual failure

of kidney function, termed 'uremia,' accumulation of uremic toxins, metabolic acidosis, abnormalities in lipid, mineral, amino acid, bone and homocysteine metabolism; insulin resistance, malnutrition, inflammatory and oxidative stress, anemia, vitamin D deficiency, skeletal muscle dysfunction with a reduction in exercise tolerance, and lean body mass (LBM) wasting and 'cachexia' [8, 9]. Chronic kidney disease (CKD) is associated with electrolyte changes, especially sodium, potassium, calcium, phosphate, magnesium and others. Unfortunately, magnesium is the most forgotten electrolyte in general, as well as CKD patients [10, 11]. The major objective of this current study was to acquire a clear concept on the clinical features of chronic kidney diseases.

METHODOLOGY

This was a descriptive cross-sectional study and was conducted in the Department of Medicine and Nephrology, Dhaka Medical College & Hospital (DMCH), Dhaka, Bangladesh, from March 2018 to September 2020. In total, 150 diagnosed cases of chronic kidney disease (CKD) were enrolled in this study as the study subjects. Properly written consent was taken from all the patients before data collection. The study was approved by the ethical committee of the mentioned hospital. Properly written consent was taken from all the patients before data collection. The whole intervention was conducted following the principles of human research specified in the Helsinki Declaration [12], and executed in compliance with currently applicable regulations and the provisions of the General Data Protection Regulation (GDPR) [13]. According to the inclusion criteria of this study, only diagnosed patients with chronic kidney disease for at least 3 months, CKD patients who did not get dialysis as renal replacement therapy and who were willing to participate were included. On the other hand, as per the exclusion criteria, patients with chronic kidney disease receiving any medications like amphotericin, cisplatin, furosemide, or aminoglycosides and pregnant women were excluded. A predesigned questionnaire was used in data collection. All data were processed, analyzed, and disseminated by using the MS Excel program.

RESULT

In this study, among the total patients, 64% were male, whereas the rest 36% were female. So male patients were dominating in number and the male-female ratio of the patients was 2:1. Among the total patients, 32.7% were more than 60 years old, 36% were from 51 to 60 years, 16% were from 41 to 50 years, 12.7% were from 31 to 40 years the rest 2.7% were from 20 to 30 years' age groups. The mean age of the patients was 53.31±10.28 years. In this study, 34% of patients had CKD stage 5, 28% had CKD stage 4, 25.3% had CKD stage 3, 9.3% had CKD stage 2 and only 3.3% had CKD stage 1. Among our patients, 80% patients had nausea, 74.7% had fatigue and weakness, 65.3% had oliguria, 50.7% had oedema, 28% had fever and 18% had confusion. In 69.3% of cases, hypertension and in 40.7% of cases, diabetes was found as comorbidities. Among our patients, the mean serum magnesium level was 2.68±0.81 mg/dl, 24 hrs. Urinary magnesium level was 38.91±13.29 mg/day; serum sodium was 140.90±2.86 mEq/L, serum potassium was 4.81±0.83mEq/L, calcium was 8.71±0.71mg/dl, phosphate was 5.07±0.70m, s. creatinine was 9.72±4.08 mg/dl and hemoglobin was 10.94±1.23 gm/dl.

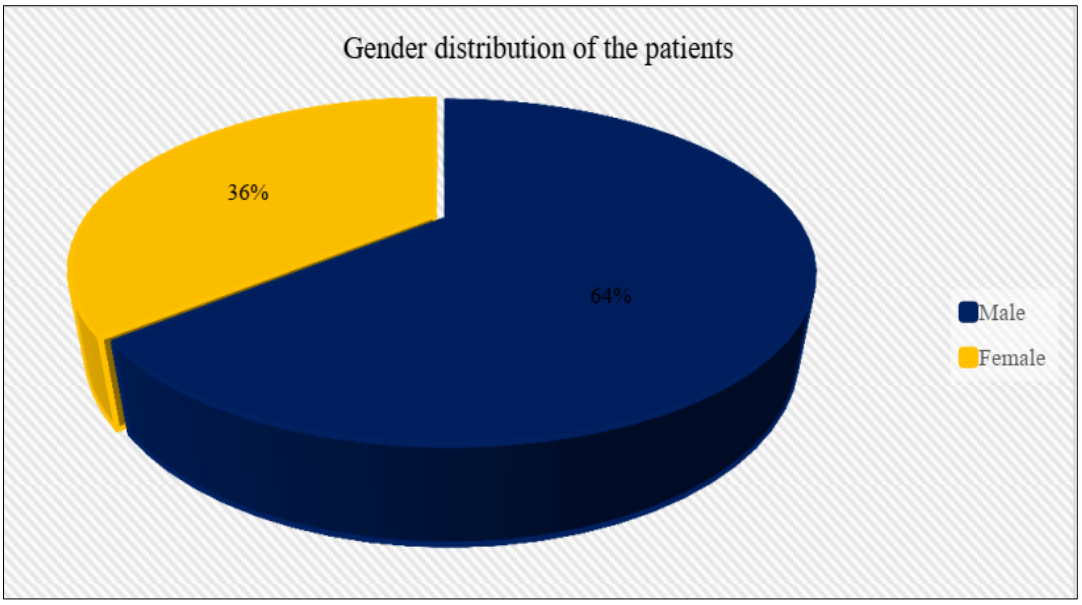

Figure I: Pie chart showed gender wise patients distribution. (N=150)

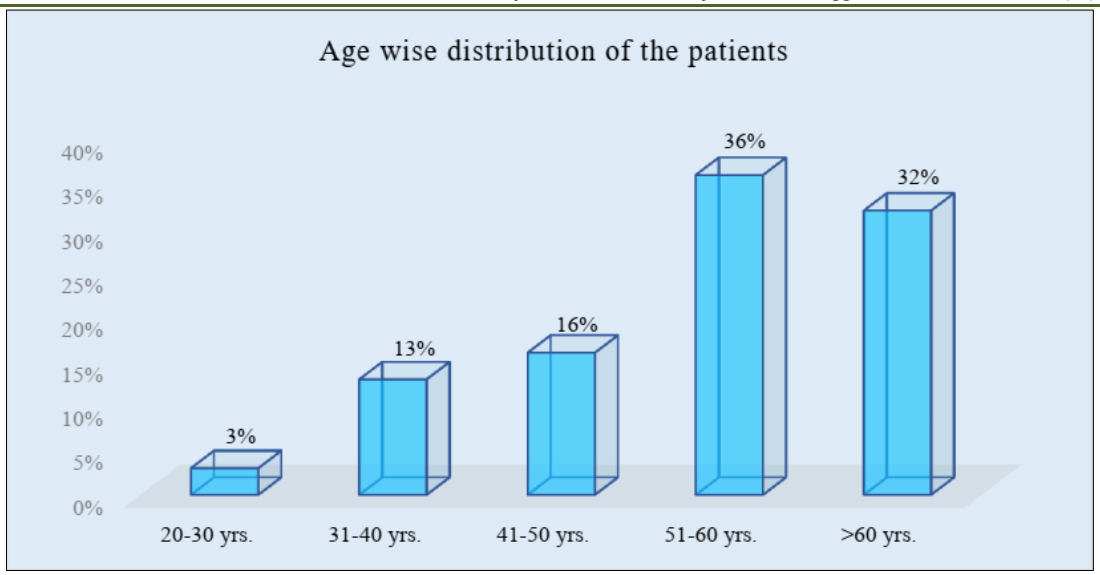

Figure II: Column chart showed age wise patients distribution. (N=150)

Table 1: Distribution of the patients according CKD stage (N=150)

Stage	n	%
Stage 1 (GFR≥90)	5	3.3
Stage 2 (GFR 60-89)	14	9.3
Stage 3 (GFR 30-59)	38	25.3
Stage 4 (GFR 15-29)	42	28
Stage 5 (kidney failure)	51	34

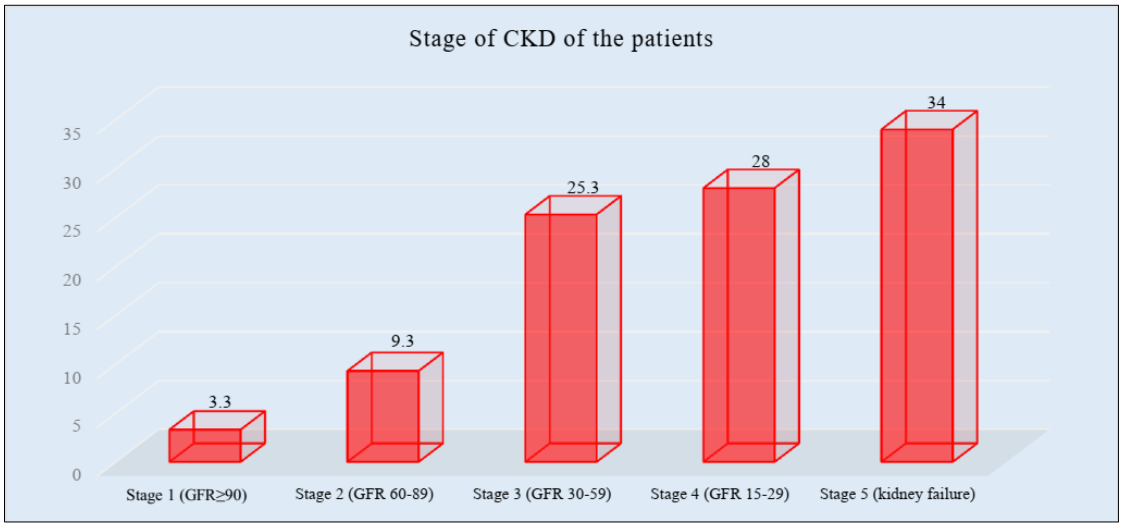

Figure III: Column chart showed Stage of CKD among the patients. (N=150)

Table 2: Distribution of the patients according to clinical features (N=150)

Features	n	%
Nausea	120	80
Fatigue and weakness	112	74.7
Oliguria	98	65.3
Oedema	76	50.7
Fever	42	28
Confusion	27	18

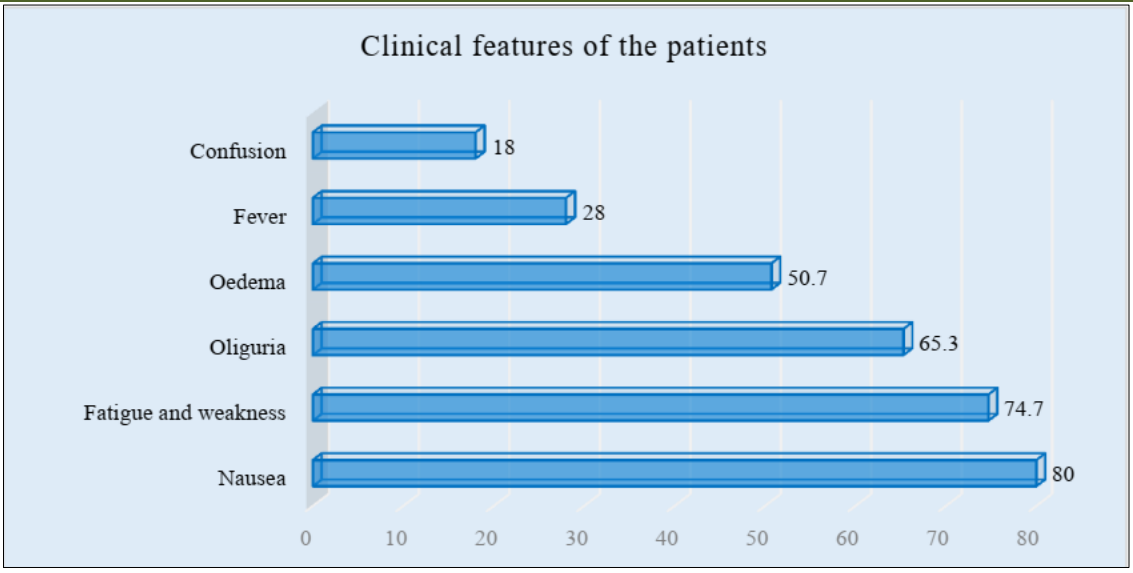

Figure IV: Bar chart showed clinical features wise patients. (N=150)

Table 3: Distribution of the patients according to comorbidities (N=150)

Comorbidities	n	%
Hypertension	104	69.3
Diabetes	61	40.7

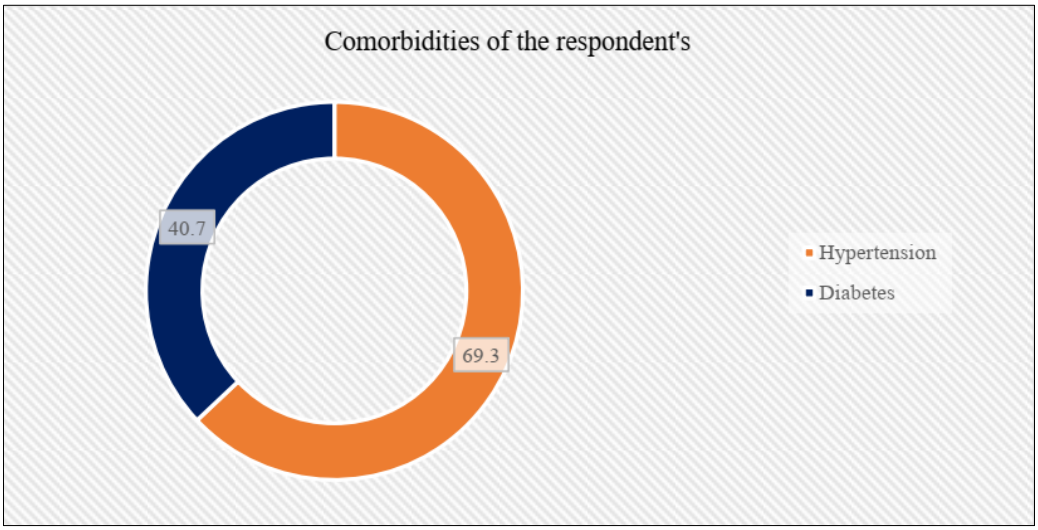

Figure V: Ring chart showed comorbidities wise patients. (N=150)

Table 4: Mean value of investigations among the patients (N=150)

Investigation	**Mean ±SD**
Serum Magnesium (mg/dl)	2.68±0.81
24 hours urinary Magnesium(mg/day)	38.91±13.29
Serum Sodium (mEq/L)	140.90±2.86
Serum Potassium (mEq/L)	4.81±0.83
Calcium (mg/dl)	8.71±0.71
Phosphate (mg/dl)	5.07±0.70
Creatinine (mg/dl)	9.72±4.08
Haemoglobin (gm/dl)	10.94±1.23

DISCUSSION

This study aimed to acquire a clear concept of the clinical features of chronic kidney diseases. Among

our total patients, 64% were male and 36% were female. Previous 3 studies by Anand *et al*., (2014) [14], Patel *et al*., (2018) [15], and Fatema *et al*., (2013) [16], also found male predominance. The mean age of the patients was 53.31±10.28 years. Another study conducted by Patel *et al*., (2018) [15], observed the majority of patients were in the age group >60 years. Another study conducted by Anand *et al*., (2014) [14], found the mean age 49.5 ±12.7 years. In our study, 34% of patients had CKD stage 5, 28% had CKD stage 4, 25.3% had CKD stage 3, 9.3% had CKD stage 2 and only 3.3% had CKD stage 1. In another study conducted by Kanbay *et al*., (2012) [17], most of the patients were in stage 5 CKD, followed by stage 4, stage 3, stage 2 and stage 1 CKD, which was similar to this study. Most of the studies found a smaller number of patients in Stage 1 and Stage 2. In this study, about 80% of patients had nausea, 74.7% had fatigue and weakness, 65.3% had oliguria, 50.7% had oedema, 28% had fever, 18% had confusion, 69.3% had hypertension and 40.7% had diabetes. In another study conducted by Patel *et al*., (2018) [15], found the majority of patients presented with nausea and were followed by vomiting. The other clinical presentation was similar to this study. In this study, a smaller number of patients were found with vomiting. Patel *et al*., [15], also observed that the majority of patients had hypertension followed by diabetes mellitus. In another study, they also observed the risk for developing CKD was almost two-fold higher in subjects with high SBP, and high RBS (Fatema *et al*., 2013) [16]. In this current study, the mean serum magnesium level was 2.68±0.81 mg/dl, 24 hours urinary magnesium level was 38.91±13.29 mg/day, serum sodium was 140.90±2.86 mEq/L, serum potassium was 4.81±0.83 mEq/L, calcium was 8.71±0.71 mg/dl, phosphate was 5.07±0.70m, creatinine was 9.72±4.08 mg/dl and hemoglobin was 10.94±1.23 gm/dl. Anaemia and hypocalcemia were more evident in the case of stage 4 and stage 5 CKD. Hyperkalemia was found the most of the patients with stage 5 CKD and some with stage 4 CKD. Hyperphostaemia was also found among the CKD patients despite receiving treatment. In a previous study, the results of various investigations among CKD patients showed similarity with this study (Patel *et al*., 2018) [15]. All the findings of this current study may be helpful in further similar studies.

Limitation of the Study

This was a single-centered study with small-sized samples. Moreover, the study was conducted over a very short period. So, the findings of this study may not reflect the exact scenario of the whole country.

CONCLUSION & RECOMMENDATION

As per the findings of this current study, we can conclude that middle-aged male people may be major prone to chronic kidney diseases (CKD). The frequency of hospital admission among stage 1 and 2 are very lower. Nausea, fatigue, weakness, oliguria, and oedema are very common symptoms, whereas hypertension and diabetes are very common comorbidities for patients with CKD. To get more specific results, we would like to recommend conducting similar studies in several places with larger-sized samples.

REFERENCES

1. Kidney Disease Improving Global Outcome (KDIGO), 2013. KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. In: Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group, 1-150.
2. De Nicola, L., & Zoccali, C. (2016). Chronic kidney disease prevalence in the general population: heterogeneity and concerns. *Nephrology Dialysis Transplantation*, *31*(3), 331-335.
3. Herzog, C. A., Muster, H. A., Li, S., & Collins, A. J. (2004). Impact of congestive heart failure, chronic kidney disease, and anemia on survival in the Medicare population. *Journal of cardiac failure*, *10*(6), 467-472.
4. Coresh, J. (2017). Update on the burden of CKD. *Journal of the American Society of Nephrology: JASN*, *28*(4), 1020.
5. Centre for Disease Control (CDC), 2019. Chronic Kidney Disease in the United Statets, 2019. CDC. 3(2), 1-5. https://www.cdc.gov/kidneydisease/pdf/2019_National-Chronic-Kidney-Disease-Fact-Sheet.pdf (last accessed October 24, 2020).
6. Hasan, M., Sutradhar, I., Gupta, R. D., & Sarker, M. (2018). Prevalence of chronic kidney disease in South Asia: a systematic review. *BMC nephrology*, *19*(1), 1-12.
7. Craver, L., Marco, M. P., Martínez, I., Rue, M., Borràs, M., Martín, M. L., ... & Fernández, E. (2007). Mineral metabolism parameters throughout chronic kidney disease stages 1–5—achievement of K/DOQI target ranges. *Nephrology Dialysis Transplantation*, *22*(4), 1171-1176.
8. Mencarelli, F., Busutti, M., & Montini, G. (2015). Chronic kidney disease. Pediatric Urology: *Contemporary Strategies from Fetal Life to Adolescence*, *22*(2), 353–363.
9. De Francisco, Á. L. M., & Rodríguez, M. (2013). Magnesium - its role in CKD. *Nefrologia*, *33*(3), 389–399.
10. Vormann, J. (2016). Magnesium and Kidney Health-More on the 'Forgotten Electrolyte'. *American journal of nephrology*, *44*(5), 379-380.
11. van de Wal-Visscher, E. R., Kooman, J. P., & van der Sande, F. M. (2018). Magnesium in chronic kidney disease: should we care?. *Blood purification*, *45*(1-3), 173-178.
12. World Medical Association. (2001) . World Medical Association Declaration of Helsinki. Ethical

principles for medical research involving human subjects. *Bulletin of the World Health Organization*, *79* (4), 373 - 374. World Health Organization. https://apps.who.int/iris/handle/10665/268312.

13. Voigt, P., von dem Bussche, A., Voigt, P., & von dem Bussche, A. (2017). Enforcement and fines under the GDPR. *The EU General Data Protection Regulation (GDPR) A Practical Guide*, 201-217.
14. Anand, S., Khanam, M. A., Saquib, J., Saquib, N., Ahmed, T., Alam, D. S., ... & Chertow, G. M. (2014). High prevalence of chronic kidney disease in a community survey of urban Bangladeshis: a cross-sectional study. *Globalization and health*, *10*(1), 1-7.
15. Patel, H., Redkar, V., Kulkarni, A., & Kale, A. (2018). A Study of Serum Magnesium Level in Patients with Chronic Renal Failure at Tertiary Care Hospital. *International Journal of Contemporary Medical Research*, *5*(10), J5–J8.
16. Fatema, K., Abedin, Z., Mansur, A., Rahman, F., Khatun, T., Sumi, N., ... & Ali, L. (2013). Screening for chronic kidney diseases among an adult population. *Saudi Journal of Kidney Diseases and Transplantation*, *24*(3), 534-541.
17. Kanbay, M., Yilmaz, M. I., Apetrii, M., Saglam, M., Yaman, H., Unal, H. U., ... & Covic, A. (2012). Relationship between serum magnesium levels and cardiovascular events in chronic kidney disease patients. *American journal of nephrology*, *36*(3), 228-237.