



Daffodil
International
University

Project on

A survey on Dialysis patients at Mirpur kidney foundation hospital

[In the partial fulfillment of the requirements for the degree of Bachelor of
Pharmacy]

Submitted To

The Department of Pharmacy,
Faculty of Allied Health Sciences,
Daffodil International University

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APPROVAL

This project paper, “**A survey on Dialysis patients at Mirpur kidney foundation hospital**”, submitted to the Department of Pharmacy, Faculty of Allied Health Sciences, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Pharmacy and approved as to its style and contents.

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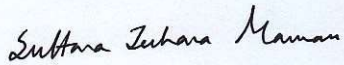
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DECLARATION

I hereby declare that this project report, “A survey on Dialysis patients at Mirpur kidney foundation hospital”. I am declaring that this Project is my original work. I also declare that neither this project nor any part thereof has been submitted elsewhere for the award of Bachelor or any degree.

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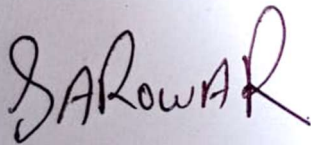
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My Parents

The persons who always encourage me in every sphere of my life

Abstract

When the kidneys are unable to eliminate extra fluid and waste from the blood, a type of therapy called dialysis can help. The purpose of this survey to know the side effect of dialysis & to know the dialysis patient's life style. A survey created using a questionnaires' was being circulated on face to face individually at Mirpur kidney foundation hospital. most of the patients have been chronic kidney disease (67%). 33% responders replied that they haven't chronic kidney disease. 46% participants answered that they have been needed dialysis but 54% responders replied that they haven't idea about this. 39% responders replied that they have been dialysis two times per week, 33% replied that they have been dialysis three times per week & also 28% have been dialysis one time per week. 49% participants answered that dialysis is more 48% responders also replied that Government hospital perspective within general people capacity for dialysis. 31% responders answered that they have been felt muscle cramps after dialysis. 28% participants replied that they have been felt hypotension after dialysis. A drop in blood pressure is a common side effect of hemodialysis. 38% responders replied that High potassium fruits such as bananas and avocados should be avoided, 20% replied that high fiber food should be avoided, 18% participants replied that limiting diary based product & also 24% responders answered that whole grain should be avoided.

Keywords: Dialysis, Chronic kidney disease, CKD fibrosis, Hemodialysis

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Chapter 1

Introduction

1.1 Introduction

Infectious infections were the main cause of death in the previous century. But in the twenty-first century, non-communicable and chronic diseases have supplanted infectious diseases as the leading cause of death and incapacity. CKD, or chronic kidney disease, become a significant public health issue with an overall prevalence that is over 10%, resulting in millions of casualties due to the high economic value of the therapy. The prevalence of CKD is rising at an annual rate of 8%, and it accounts for around 2% of all medical spending worldwide. When contrasted to persons among the ages of 30 and 50, people aged 70 to 90 have a 6–8 times greater risk of CKD [1]. "Reduced estimated glomerular filtration rate (eGFR) below 60ml/min/1.73m² continuing for 3 months or beyond" or "the existence of albuminuria is linked with development to end-stage renal disease (ESRD)" are two definitions for chronic kidney disease (CKD). Cardiovascular disorders can develop in CKD patients due to reduced elimination renal function, which is symptomatic of the loss of functioning nephrons. Diabetes, hypertension, and obesity are the three main conventional indicators of risk for CKD. Nephrotoxins, prescription drugs, complementary therapies, kidney stones, maternal and fetal exposures (low birth weight), infections, environmental exposures, and acute kidney infections (AKI) are some of the unconventional risk variables [2]. If CKD is not treated in the beginning phases, it can develop quickly into serious consequences that greatly raise death rates. These issues involve anemia and mineral imbalances, as well as severe starvation, metabolic acidosis, dyslipidemia, cardiovascular illnesses (CVDs), and bone disorders. The burden of kidney disease is increasing internationally as a result of a number of reasons, including limited possibilities for laboratory services and a lack of knowledge. Lack of awareness is caused by a lack of information, a limitation of access, or inaccurate information [3]. People seek medical institutions after the disease has advanced or reached a late stage because of an insufficient consciousness, which lowers the likelihood that they will receive an appropriate course of therapy. Early detection of an illness depends on being knowledgeable of its signs and symptoms. The evolution of the illness can be slowed down and future fatalities can be avoided with enough awareness among patients. There may be many research on physicians and other populations, according to the literature. In the studies that have been stated, there is a lack of a legitimate and dependable tool. There

hasn't been any research on CKD awareness among hemodialysis patients in Pakistan to yet. Utilizing a dependable technique, the current study seeks to assess CKD-related knowledge amongst patients receiving hemodialysis [4].

1.2 Epidemiology of dialysis

A glomerular filtration rate of less than 15 ml/min/1.73 m² indicates kidney failure, which can be managed by supportive care or with KRT (dialysis or transplantation). The prevalence of kidney failure worldwide is unknown, but in 2017 it was projected to affect 0.07% of the population, or roughly 5.3 million people, with some estimates going as high as 9.7 million. Due to insufficient availability to KRT¹⁰, millions of people worldwide suffer renal failure every year, frequently without receiving supportive care. Since haemodialysis is expensive, the present recommendations imply that LMICs should give it a lower consideration when establishing kidney care programs [5]. PD¹¹, conservative care, living donor kidney transplantation, and medicines that avoid or delay renal failure should be given higher priority in these programs. However, haemodialysis is the most often provided type of KRT in both high-income countries (HICs) and LMICs¹², and it is anticipated that this trend will continue globally in the next decades. In this section we cover the fundamental epidemiology of renal failure, which is managed with long-term dialysis, and talk about some of the major epidemiological concerns that will arise in the future [6].

1.3.1 Prevalence of haemodialysis

Haemodialysis is used by about 89% of dialysis patients worldwide; the bulk (>90%) of these patients reside in HICs or so-called upper middle-income nations like Brazil. Although it varies greatly by area, it appears that prevalence of long-term dialysis is closely correlated with national income. This variance in prevalence partially reflects real variations in the use of dialysis^{12,15} but also reflects the fact that wealthy countries have a greater probability than lower income countries to have thorough dialysis registry. While there is significant variance among territories in all three of these regions, it is noteworthy that the prevalence of haemodialysis is rising more quickly than in Europe or the USA (both at a pace of 2% per year), and this likewise corresponds predominantly (but not only) with affluence [7]. With a relatively high frequency (and quick expansion) in India and a

lesser incidence in Afghanistan and Bangladesh, haemodialysis use differs greatly throughout South Asia. Data on the use of dialysis treatments in sub-Saharan Africa are few. According to a 2017 survey, at least 34 African nations offered hemodilution services, but almost all of residential applicants could not afford or obtain this treatment [8].

1.3.2 Prevalence of peritoneal dialysis

Compared to hemodialysis, PD is less generally accessible globally. PD was apparently offered in 75% of the 125 countries surveyed in 2017, compared to 96% of those for hemodialysis²⁰. Approximately 11% of long-term dialysis patients received PD in 2018, with slightly more than half of these patients residing in China, Mexico, the USA, and Thailand. The proportional use of PD for managing kidney failure varies greatly among territories; for instance, in Hong Kong, >80% of dialysis patients use PD, while in Japan, this proportion is under 5%. Governmental policy and the density of hemodialysis services have a role in this difference [9]. In other nations, including the USA, the prevalence of PD use also differ by ethnicity, with African Americans and Hispanics being far fewer likely to acquire PD than white Americans. Disparate secular trends in PD usage are also visible, with PD use growing quickly in some places like the USA, China, and Thailand while dropping or being stable in other places, including Western Europe. Regarding hemodialysis, many LMICs have limited availability of it for a variety of reasons, which are all covered in-depth elsewhere [10].

1.4 Inflammation and CKD (Chronic kidney disease) Fibrosis

The innate and adaptive immune systems are involved in complicated inflammatory processes that describe the early phases of the fibrotic development. Both M1 and M2 reparative macrophages are necessary for the initial inflammatory stage of the wound healing process. compared to these acute inflammatory reactions, fibrosis usually arises from chronic inflammation as the outcome of an immune system reaction that lasts for several months, in which inflammation, tissue remodeling, and processes for repair take place concurrently. Therefore, the fibrosis process is frequently started by persistent inflammation, a CKD feature [11]. Inflammatory cells such as lymphocytes, polymorphonuclear leukocytes, eosinophils, basophils, mast cells, and macrophages are recruited as a result of the inflammatory process, which is carried by epithelial and

endothelial cells, which also produce inflammatory mediators such as cytokines and chemokines. Transforming growth factor beta 1 (TGF- β 1), a potent fibrogenic factor that stimulates fibroblast activation and boosts the production of extracellular matrix (ECM) proteins, is released by these inflammatory cells. It is common knowledge that renal inflammation serves as the ignition for the start of renal fibrosis. The secretion of cytokines, infiltration of inflammatory cells, and consequent epithelial to mesenchymal transition (EMT) cause renal fibrosis and failure in both acute and chronic kidney damage [12].

1.5 The Renin-Angiotensin System and CKD Fibrosis

It is well known that the renin-angiotensin system (RAS) plays a significant role in regulating arterial pressure and extracellular fluid volume. Renal and cardiovascular illnesses include hypertension, heart failure, and fibrosis, amongst others, are largely caused by chronic RAS stimulation. The fact that a lot of the RAS's elements are present locally in organs including the heart, kidney, liver, and lung has led to the expansion of this idea outside the circulatory system, where it was first discovered that it plays a significant role. By means of separate pathways from the circulating RAS, local RAS participates in the damage, inflammatory, and fibrogenic illnesses of numerous organs, particularly the kidney and heart. Additionally, angiotensin II (Ang-II) operates on the kidney, cardiovascular system, and other organs via specific receptors [13]. The traditional method and the alternate pathway are two distinct categories for RAS elements. Renin and angiotensin production acted as the catalyst for the induction of the conventional RAS system. The juxtaglomerular cells of the kidney release renin, an aspartyl protease, which also plays a role in regulating the RAS's pace of reactivity. Renin's primary role is the synthesis of angiotensin I (Ang-I), a 10 amino acid peptide component of angiotensinogen that is broken down by renal renin. The angiotensin-converting enzyme (ACE) converts Ang-I into the octapeptide Ang-II, which controls blood pressure and is a major factor in hypertension [14]. A TGF- β -independent method is used by Ang-II, the most active part of the RAS, to activate the Smad signaling pathways. It is also associated with influencing collagen and fibronectin formation. demonstrating that RAS is a key player in tissues fibrosis, Ang-II also activates TGF- β 1 processes, making RAS a second "core" signaling mechanism.

On the contrary, the seven-transmembrane G-protein-coupled receptor (Mas receptor) is bound by the ACE2 and its product, Ang (1–7), in the alternate RAS route. In many organs, the matching ACE2/Ang (1-7)/Mas receptor axis inhibited the activity of the traditional RAS route, acting as a protective mechanism against fibrogenesis and inflammation [15].

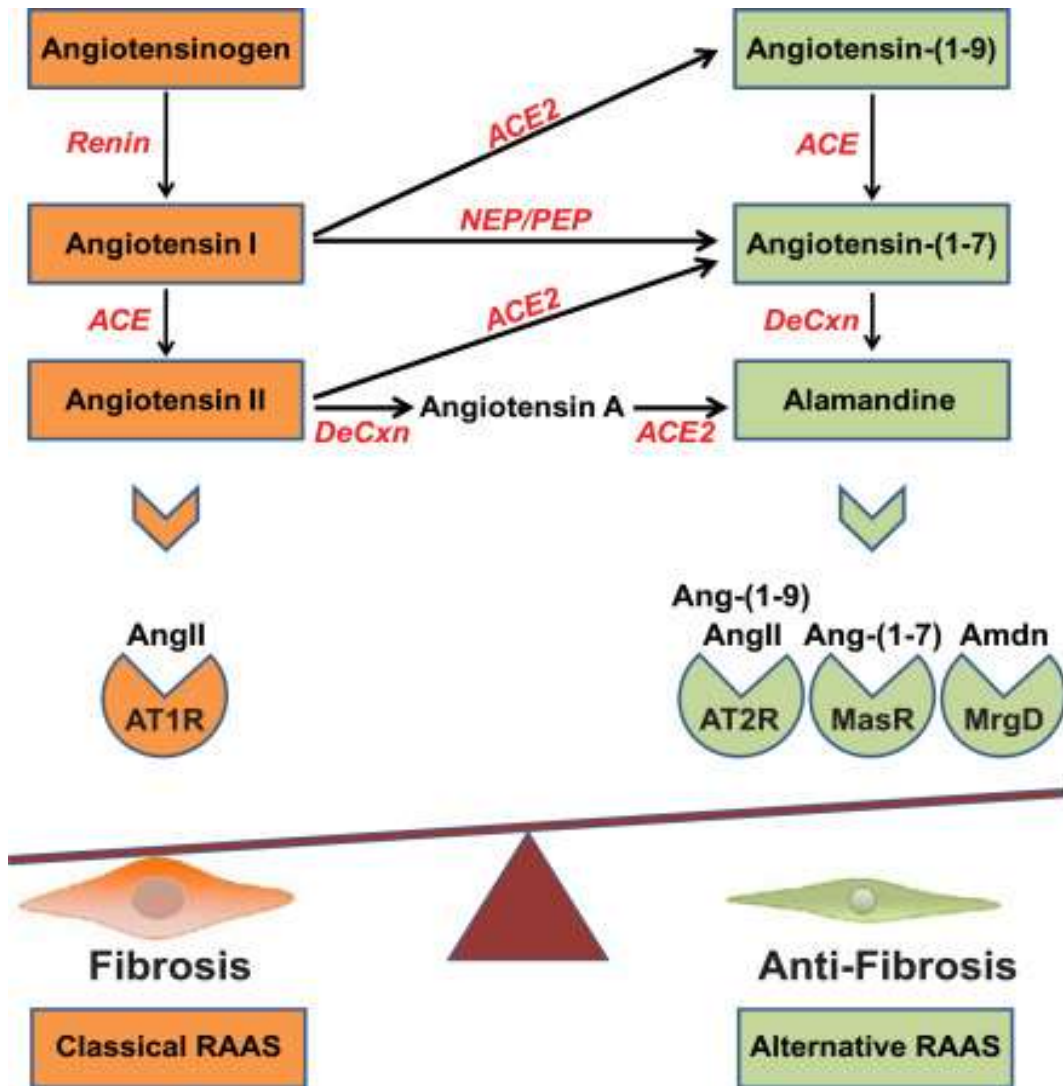


Figure 1: The Renin-Angiotensin System and CKD Fibrosis [16]

Chapter 2

Purpose of the study

2.1 Purpose of the study

A form of therapy for those whose kidneys are failing is dialysis. Your kidneys do not properly filter blood when you have renal failure. Wastes and poisons accumulate in your bloodstream as a consequence of this. Your kidneys' job of eliminating waste and extra fluid from the blood is performed by dialysis. The purpose of this survey following points:

- The goals of this project are to get a thorough understanding of the medical problem being explored.
- To know consciousness of general people about dialysis.
- To know general responder's awareness about process of dialysis.
- To know the effectiveness of dialysis.
- To know the side effect of dialysis.
- To know the dialysis patient's life style.

Chapter 3

Methodology

3.1 Methodology

A big or small proportion of project participants, consumers, and/or stakeholders may be surveyed to collect a wealth of quantitative and qualitative data.

- I have started work for this survey in January 2023
- A survey created using a questionnaires' was being circulated on face to face individually at Mirpur kidney foundation hospital.
- Some important data has been collected by reviewed number of related article paper from different website like google scholar, research gate and PubMed.

3.2 Sample size

- The test had 12 short-answer questions and took roughly four to five minutes to finish. The survey includes the following information: (1) prologue; (2) sociosegment statistics (age, gender, instructional level, and occupation status); and (3) Dialysis origins and impact.
- I have tried my best to collect all data from different profession people for assembly different types of information.
- The examination is led by a questionnaires oriented survey, around **200 populations** was being retorted for this assessments.

3.3 Data analysis strategy

Data analysis is the methodical application of statistical and/or logical tools for describing and illustrating, condensing and summarizing, and evaluating data. Microsoft Excel was used to analyses the data.

Chapter 4

Literature Review

4.1 Kidney Patient Care in Disasters Emergency Planning for Patients and Dialysis Facilities

Americans were made aware of the necessity for an improved response to mass fatality occurrences by the disastrous 2005 hurricane season. The Kidney Community Emergency Response Coalition (KCERC), which includes representatives from more than 50 public and private organizations, was established to address the immediate requirements of the nephrology society. The KCERC made suggestions for patients, dialysis centers, and clinicians after finishing phase 1 of its investigation. The KCERC will encourage fulfillment of those suggestions throughout phase 2. The End-Stage Renal Disease Networks, dialysis facilities, and emergency response officials will coordinate disaster response through daily conference calls that the KCERC will hold throughout a crisis. Kidney patients should focus on finding alternate dialysis facilities and learning concerning the renal emergency diet during disaster planning [17]. Every dialysis facility must have a disaster plan, which must be regularly updated and practiced. A strong communications strategy that considers the restrictions of telephone and broadband access, staff shortages in the context of a potential influx of new patients, the provision of adequate service in the face of weakened services (water, power), and the rebuilding of a dialysis facility which suffers flooding or structural damage are critical problems for dialysis facilities. It is possible to envisage an agenda for getting dialysis patients to shelter; if certain activities are completed at every step of a disaster, it is conceivable that the health of these fragile patients can be safeguarded [18].

4.2 Fibrosis in Chronic Kidney Disease: Pathogenesis and Consequences

Fibrosis is a condition that results in organ dysfunction and is defined by a large buildup of extracellular matrix as a consequence to various tissue damage. The procedure can be started by a variety of various triggers and pathogenic elements that set off a cascade of repair that converges on the molecular signals that start and fuel fibrosis. Although cystic fibrosis can act as a protective mechanism, in some situations, at a certain point, it can develop into an unchecked, permanent, and self-maintained process known as pathological fibrosis [19]. This summary will cover a number of infrastructure, particles, and reactions that contribute to the pathogenesis of the pathological fibrosis of chronic kidney disease (CKD), with a focus on inflammation, the renin-angiotensin system (RAS), parathyroid

hormone (PTH), fibroblast growth factor 23 (FGF23), Klotho, microRNAs (miRs), and the vitamin D hormonal structure. They are all important components of the regulation and core processes that promote fibrosis, which has a serious adverse effect on the kidney and heart in CKD [20].

4.3 The Importance of Residual Kidney Function for Patients on Dialysis: A Critical Review

The death rate of dialysis patients has not been impacted through raising the dialysis dose. However, for both hemodialysis and peritoneal dialysis patients, remaining kidney function (RKF) has always been a strong indicator of increased longevity. The advantages of RKF conservation cast doubt on traditional notions of dialysis sufficiency that have mostly centered on hitting small-solute clearance goals. In this summary, we emphasize the data that RKF has a positive effect on dialysis patients' longevity and quality of life and present a mechanistic explanation for this link. A study regarding present RKF preservation techniques is also done, with a focus on peritoneal dialysis patients [21].

Chapter 5

Result & Discussion

5.1 Age of responders

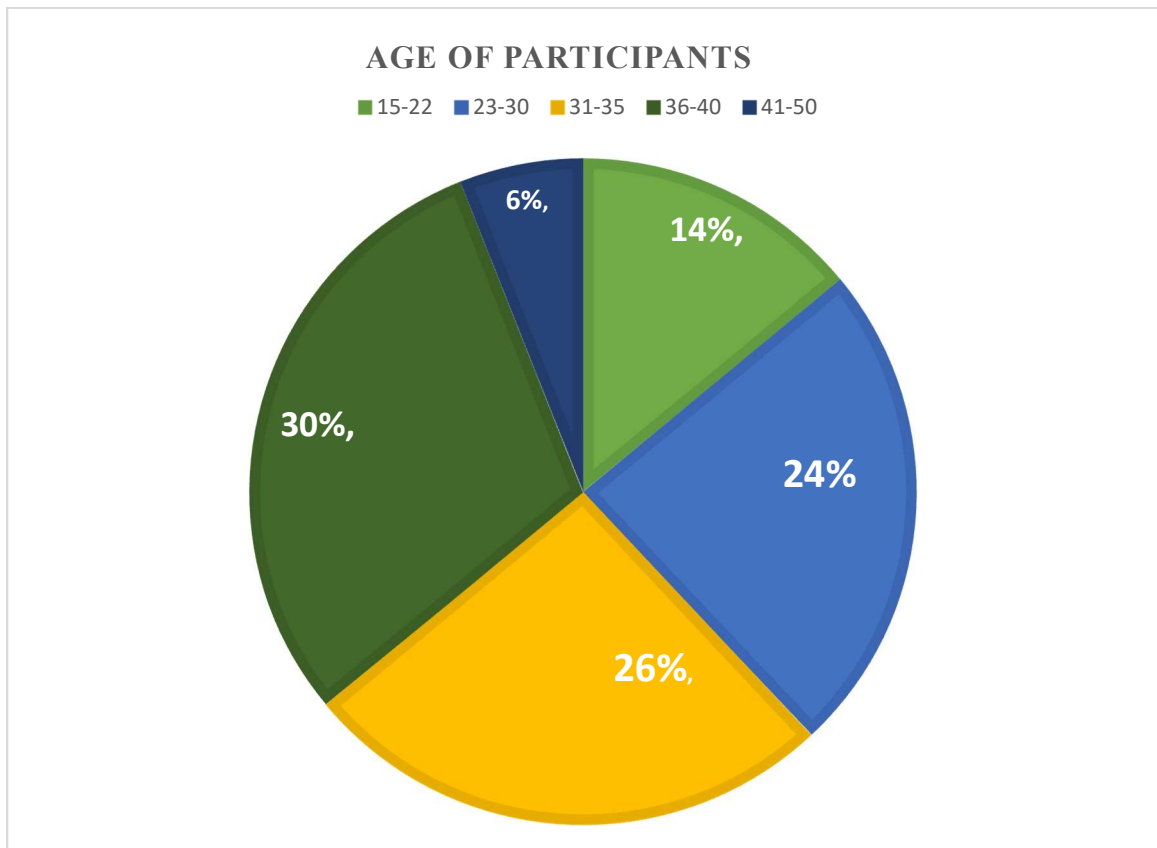


Figure 2: Age of responders

Discussion: People from a widespread assortment of ages have answered to this investigation. A maximum of 30% of the respondents and 26% of responses were among the ages of 31 and 35, respectively. Among the ages of 23 and 30, 24% of the participants were.

5.2 Gender of participants

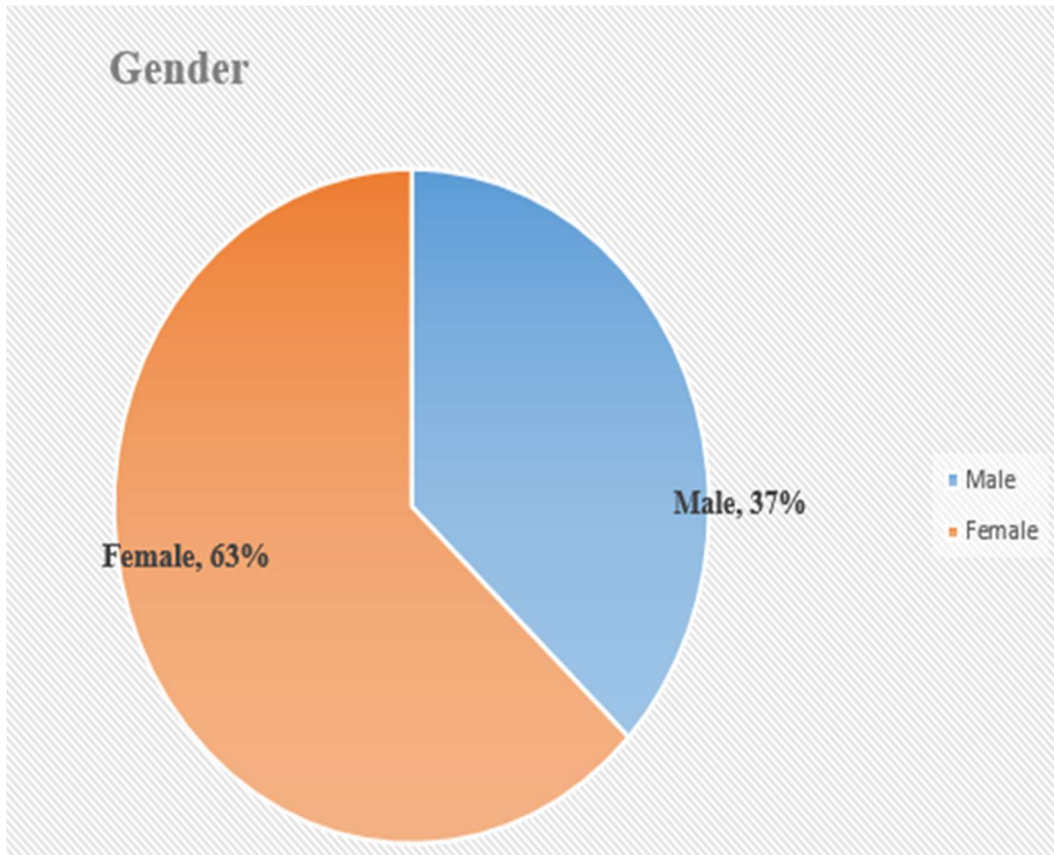


Figure 3: Gender of participants

Discussion: Figure 5 presentations a summary of the demographics of the interviewees. 63% of respondents, who make up the bulk, are female, while 37% are male.

5.3 Professional status of responders

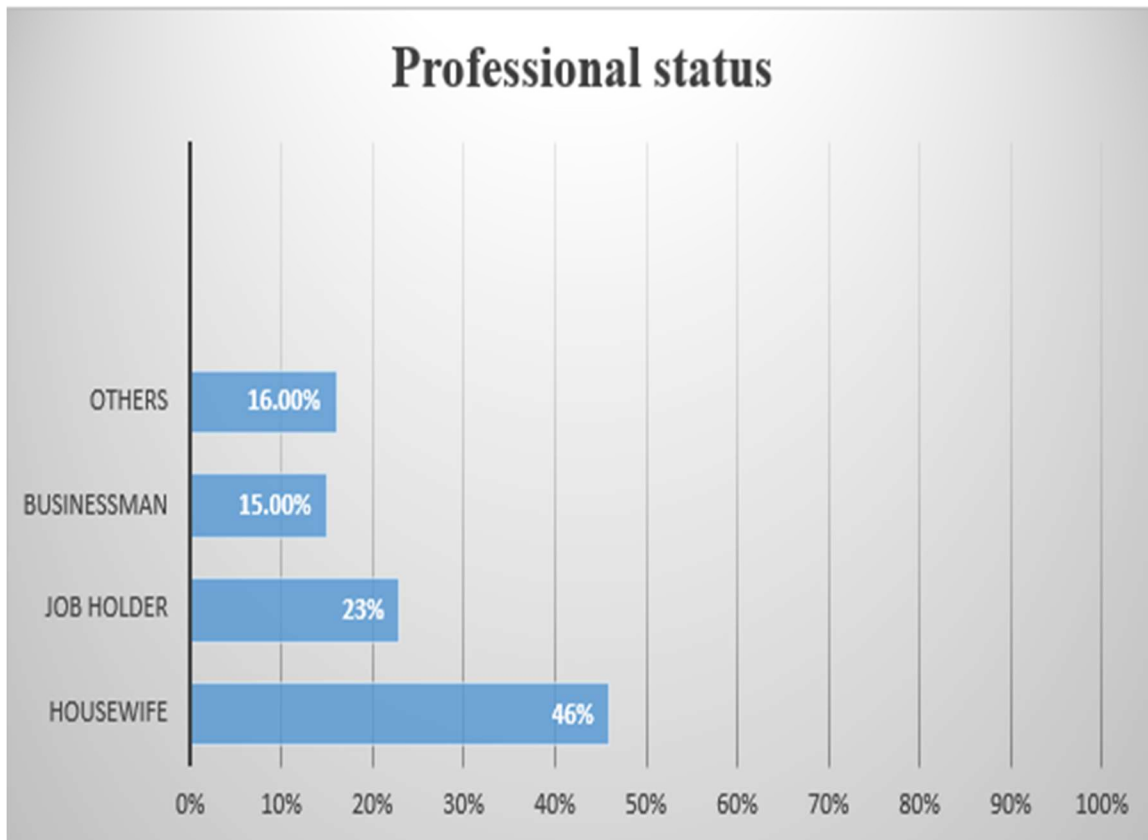


Figure 4: Professional status

Discussion: As of this time, it was exposed that 46% of the people who took part were housewife's. 15% and 23% of accused were businessmen and employment holders, harmoniously.

5.4 Do you have chronic kidney disease?

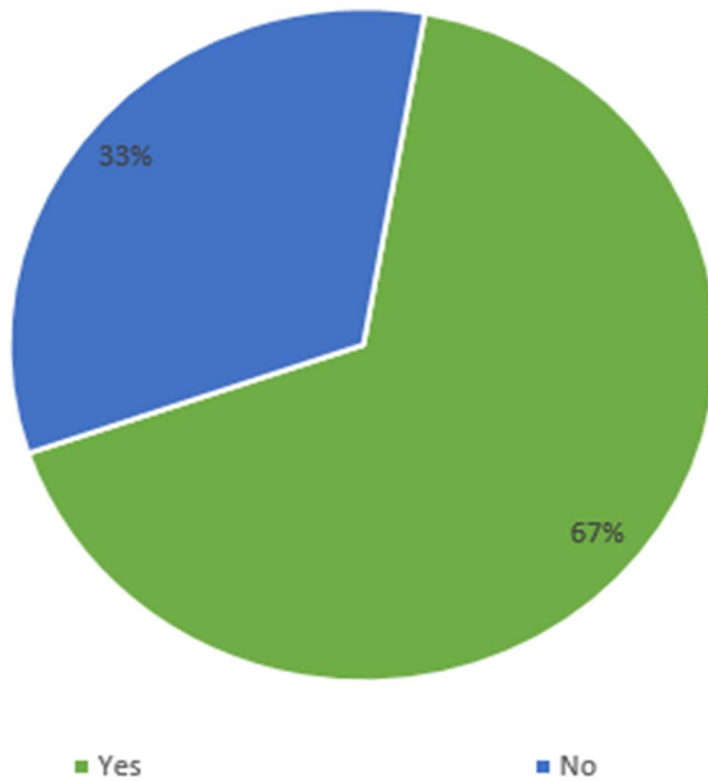


Figure 5: Rate of chronic kidney disease people

Interpretation: when gone to the Mirpur kidney foundation hospital at kidney patient's unit. Observed that most of the patients have been chronic kidney disease (67%). 33% responders replied that they haven't chronic kidney disease.

5.5 Do you need Dialysis?

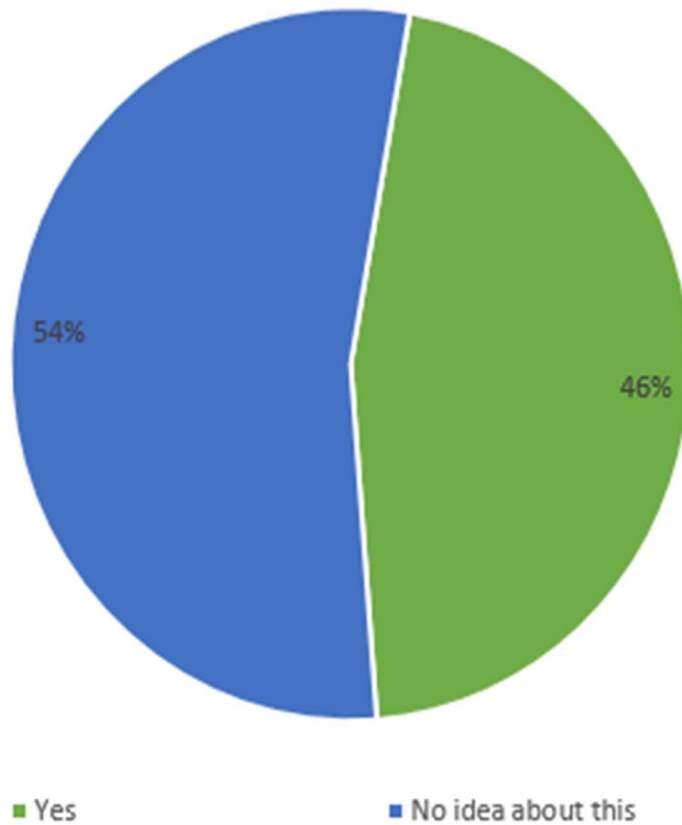


Figure 6: Range of dialysis required patients

Interpretation: If your kidneys are unable to eliminate sufficient fluid and waste from your blood to keep you healthy, you may require dialysis. When your kidney function is just 10 to 15 percent or less, this typically occurs. You could have symptoms like nausea, vomiting, edema, and exhaustion. On the word of the inspection, **46%** participants answered that they have been needed dialysis but **54%** responders replied that they haven't idea about this.

5.6 If yes, have you experienced dialysis discomfort?

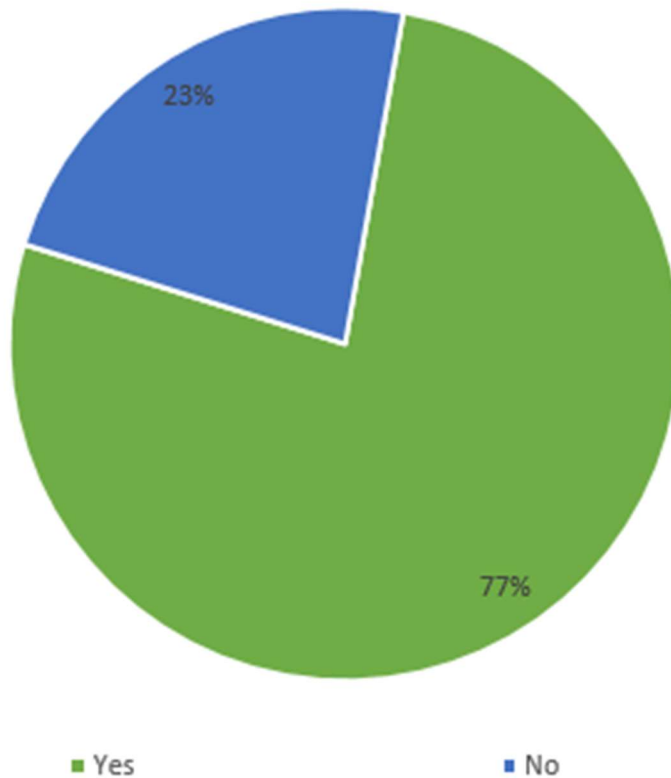


Figure 7: Discomfort of dialysis

Interpretation: Dialysis is uncomfortable. When the needles are inserted into your fistula or graft while you are receiving hemodialysis, you can experience some discomfort, but the majority of patients typically have no other issues. According to the survey, majority of the participants **77%** replied that they have been felt discomfort during dialysis.

5.7 How often should dialysis be done?

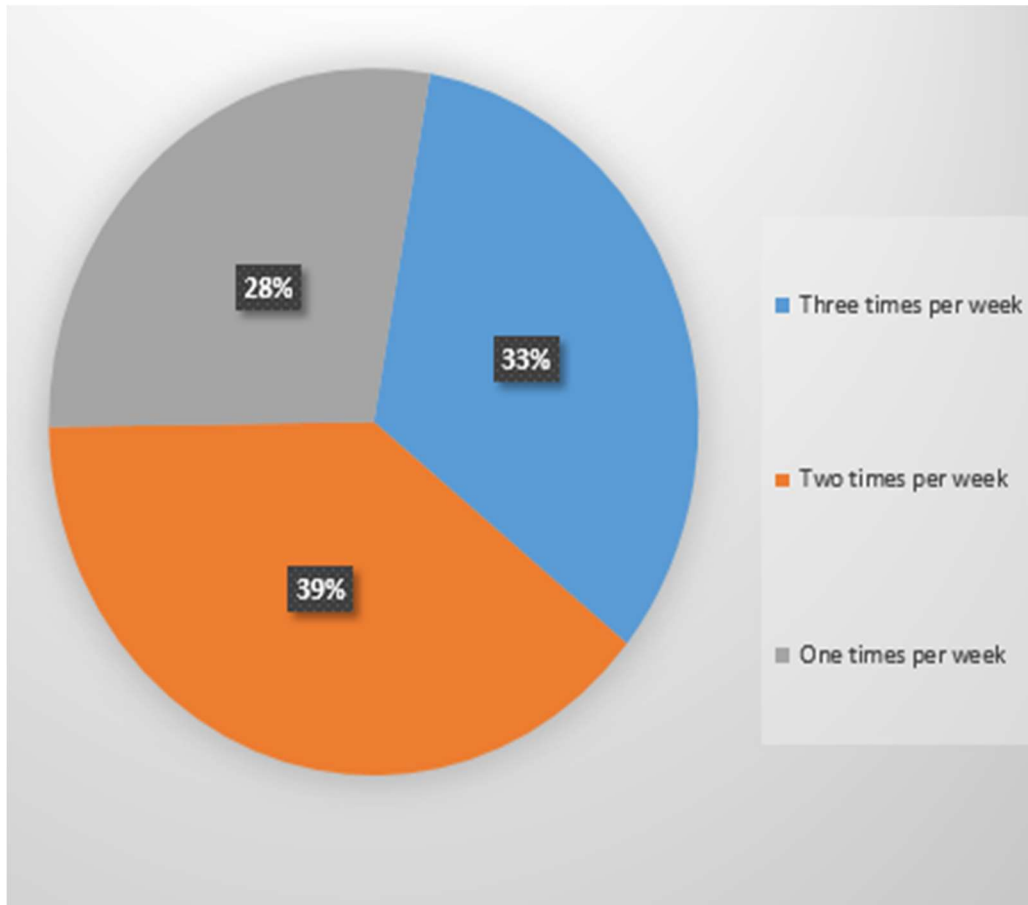


Figure 8: Frequency of dialysis on weekly basis

Interpretation: You can perform hemodialysis at home or in a nephrology clinic. Depending on the patient's severity, treatments typically last four hours and take place at various times throughout the week. Depending on their individual requirements, some patients could require longer therapy. According to the investigation, 39% responders replied that they have been dialysis two times per week, 33% replied that they have been dialysis three times per week & also 28% have been dialysis one time per week.

5.8 Do you think dialysis is within the reach of common people in perspective of Bangladesh?

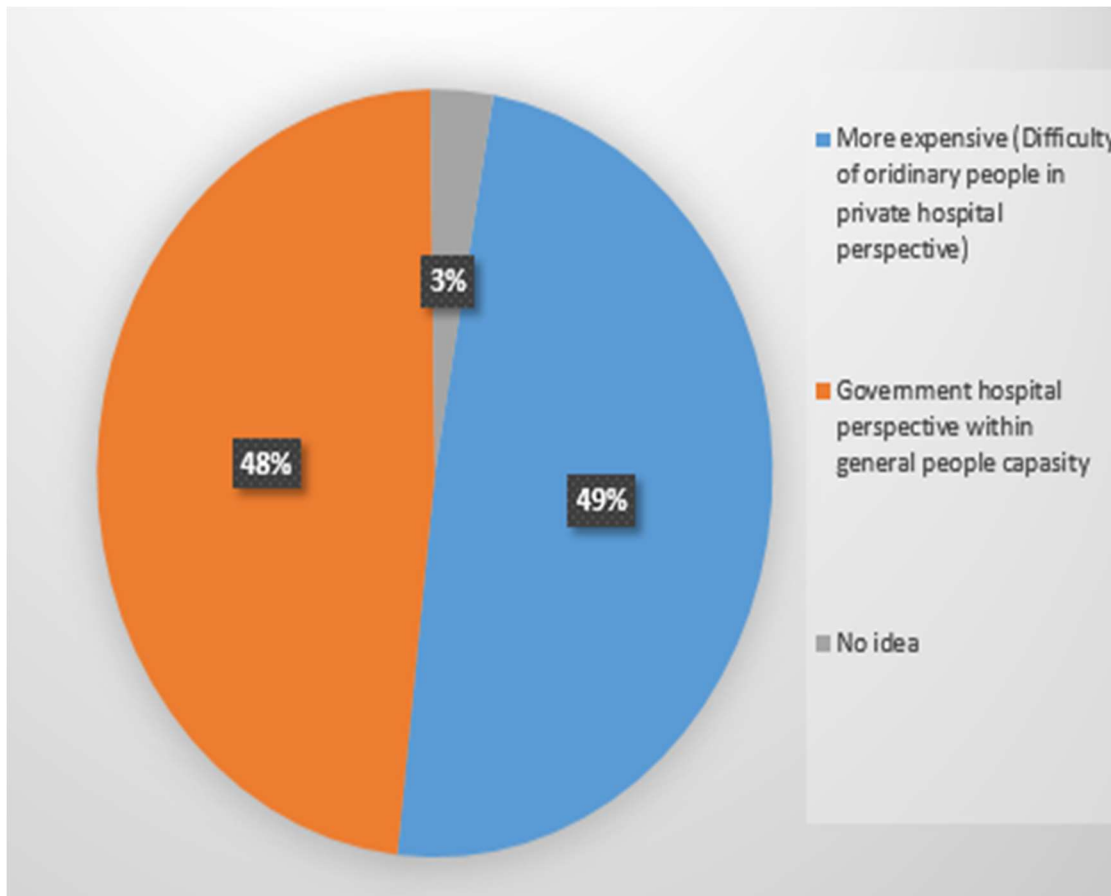


Figure 9: Capacity of dialysis treatment

Interpretation: According to the survey, 49% participants answered that dialysis is more expensive (Difficulty of ordinary people in private hospital perspective), 48% responders also replied that Government hospital perspective within general people capacity for dialysis.

5.9 What kind of side effects are you experiencing after dialysis?

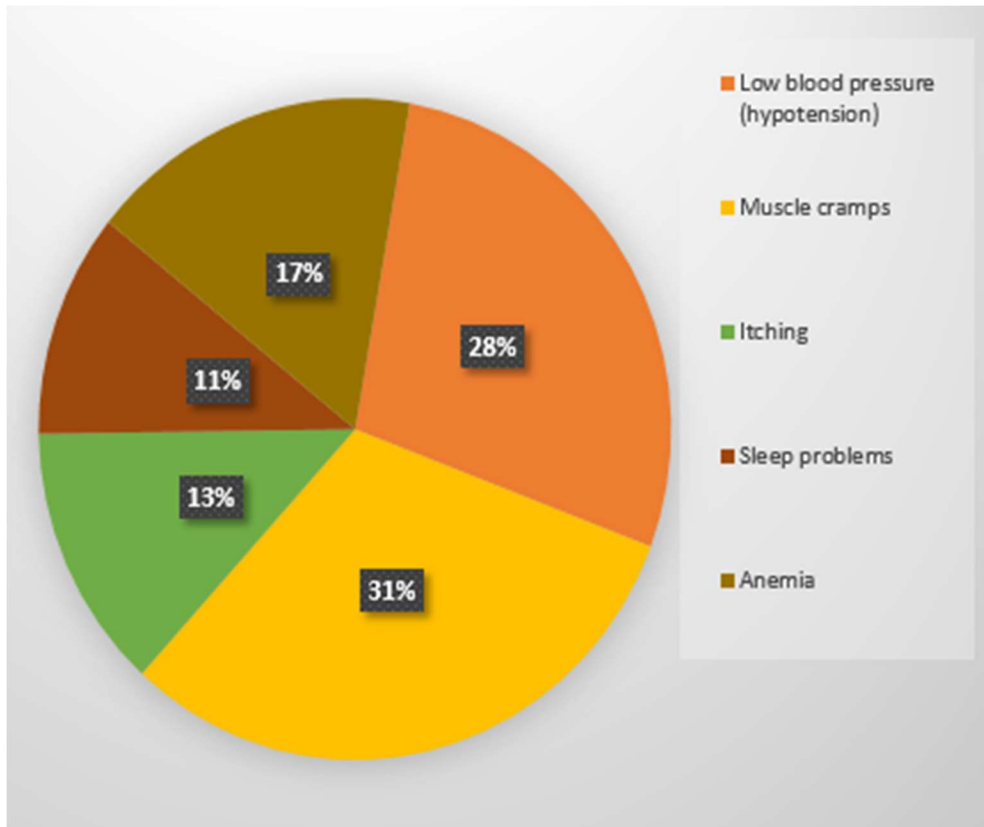


Figure 10: Side effects of dialysis

Interpretation: Different people have been felt different type of side effects after dialysis. In this investigation, **31%** responders answered that they have been felt muscle cramps after dialysis. Although the cause is not clear, muscle cramps during hemodialysis are common. **28%** participants replied that they have been felt hypotension after dialysis. A drop in blood pressure is a common side effect of hemodialysis.

5.10 If you are a dialysis patient, what advice has the doctor given you about drinking water?

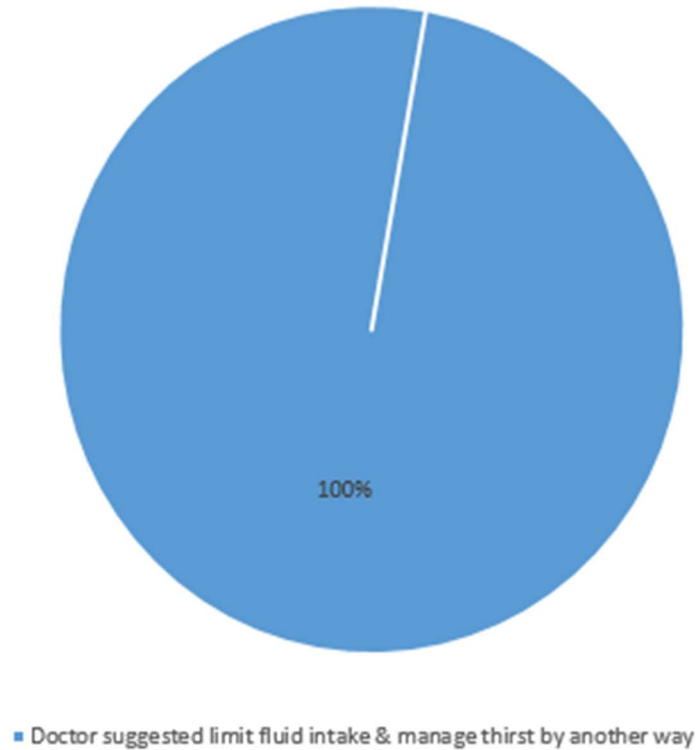


Figure 11: Doctor advice about fluid intake

Interpretation: According to the survey (100%) responders replied that doctor have been suggested to limit fluid intake. The majority of dialysis patients must keep their daily fluid intake at 32 ounces. Be aware of your thirst. You can control your thirst by eating sugar-free hard candies, ice chips, or frozen grapes, according to your dietician. By doing this, you can prevent consuming excessive liquids throughout your dialysis sessions.

5.11 What foods should dialysis patients avoid?

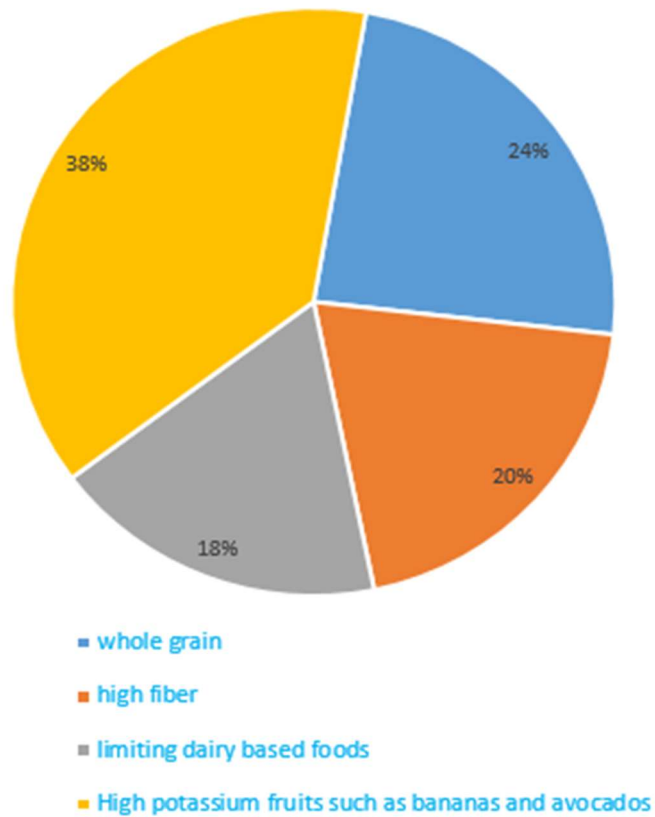


Figure 12: Foods should dialysis patients avoid

Interpretation: According to the survey, **38%** responders replied that High potassium fruits such as bananas and avocados should be avoided, 20% replied that high fiber food should be avoided, 18% participants replied that limiting dairy based product & also 24% responders answered that whole grain should be avoided.

5.12 Which type of life style lead for the prevention of kidney disease?

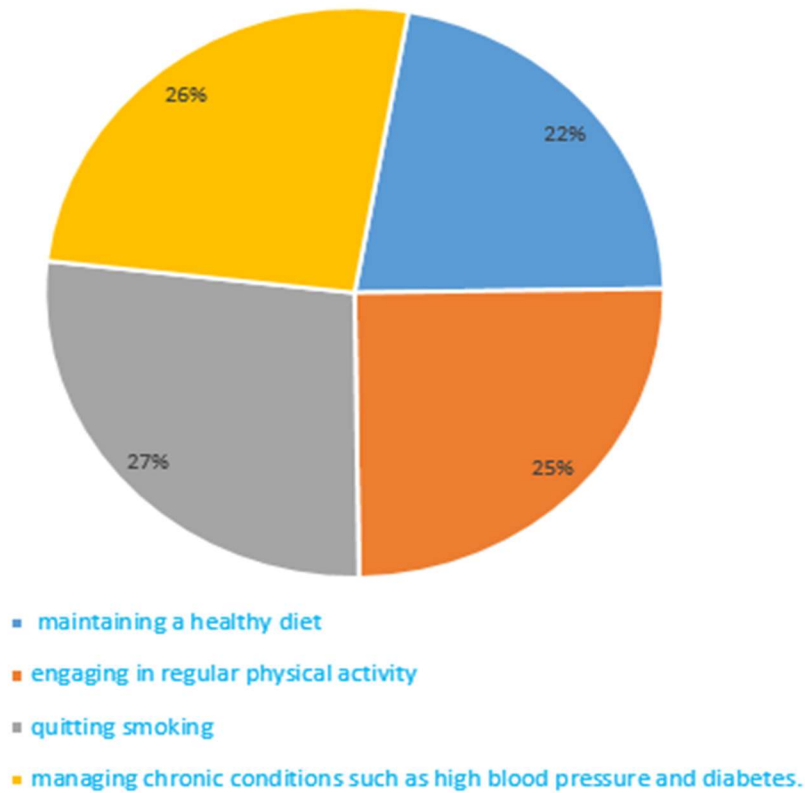


Figure 13: life style lead for the prevention of kidney disease

Interpretation: According to the investigation, different person replied different type of life style for the prevention of kidney disease. 22% replied that maintaining a healthy diet, 25% engaging in regular physical activity, 27% replied that quitting smoking & also 26% responders replied that managing chronic conditions such as high blood pressure and diabetes.

Chapter 6

Conclusion

6.1 Conclusion

However, for both hemodialysis and peritoneal dialysis patients, remaining kidney function (RKF) has always been a strong indicator of increased longevity. 46% participants answered that they have been needed dialysis but 54% responders replied that they haven't idea about this. According to the survey, majority of the participants 77% replied that they have been felt discomfort during dialysis. 39% responders replied that they have been dialysis two times per week, 33% replied that they have been dialysis three times per week & also 28% have been dialysis one time per week. According to the survey, 38% responders replied that High potassium fruits such as bananas and avocados should be avoided, 20% replied that high fiber food should be avoided, 18% participants replied that limiting diary based product & also 24% responders answered that whole grain should be avoided. Severe forms of kidney disease which requires dialysis are curable in some instances. Even if it is not curable, the patient can still lead a meaningful life while on dialysis.

Chapter 7

Reference

Reference

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