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A SURVEY ON PRESCRIPTION PATTERN FOR PATIENT OF KIDNEY DISEASES

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Abstract: *Kidney disease is a general term for any damage that reduces the functioning of the kidney. It can also cause other problems that can harm our health. So. The objective of this study is to explore the pattern and practice of medicine use among the patients of kidney diseases to manage these diseases. To perform this study a survey was conducted among the kidney patients of six randomly selected private hospitals of Dhaka & Sirajganj city of Bangladesh. A total of 82 prescriptions were collected within March 2016 to April 2016, of which 60 were selected for the study based on their diagnostic findings of kidney diseases. All the prescription were prescribed by kidney specialist reflecting the detailed information of diagnostic findings, medications and their doses and dosage forms. Among 60 patients 36.7% were female patient and the rest 63.33% were male; both were in between 26-67 years. In this prescription the type of kidney disease was found like, Kidney failure, Kidney cancer, Kidney stone, Pyelonephritis, Glomerulonephritis, Acute renal failure, Chronic renal failure, Diabetic nephropathy, Nephrogenic diabetes insipidus, End stage renal disease (ESRD), Hypertensive nephropathy etc. The study shows that acute kidney failure was found to be most common (23.5%) and kidney cancer and End stage renal disease were found in a lowest number of patient (1.7%). All of the prescriptions contain multiple drugs. According to these prescriptions most commonly prescribed drugs were Furosemide (40%) and Amlodipine (40%) whereas Atenolol (15%) and Prednisolone (15%) were used in less number of prescription. The study was done on a limited scale, only 82 prescriptions were collected but additionally this can be done on a large scale to assess the scenario of kidney diseases of overall population of Bangladesh. Furthermore it is necessary to monitor the use of medication and its correlation with clinical outcome and quality of life to ensure the optimal use of health care resources.*

Keywords: *Kidney, kidney failure, glomerulonephritis, furosemide, amlodipine, Sirajganj.*

Introduction

Prescription pattern monitoring studies (PPMS) are a tool for assessing the prescribing, dispensing and distribution of medicines. The main aim of PPMS is to facilitate rational use of medicines[1]. Medicines are essential needs for many people as a first aid and treating chronic and acute diseases. Many efforts have been made by health policymakers to ensure the rational use of medicines by people. Irrational use of medicines is a serious problem that can affect patients' health negatively. If patients obtain medicines without sufficient information about how to use them, they will not gain the expected therapeutic benefits of the medicines or may suffer negative outcomes. The evaluation of medicine use is used to understand medicine utilization and prescribing patterns, and to help in the assessment of the quality of the use of medicines. The quality of the use of medicines is assessed according to patients' demographics and their prevalence of clinical conditions[2].

Kidney failure or renal insufficiency is a clinical condition of impaired kidney function in which the kidneys fail to adequately filter metabolic wastes from the blood[3]. Kidney injury can be two types- acute kidney injury, which is often reversible with adequate treatment, and chronic kidney disease, which is often not reversible. Symptoms of kidney failure are due to the build-up of waste products in

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the body that may cause weakness, shortness of breath, lethargy, and confusion. Acute kidney failure is a rapidly progressive loss of renal function[4], generally characterized by oliguria (decreased urine production, quantified as less than 400 mL per day in adults,[5] less than 0.5 mL/kg/h in children or less than 1 mL/kg/h in infants); and fluid and electrolyte imbalance. When kidneys are damaged, waste products and fluid can build up in body, causing swelling in ankles, vomiting, weakness, poor sleep, and shortness of breath. Diseased kidneys may eventually stop working completely. Loss of kidney function is a serious -- and potentially fatal – condition[6].

Although medicine cannot reverse chronic kidney disease, it is often used to help treat symptoms and complications and to slow further kidney damage[7]. The two main causes of chronic kidney disease are diabetes and high blood pressure, which are responsible for up to two-thirds of the cases. In diabetes, when blood sugar is too high, causing damage to many organs of body, including the kidneys and heart, as well as blood vessels, nerves and eyes. High blood pressure or hypertension if uncontrolled, or poorly controlled, can be a leading cause of heart attacks, strokes and chronic kidney disease. Also, chronic kidney disease can cause high blood pressure[8]. Urinary tract infections within the kidneys themselves, called pyelonephritis, can lead to scarring as the infection heals. Defects present at birth are often the result of a urinary tract obstruction or malformation that affects the kidneys. Drugs and toxins, including long-term use of some medications, such as NSAIDs (nonsteroidal anti-inflammatory drugs) like ibuprofen and naproxen, and intravenous "street" drugs can permanently damage kidneys[9]. Blood and urine tests can help uncover signs of early kidney disease and monitor the condition. When the kidneys are not working correctly, it can develop high potassium and low calcium, phosphorus, bicarbonate, which can affect the heart's conduction system and cause muscle aches and other complications[10].

When the kidneys become damaged, the holes in the filtering system of the kidneys become enlarged, allowing protein to leak into the urine. In the early stages of kidney damage, only small amounts of albumin (microalbuminuria) are found. GFR is also a measure of how well the kidneys are filtering blood. An estimate of "filtering rate" is determined by a blood test called a blood creatinine test, which measures the amount of creatinine -- a waste product -- in blood[10]. The GFR, or "filtering rate," helps confirm normal or low kidney function. A score of 90 or above is normal; a score below 15 indicates kidney damage that will require dialysis or a kidney transplant. Another commonly used test to estimate GFR is a creatinine clearance. This test measures the creatinine in the blood and urine to determine kidney function[10]. The major outcomes of chronic kidney disease, regardless of cause, include progression to kidney failure, complications of decreased kidney function, and cardiovascular disease (CVD). Increasing evidence indicates that some of these adverse outcomes can be prevented or delayed by early detection and treatment[11]. Unfortunately, chronic kidney disease is underdiagnosed and undertreated, resulting in lost opportunities for prevention[12-14].

The World Health Organization suggests that nearly half of the world's populations are affected by kidney disease with an impact on their self-esteem to function in everyday life. The present study focuses on the scenario of kidney diseases in Bangladesh which will help to identify the incidence rate according to the patient's physiological characteristics which consecutively can help to prevent and manage kidney diseases by people at early stage.

Materials and methods

This is an descriptive observational study based on the evaluation of the prescription which contain the detailed information of diagnostic findings, medications and their doses and dosage forms. To perform this study a survey was conducted among the kidney patients of six randomly selected private clinics of Dhaka & Sirajganj city namely- Kidney foundation, Dr. Azmol khan hospital, City hospital, Popular diagnostic centre Ltd, Green life hospital Ltd. and Prime hospital Sirajganj. All the patients

were asked for detailed query of their kidney related problems and treatments taken by a semi-structured questionnaire. A total of 82 prescriptions were collected for more than 30 days (from March 2016 to April 2016) from these hospitals. Before conducting the study a permission seeking letter was given to the authority of all the clinics which was issued by the department of Pharmacy, DIU. All patients were well informed about the objective of collecting prescription from them and verbal consent was taken from them. Finally 60 prescriptions were selected for analyses which were prescribed by Specialist in Kidney disease. The primary data was gathered based on the prescription of the kidney patients. Other related information was collected from internet of different hospitals and various journals, article related to kidney disease and its medication.

Then the prescriptions were gathered and evaluated to establish the parameter which affects the kidney disorder and the pattern of drug therapy used for the treatment. Among 60 prescription 63.33% are male and 36.7% are female and they were in are between 26-67 years. Some diagnostic information was collected orally and some were collected by observation.

Results

From the survey we found that male person have more kidney problem than female. We scrutinized total 60 prescription among them 63.33% are male and 36.7% are female. Approximately maximum patients were come from rural area whereas minimum patient comes from urban area and the difference was found to be statically insignificant. The survey can ascertain the kidney diseases namely- Kidney failure, Kidney cancer, Kidney stone, Pyelonephritis, Glomerulonephritis, Acute renal failure, Chronic renal failure, Diabetic nephropathy, Nephrogenic diabetes insipidus, End stage renal disease (ESRD) and Hypertensive nephropathy.

Demographic characteristics of participants

Different patient characteristics are given in table 1. Kidney disease may affect at any age. But, from the survey we have got the results which shows that most of the patients who suffer from kidney disease are between 51-60 years old (36.7%). The survey has also ascertained that kidney disease occur in male at high level than the female. This may cause due to drug addiction, frequently taking nephrotoxic drug and food, working in bad condition, low water consumption in daily basis.

Table 1: Age group of the patients with kidney disease:

Age (in year)	Male	Female	Total Number of prescriptions
21-30	3	0	3
31-40	7	3	10
41-50	7	10	17
51-60	15	7	22
61-70	6	2	8
Total			60

Different Types of Kidney Diseases

There are various types of Kidney disorder. From the study we have noticed following kidney disorder with their percentage of incidence. The data shows that acute kidney failure is found to be most common and kidney cancer and End stage renal disease is found in a lowest number of patients.

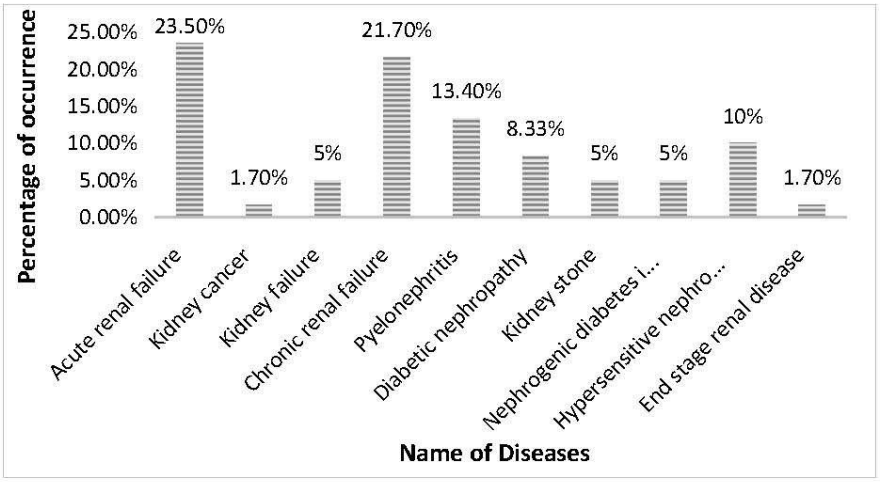

Figure 1: Comprehensive view of all types of kidney Diseases

Medication history

Our prescriptions that are prescribed for various kidney diseases contain more than one drugs in each prescription. The percentages of mostly used drugs according to their generic name are given in table 2. According to the data most commonly prescribed drugs are Furosemide and Amlodipine whereas Atenolol and Prednisolone are used in less number of prescriptions. There are also some other drugs which are used in less amount and are presenting as miscellaneous.

Table 2: List of all types of prescribed drugs for patient with kidney diseases

.Generic name of Drug	No of prescription	Percentage
Furosemide	24	40%
Losartan potassium	15	25%
Cyclosporine capsule	10	16.66%
Amlodipine	24	40%
Atenolol	9	15%
1-hydroxycholecalciferol	16	26.66%
Domperidone	22	36.66%
Olmesartan	20	33.33%
Valsartan	12	20%
Diazepam	15	25%
Prednisolone	9	15%
Ketorolac	17	28.33%
Omeprazole	15	25%
Clopidogrel	11	18.33%
Miscellaneous	10	16.66%

Discussion

A prescription based study is one of the most professional methods to assess and evaluate the prescribing patterns of physicians[15]. According to the data showed in table 1, the maximum number of male and female patients belonged to the age group of 51-60 years (36.7%) whereas the lowest percentage of age groups are 21-30 years(5%). Our study reveals that kidney disease is more prevalent in males (63.33%) than female (36.7%) (Table 2).

In figure 1, various types of kidney diseases which were observed in our study are shown. According to this data most prevalent kidney disease is Acute kidney failure (23.5%) followed by chronic renal failure and Pyelonephritis whose rate is 21.7% and 13.4% respectively. In contrast, kidney cancer and End stage renal disease is found to be lowest prevalent diseases, both of which is only 1.7%. In United States, the incidence of Chronic kidney disease in people ages 65 and older more than doubled between 2000 and 2008 whereas the prevalent rate for End stage renal disease increased nearly 600 percent, between 1980 and 2009[16]. In our country one in every seven people has been suffering from kidney diseases and 40,000 die of longtime kidney failures annually[17].

The prescription rates of various types of drugs used for kidney diseases are shown in table 2. The study reveals that highest numbers of prescriber indicate Furosemide and Amlodipine which is 40%. Other commonly used drugs for kidney diseases are Domperidone, Olmesartan, Ketorolac, 1-hydroxycholecalciferol, Losartan potassium, Diazepam and Omeprazole; prescription rate of which are 36.66%, 33.33%, 28.33%, 26.66%, 25%, 25% and 25% respectively. Numerous studies have shown that various forms of treatment can delay the onset of end stage renal disease[18-20].

Conclusion

A large number of people around the world are suffering from kidney disease. According to this study most of the people suffering from Acute kidney failure, Chronic renal failure and Pyelonephritis. Our study reveals that there are many of the drugs to treat kidney disease. Besides, dialysis and kidney transplant is occurring also in our country which is more effective to cure a kidney patient properly. According to WHO, more than 450 million people in the world are suffering from kidney problem and in Bangladesh there are 10 million people suffering from kidney disease of various types, In other words, almost 10 percent of the population is in need of kidney treatment services.

This comprehensive study was conducted to understand the prevailing situation kidney problem issues in Bangladesh. In Bangladesh, data related to kidney problem is scarce. So the future step may be study more and more in this sector to aware about and prevent kidney diseases and identify best way of health care in kidney disease treatment.

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