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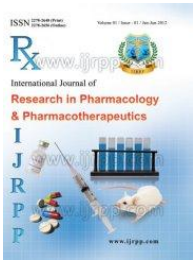

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Pharmacist's interventions in the management of patients with chronic kidney disease

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ABSTRACT

Aim

Chronic kidney disease (CKD) is a complex debilitating condition affecting more than 70 million people worldwide. With the increased prevalence in risk factors such as diabetes, hypertension, and cardiovascular disease in an aging population, CKD prevalence is also expected to increase. Increased awareness and understanding of the overall CKD burden by health care teams (patients, clinicians, and pharmacist's) is warranted so that overall care and treatment management may improve. Objectives included were assessing the drug usage in ckd, management of co morbid conditions, patient education and support during ckd transition and improving quality of life.

Methodology

This is a prospective observational study conducted over a period of six months using questionnaires as a tool. The study was conducted at Nephrology ward of AWARE GLOBAL HOSPITAL LB. NAGAR. Patients who admitted to the Nephrology ward of the hospital during a six month period from October 2016 to March 2017 are enrolled.

Results

Based on inclusion and exclusion criteria, 103patients were selected from the inpatient department over a period of 6 months for the present study. Among 103 patients The gender distribution found in the following study was males (65%) and females (35%),the age distribution was found to be 20-30 yrs (3.80%), 30-40yrs (9.70%), 40-50 yrs (20.38%), 50-60yrs (26.20%), 60-70yrs (27.18%), 70-80yrs (10.67%), 80-90 (1.94). Of the total 103 cases enrolled the co morbid conditions found were Hypertension (66%), diabetes mellitus (21.35%), hypothyroidism (10.60%) and urinary tract infections (1.94%). A total of 594 drugs were prescribed during the study period, out of which NSAIDS (27.03%), PPI's (23.13%), Anti-Hypertensive (27.17%), Diuretics (12.28%), ESA's (2.86%), Anti-hyperlipidaemias (2.02%) and Anti-diabetics (11.85%).

Conclusion

The only way to manage CKD is slowing the progression of kidney deterioration. Finally we concluded that with time there happened to be change in treatment strategies and quality of life by pharmacist's interventions. Our results were showed that the choice of treatment reasonable complying with k/DOQI Guidelines in the management of CKD. This study concludes that Anti-hypertensive's, Anti-diabetics and Diuretics were used majorly to improve

condition and counseling was given to improve adherence to therapy and quality of life. Counseling included Dietary protein, salt, caloric restriction, decreased fluid intake, Physical exercises and Social habits for improving quality of life. Chronic kidney disease (CKD) is the 12th and 17th leading cause of death and disability globally, respectively [1]. The number of deaths due to chronic disease in India was around 5.21 million in 2008 and is expected to be 7.63 million by 2020 [2]**.** Globally, it is one of the major cause of morbidity and mortality leading to worldwide health crisis [3].. Almost 60% of the deaths worldwide are due to CKD and ~80% of deaths occur in low and middle income countries [4]. CKD is a major problem and its prevalence will continue to rise with increasing elderly population and the number of patients with diabetes and hypertension [5].

DEFINITION AND CLASSIFICATION OF CKD

Chronic kidney disease is defined as the presence of kidney damage characterized by abnormal albumin excretion or decreased glomerular filtration rate (GFR) for a period of 3 months or longer [6, 7]. Kidney damage is defined as pathologic abnormalities or markers of damage including abnormalities in blood or urine tests or imaging studies [8].

The US National Kidney Foundation Kidney Disease Outcomes Quality Initiative (KDOQI CKD) clinical practice guidelines had proposed a classification based on GFR [8]. Stages of GFR are mentioned in table-2 below

Table-2: Stages of CKD

Stages	Description	GFR(mL/min/1.73m^2)
Stage-1	Kidney damage with normal or increased GFR	>90
Stage-2	Kidney damage with mild decrease in GFR	60-89
Stage-3	Moderate decrease in GFR	30-59
Stage-4	Severe decrease in GFR	15-29
Stage-5	Kidney failure	<15

METHODS

Patients

Patients with chronic kidney disease and complications. Patients who are undergoing dialysis and with other co-morbid conditions.

Study design: Study was done for 24 weeks in INDIA.

- it is a prospective observational study conducted on the CKD patients.
- During the study period regularly attended the ward rounds with healthcare professional in the department of nephrology at Aware Global Hospital.
- Inpatients were reviewed on daily basis who met the study criteria.

Procedures and outcomes

This study was conducted in the IPDs of Nephrology and general medicine of a tertiary care hospital. CKD patients of at least 1year duration; between 20 to 90 years of age of either sex included in this study. Considering the increased prevalence of other co-existing disease conditions, the patients above 90years were excluded. Data were collected from the profile sheets of 103 CKD patients who had visited the IPD for six months study period i.e. from October 2016 to March 2017.

The results were analyzed by using Microsoft-Excel.

ROLE OF CLINICAL PHARMACIST

- Clinical pharmacist intervention led to the improvement of patient care.
- Focuses on detecting, resolving and preventing drug related problems.
- The services will focus on patient education in order to increase medical knowledge.
- Anaemia was the most common morbidity managed by clinical pharmacist and their involvement led to significant improvement in disease related outcomes.
- They reduced the all cause of hospitalisation.

- Reduced the incidence of end stage renal disease or death in patients with diabetic nephropathy.
- They advise in adjusting and optimizing drug therapy, making therapeutic recommendations and interacting with physicians.
- Identifying and correcting drug discrepancies.
- Providing medication/ disease education to patients and improving compliance and communication with other health care professionals.

Pharmacist intervention produced a highly significant decrease in fasting blood glucose level. In our study with the clinical pharmacist intervention there was decrease in the hospital stay of patients, increase in the health related outcomes, increasing medication adherence, slowing the progression of their stages of disease to ESRD.

RESULTS

Among 103 CKD patients of age group ranging between 21-80years, the majorities were in age group 60-70years (27.2%) and the least were in age group 21-30years (3.88%). The study reveals that the impact of CKD increases with age.

GENDER WISE DISTRIBUTION

Based on inclusion and exclusion criteria, 103patients were selected from the inpatient department over a period of 6 months for the present study. Among 103 patients 67 were male and 36 were female. The higher percentages of patients were in age group between 60-70years (27.2%) and lowest percentage in the age group of 21-30years (3.88%). Identification of patients those can be treated by medicines without dialysis. Of 103 patients Mean age ± SD was 56.24±13.402 years in males (Range 28-80) & 55.5±13.24 in females (Range 21-78) and male: female ratio was 67:36. The occurrence of disease is more predominant in male group.

Figure 8: Gender Distrubution

COMORBID CONDITIONS

Total 103 patients, in which 68 patients with hypertension account for about 66%, 22patients with diabetes account for 21.35%, 11 patients with Hypothyroidism 10.6% and 2 patients with UTI i.e. 1.94% and 59 patients with both diabetes mellitus and hypertension i.e 57.2%. It shows that the impact of hypertension and diabetes is more than other comorbid conditions.

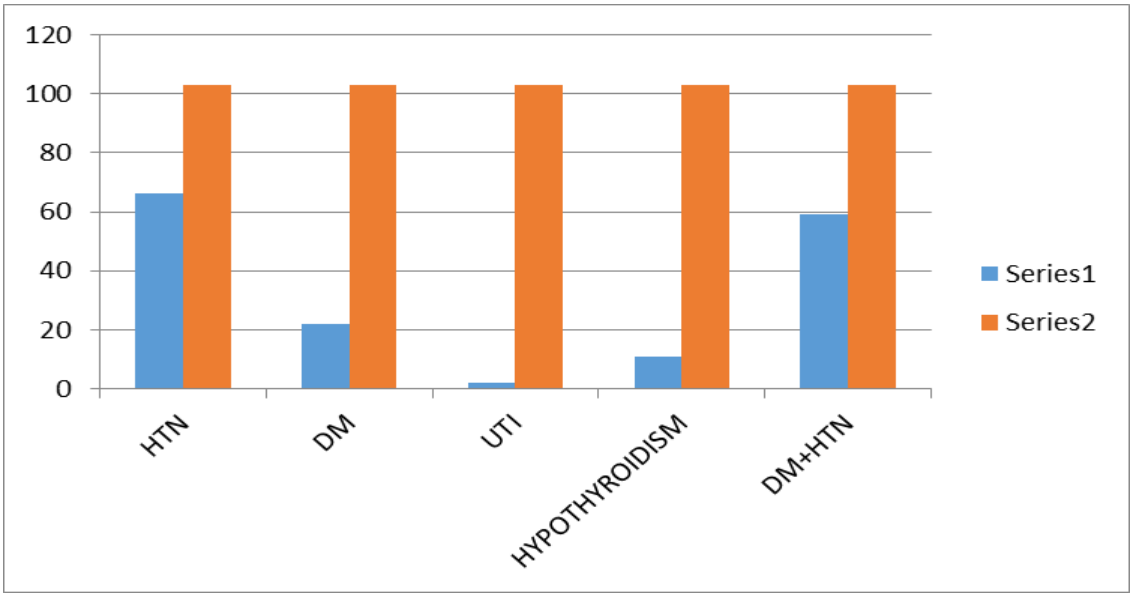

Figure 9: Based on Co morbities

DRUG USAGE

Total 103 patients, A total of 594 drugs were prescribed during the study period. Out of which NSAIDS (17.03%), PPI's (13.13%), Anti-Hypertensive (17.17%), Diuretics (6.28%), Anti-platelets (6.28%), Antibiotics (7.07%), Anti-emetics (4.37%), Anti-cholinergic (4.37%), Corticosteroids (2.18%) , ESA's (2.86%), Multi-vitamins (9.02%), Anti-hyperlipidaemias (2.02%), Alkalising agents (3.5%), Opioid analgesics (2.02%), Laxatives (3.36%), Anti-diabetics (1.85%), Anti-TB (1.01%), Anti-fungal (0.3%). By using oral antibiotics for infections, antihypertensive mainly ACE, ARB, ARBII for controlling hypertension, metformin in combination with glimepiride and insulin for diabetes, statins for high cholesterol levels, with supplements was used in our study for CKD patients. Modified food for CKD patients was used with salt restriction of 100ug/day and with plenty of fluids was given. In severe cases fluid restriction to only 2-3 liters was followed. Mainly illiterate patients was educated in our study which contribute to more than 70% of the disease, they were educated about disease and life style modifications and regular follow-ups.

Figure 10: Drug distrubution

Table 7: Based on drug interactions

s.no	severity	No of drug interactions
1	Mild	23
2	Moderate	46
3	Severe	07

Figure 11: Drug Interactions

CONCLUSION

In our study, pharmacist's interventions in patients with chronic kidney disease is sparse, of variable quality and with heterogeneous outcomes. On the basis of available data, pharmacists interventions may have a positive impact on outcomes of patients with chronic kidney disease.

The gender distribution found in the following study was males (65%) and females (35%),the age distribution was found to be 20-30yrs (3.80%),30-40yrs(9.70%),40-50 yrs(20.38%),50-60yrs(26.20%),60-70yrs (27.18%),70-80yrs (10.67%),80-90(1.94).Of the total 103 cases enrolled the comorbid conditions found were Hypertension(66%),diabetes mellitus (21.35%), hypothyroidism (10.60%) , Urinary tract infections (1.94%). A total of 594 drugs were prescribed during the study period. Out of which NSAIDS (17.03%), PPI's (13.13%), Anti- Hypertensive (17.17%), Diuretics (6.28%), Anti-platelets (6.28%), Antibiotics (7.07%), Anti-emetics (4.37%), Anti-cholinergic (4.37%), Corticosteroids (2.18%) , ESA's (2.86%), Multi-vitamins (9.02%), Anti-hyperlipidaemias (2.02%), Alkalising agents (3.5%), Opioid analgesics (2.02%), Laxatives (3.36%), Anti-diabetics (1.85%), Anti-TB (1.01%), Anti-fungal (0.3%).

The Drug interactions developed were classified based on the severity which includes the following, the mild interactions were 46, serious interactions were 13, and moderate interactions were 93 these were considered major among the 354 observed.

Diuretics and antihypertensives were the major drugs in CKD as there is no particular treatment but only management of the disease.to avoid further complications like atherosclerosis and metabolic acidosis prophylactic drugs like clopidogrel and sodium carbonate are given respectively. The only way to manage CKD is slowing the progression of kidney deterioration .

Out of 103 patients, counselling was done for 74 patients and the remaining 29 patients were excluded due to various reasons. Improvement in Quality of Life was Observed for 32 patients, Counselling included Dietary protein, salt, caloric restriction and decreased fluid intake, Physical exercises and Social habits.

Finally we concluded that with time there happened to be change in treatment strategies and quality of life by pharmacist's interventions. Our results were showed that the choice of treatment reasonable complying with k/DOQI Guidelines in the management of CKD. This studies concludes Anti-hypertensives, Anti-diabetics and Diuretics were used majorly to improve condition and counselling was

given to improve adherence to therapy and quality of life.

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