IJPSR (2016), Vol. 7, Issue 7 (Research Article)

INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES AND RESEARCH

Received on 04 February, 2016; received in revised form, 28 March, 2016; accepted, 13 April, 2016; published 01 July, 2016

MEDICATION ADHERENCE ASSOCIATED WITH POLYPHARMACY IN CHRONIC KIDNEY DISEASE PATIENTS

C. S. Manju [*1], B. Anish [2] and M. Sreelatha [3]

Department of Pharmacy [1], Govt Medical College, Alappuzha, Kerala, India
Govt Medical College [2], Kozhikode, Kerala, India
Department of Nephrology [3], Govt. Medical College, Kozhikode, Kerala, India.

Keywords:

Chronic Kidney disease, Medication Adherence, Poly Pharmacy

Correspondence to Author:
C. S. Manju

Assistant Professor,
Govt. Medical College, Alappuzha, Kerala, India.

Email: manjusreeniajith@gmail.com

ABSTRACT: Chronic Kidney Disease is a considerable problem requiring coincident use of several medications in order to manage the condition and co morbidities. Medication adherence rate are diminished by complex drug regimens. Generally poly pharmacy fabricates chances of poor adherence and adverse drug reactions (ADRs). In Chronic Kidney Disease (CKD) functioning of kidney is poor and decreased elimination of drugs leads to serious consequences. In this study 144 CKD patients were enrolled. The mean age was found to be 54.97 (±13.425). CKD was more common in male (66%) than female (34%). Majority of the patients were diagnosed with Hypertensive Kidney Disease and Diabetic Kidney disease and using 4 to 6 drugs concurrently. This shows that hypertension and Diabetes are the main risk factor for CKD in these patients. Most of the patients enrolled in the study were diagnosed with CKD for more than 3 years. Patients with CKD were commonly using the drugs like Antihypertensives, Antidiabetics and other cardiovascular drugs. Most of the patients were highly adherent to the medications prescribed. No major ADR was found in the patients enrolled due to the impact of poly pharmacy. High medication adherence and low ADR incidence found in patients enrolled in this study and is mainly because of the better patient care in the Nephrology Department. Patients were well educated about their disease and the importance of medication taking. ADR is less common because of the monitoring drug therapy.

INTRODUCTION: Chronic kidney disease is a progressive loss in renal function or structure which requires concurrent use of several medications because of co morbidities like hypertension and diabetes. When advanced it carries a higher risk of mortality [1]. Diabetes and hypertension responsible for up to two thirds of cases [2]. In the setting of chronic kidney disease, patients experience high pill and treatment burden. Poly pharmacy is unavoidable because of the multiple co morbid conditions. Generally poly pharmacy will create problems like poor adherence and adverse drug reactions [3]. Medication adherence rate are diminished by complex drug regimens, incomplete explanation of benefits and side effects, cost of medication etc [4]. Previous studies conducted show that poly pharmacy make poor adherence and create chances of Adverse Drug Reactions. Several studies use different tools for assessing medication adherence and adverse drug reactions.

In India, studies related to poly pharmacy are limited in number and most studies over estimate the result because of the methods used to assess the objectives. This study was conducted to assess medication adherence among patients with poly pharmacy in CKD, its impact on the behavior of medication adherence and to assess, is there any

QUICK RESPONSE CODE

DOI: 10.13040/IJPSR.0975-8232.7(7).3107-11

Article can be accessed online on: www.ijpsr.com

DOI link: http://dx.doi.org/10.13040/IJPSR.0975-8232.7 (7).3107-11

direct relation between the number of drugs used and adherence.

MATERIAL AND METHODS:

Study setting:

The study was designed as a Cross-sectional study in the Department of Nephrology, Govt. Medical College, Kozhikode, India. The study protocol was submitted to the Institutional Ethics Committee and was approved by the same. The study was conducted over a period of six months from July 2013 to December 2013. Patients visiting outpatient department of nephrology and were diagnosed with CKD and using two or more drugs were enrolled in the study.

Patients and data collection

Patient's demographic data and medication usage data were collected from patient interview, valid prescriptions, consulting nephrologists and laboratory reports. A suitable data collection form was prepared to collect demographic details of patients. Adherence was checked by interviewing of the patients with medication adherence questionnaire. Adherence questionnaire was prepared based on Morisky-8-item medication adherence questionnaire [5]. Scores are given according the answers given by the patient. For each question, there were 3 possible answers, never, sometimes and always. Adherence score for these three answers were set as Never = 0 Sometimes = 1 Always = 2. Adherence was calculated based on the total score of the medication adherence questionnaire. Scores, > 2 indicates poor adherence. Score 1 or 2 is medium adherence, score 0 indicates high adherence. The patients' medication adherence decreases as the score of the medication adherence questionnaire increases. The number of medications in each prescription was noted. Those who taking two to four drugs were categorized as minor poly pharmacy and five or more drugs were categorized as major poly pharmacy.

RESILUTS AND DISCUSSION:

TABLE 1: AGE WISE DISTRIBUTION OF CKD

Age in years	Number of patients
0-10	2
11-20	1
21-30	4
31-40	9
41-50	28
51-60	41
61-70	42
71-80	16
81-90	1

In this study CKD was more common in male (66%) than female (34%). Men are more prone to develop chronic kidney disease (CKD) and to progress to end-stage renal disease than are women, when all-cause incidence rates are considered [6]. Majority of CKD patients were in the age group 61-70 years (table 1). The mean age was found to be 54.97 (±13.425). The maximum and minimum age included in the study was 81 and 9 years respectively. CKD is more common in older population especially age of 70 years [7]. Out of 144 patients enrolled, 20 men had a history of alcoholism and 6 were present alcoholic. All the female patients were free from the alcohol consumption. Alcohol consumption will increase the risk of CKD by increasing the level of albumin and uric acid in the serum [8]. Out of 95 men enrolled in the study, 41 (43.16%) had a history of smoking and 18 (18.95%) were present smokers. None of the females were smokers or past smokers. Most of the patients were unemployed because of the disease condition.

Among 144 patients, 139 (96.5%) were married and remaining 5 (3.5%) were unmarried. As CKD is a chronic disease, majority of the patients 99 (68.75%) enrolled in the study were diagnosed with CKD for more than 3 years (**Fig.1**).

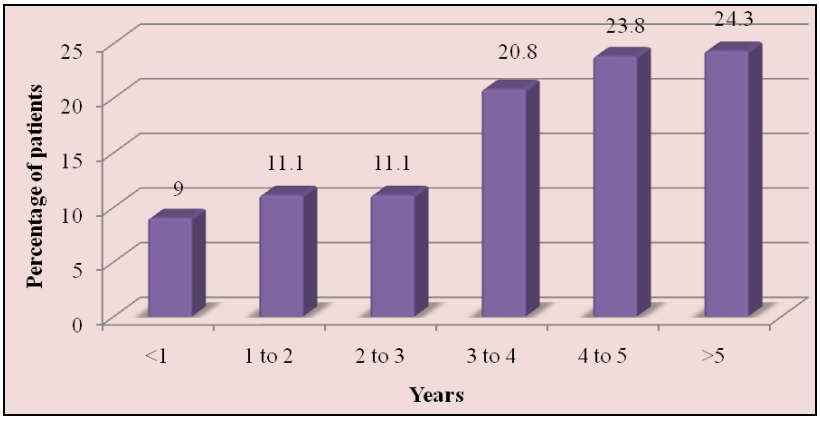

FIG.1: DURATION OF CKD

TABLE 2: SPECIFIC DIAGNOSIS OF CKD

Diagnosis	Number of patients	Percentage of patients
Diabetic kidney disease	37	25.7
Hypertensive kidney disease	49	34
Glomerulonephritis	19	13.2
Autosomal dominant polycystic kidney disease	10	6.9
Metabolic syndrome	5	3.5
Ischaemic nephropathy	15	10.4
Nephrotic syndrome	4	2.8
Chronic tubulo interstitial disease	5	3.5

The study shows that 49 (34%) patients were diagnosed with Hypertensive Kidney Disease and 37 (25.7%) with Diabetic Kidney disease (**Table 2**). Hypertension and diabetes are the main risk factor for CKD [9]. Other common co-morbidity was coronary artery disease and chronic obstructive pulmonary disease. Dyslipidaemia, cancer and hypothyroidism were found as less common **(Table 3**).

TABLE 3: CO MORBIDITIES ASSOCIATED WITH CKD

Co morbidity	Number of patients	Percentage of patients
Diabetes mellitus	54	33.11
Hypertension	81	49.7
Coronary artery disease	15	9.2
Chronic obstructive pulmonary disease	5	3.07
Dyslipidaemia	2	1.23
Cancer	2	1.23
Hypothyroidsm	2	1.23
None	2	1.23

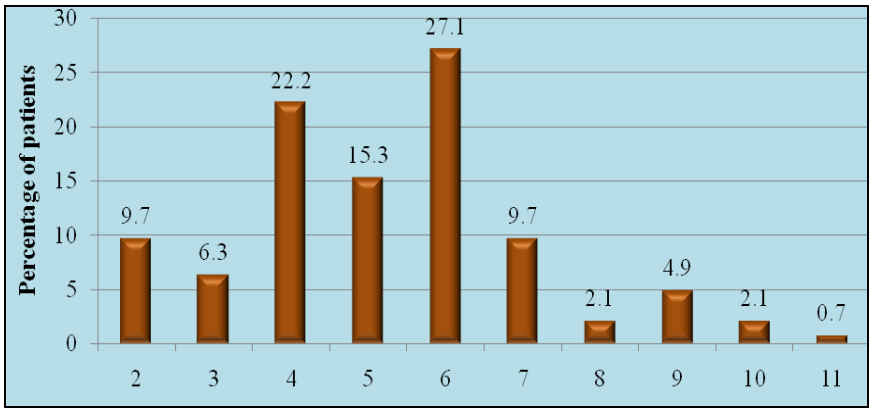

FIG.2: NUMBER OF DRUGS USED

From this study, it is found that 39 (27.1%) of patients use 6 drugs, 32 9 (22.2%) use 4 drugs and 22 (15.3%) use 5 drugs. That means majority of patients (64.58%) were using 4-6 drugs concurrently in CKD (**Fig. 2**).

TABLE 4: TYPE OF POLY PHARMACY

Type	Number of patients	Percentage of patients
Minor polypharmacy	55	38.2
Major poly pharmacy	89	61.8

Major poly pharmacy is common (61.80%) in CKD patients (**Table 4**). This is mainly because of the co-morbid conditions associated with CKD. This is an unavoidable poly pharmacy. Out of 144 CKD patients enrolled, 132 (91.7%) were using antihypertensive drugs, 35 (24.3%) were using antidiabetic drugs and 52 (36.1%) using other cardiovascular drugs. Majority of them were also prescribed with sodium bicarbonate tablets. The commonly used antihypertensive drug in the descending order is Amlodipine (34.09%), Telmisartan (26.51%), Cilnidipine (20.45%), Clonidine (20.45%), combination of Telmisartan & Hydrochlorothiazide (8.33%) and Carvedilol (6.81%).

Insulin (45.71%) is found to be most commonly prescribed antidiabetic drug in CKD patients. Others were glipizide (28.57%), glimepiride (25.71%), metformin (22.86%), Atorvastatin is found to be commonly used hypolipideamic agent. Other cardiovascular agents prescribed were atorvastatin, aspirin, diltiazem, clopidogrel, nitroglycerine and isosorbide dinitrate.

TABLE 5: MEDICATION ADHERENCE SCORE

score	Number of patients	Percentage of patients
0	127	88.2
1	11	7.6
2	1	0.7
3	3	2.1
4	2	1.4

From the study it is clear that majority of the patients were highly adherent to the medications prescribed (**Table 5**). That is 88.2% of patients were high adherent, 7.65% were medium adherent and only 3.5% were poor adherent.

TABLE 6: MEDICATION ADHERENCE BASED ON POLY PHARMACY

Number of drugs	Number and percentage of patients with High adherence	Number and percentage of patients with Medium adherence	Number and percentage of patients with Poor Adherence	Total Number and Percentage of patients
= < 3	21 (91.3%)	2 (8.7%)	0	23 (100%)
4 to 6	81 (87.1%)	7 (7.5%)	5 (5.4%)	93 (100%)
>=7	26 (92.9%)	2 (7.1%)	0	28 (100%)

There was no direct relation between the number of drugs used and the Medication adherence (**Table 6**). Here no decrease in adherence was found as the number of drugs increased. No adverse drug reactions observed during the study period. Good adherence in majority of the patients is because of the achievement in the patient care in the Nephrology department.

Here patients were well acknowledged about the disease and the importance of medication taking. There are several factors other than number of drugs which affect the medication adherence. The study found that factors which influence the medication adherence were education, age, financial condition of the patient and forgetfulness.

CONCLUSION: The study concluded that CKD is one of the important diseases seen among the common people. Hypertension and Diabetes are the main causes of this disease. 88.2% of patients were highly adherent to therapy.

The study could not establish the hypothesis that medication adherence decreases with increase in number of medications prescribed. Certain factors other than number of drugs prescribed affect the medication adherence. Polypharmacy in CKD patients cannot be avoided because of the co-morbid conditions associated. Medication adherence and ADR must be thoroughly assessed in polypharmacy. Only a few studies were carried out to assess these parameters in polypharmacy. This area requires more attention of researchers.

ACKNOWLEDGEMENT: Nil.

REFERENCES:

1. Jonathan Himmelfarb, Mohamed H Syegh. Chronic Kidney Disease. Dialysis and Transplantation. 3rd ed. Canada: Elsevier Saunders; 2010.
2. Sameena Iqbal, Ahsan Alam.renal Disease in Diabetes Mellitus: Recent studies and potential therapies. J Diabetes Metab 2013 S9:006.
3. Mckillop G, Joy J Patients'experience and perceptions of poly pharmacy in chronic kidney disease and its impact on adherent behavior. J Ren Care 2013Dec; 39(4): 200-7.
4. Adherence to Long-Term Therapies. Evidence for Action. World Health Organization 2003.
5. Morisky D E, Green L W, Levine D M. Concurrent and Predictive Validity of a Self-Reported Measure of Medication Adherence. Med Care. 1986; 24:67-74.
6. Singh et al, Epidemiology and risk factors of chronic kidney disease in India- results from the SEEK study .BMC Nephrology 2013, 14:114.
7. Vivekanand Jha, Guillerno Garcia, Chronic Kidney Disease: Global dimension and perspectives, The Lancet Vol 382 issue 9888, 20-26 July 2013 P'260-272.
8. Sarah L White et al. How can we achieve global equity in provision of renal replacement Therapy. Bulletin of WHO 2008; 86: 229-237.
9. Mark Thomas. Chronic Kidney Diseases: The Six Red Flags. Medicine today. 2011; 12(12): 14-26.

How to cite this article:
Manju CS, Anish B and Sreelatha M: Medication Adherence Associated with Polypharmacy in Chronic Kidney Disease Patients. Int J Pharm Sci Res 2016; 7(7): 3107-11.doi: 10.13040/IJPSR.0975-8232.7(7).3107-11.