www.jmscr.igmpublication.org
Impact Factor 5.84
Index Copernicus Value: 83.27
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossref DOI: https://dx.doi.org/10.18535/jmscr/v5i3.12

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Evaluation of Adherence, Knowledge, and Practices towards the Therapy in Patients of Chronic Kidney Disease

Authors
Yogesh B. Magar[1], Rajesh S. Hiray[2], Balasaheb B. Ghongane[3]
[1]Junior resident, Dept. of Pharmacology, B. J. Government Medical College and SGH Pune, India-411001
[2]Associate Professor, Dept. of Pharmacology, B. J. Govt Medical College and SGH Pune, India-411001
Email: *rajesh.hiray@gmail.com*
[3]Professor and Head, Dept. of Pharmacology, B. J. Govt Medical College and SGH Pune, India-411001
Email: *ghongane.bb@gmail.com*
Corresponding Author
Yogesh Bajirao Magar
Email: *yogeshmagar7@gmail.com, Contact No. +91-9423824213*

Abstract
Objective: *Chronic kidney disease (CKD) is a prolonged illness with co-morbidities. These patients have to take a large number of pills per day. Hence, this study evaluates the extent of medication adherence and study factors responsible for the same.*
Methods: *A cross-sectional, questionnaire based study was conducted in a tertiary care hospital. Patients (n = 100) suffering from CKD for three months or more were interviewed. Morisky medication adherence questionnaire was used to assess overall adherence. Scoring was done accordingly: high (score =0), medium (score 1-2) and low (score >2).*
Results: *36% patient's show low adherence. Common causes of low adherence were complex dosing schedule (20%), difficult to take large number (20%) and forgetfulness (18%). 70% patients were not aware about importance of taking each medicine. Average number of medicines taken by each patient was 6.13per day. Only 3% stopped taking medicines due to high cost. Statistically significant positive correlation was observed between poor adherence and number of concurrent illnesses (r=0.68, P<0.0001) and number of medicines (r=0.77, P<0.0001) taken.*
Conclusion: *Since majority of patients were not aware about importance of taking each medicine, creating awareness about same is essential for improving drug adherence. Measures to make patient aware regarding seriousness of the condition, prevention of its complication and management of co-morbidities are essential. Physician should try to avoid poly-pharmacy. Use of long acting preparations and/or fixed dose combinations may be encouraged whenever required.*
Keywords: *Morisky medication adherence Score, adherence, CKD.*

Introduction

Chronic kidney disease (CKD) is defined as abnormalities of kidney structure or function, present for more than 3 months, with implications for health.[1] It is a prolonged illness usually coexisting with diseases such as hypertension and diabetes. Consequently, these patients have to take a large pill burden on an average around 8–10

tablets/day.[2] This imposes high personal and monetary burden on patients and their families. Hence, adherence is a major concern in therapy of CKD. Adherence is defined as the extent to which individuals follow instructions they are given for prescribed treatments. [3]

Medication adherence is defined by the World Health Organization as "the degree to which the person's behavior corresponds with the agreed recommendations from a health care provider."[4] Adherence signifies that the patient and physician collaborate to improve the patient's health by integrating the physician's medical opinion and the patient's lifestyle, values and preferences for care. [5-7]

World Health Organization estimates that only half of people with chronic diseases take their medications consistently as prescribed.[8] Non-adherence to medication can be harmful as well as expensive for patients. In CKD patients, it has been reported to cause uncontrolled hypertension, dialysis, increased medication, and hospitalization related costs. [8]

Thus, non-adherence reduces health benefits of drug therapy and augments advancement of CKD to end- stage renal disease. Widely variable rates of non-adherence are reported in various studies depending on the type of instrument used. Previous studies have reported 26–28% CKD patients to be non-adherent.[9] Reasons for non-adherence have been shown to vary depending on disease [10,11] and characteristics of medicines prescribed.[12] Hence, it is necessary to understand non-adherence to medication in a particular disease and study factors affecting it. Various studies have reported factors such as polypharmacy, psychological factors to be responsible. [10,14] Other factors such as financial constraints, patients' beliefs, and adverse drug reactions may be responsible for non-adherence. Hence, this study was planned to evaluate the extent of medication non-adherence within the CKD population and study factors responsible for the same.

Aim and Objectives

- To evaluate adherence to the medications in patients with chronic kidney disease.
- To study factors associated with non-adherence to medications in patients with chronic kidney disease.
- To study patients knowledge and practices about medicines in chronic kidney disease.

Materials & Methods

A cross- sectional, observational, questionnaire based study was carried out in Medicine department of a B.J. Government medical college and Sassoon General Hospital in Pune. Approval from the Institutional Ethics Committee (BJGMC/IEC/ Pharmac/ND-Dept 0216034-34) was obtained before initiating the study. It was conducted for 3 months of period from 01st March 2016 to 31st May, 2016.

Patients meeting eligibility criteria were briefed about the study and informed consent was obtained from those willing to participate.

Inclusion criteria

1. Patients of either sex, aged between 18 -70 years old.
2. Diagnosed cases of CKD since 3 months or more, irrespective of stage of CKD and their dialysis status.
3. Diagnosed cases of CKD since 3 months or more, irrespective of stage of CKD with or without co-morbidity.

Exclusion criteria

1. Patients aged <18 years and >70 years.
2. Patients with psychiatric illnesses.
3. Patients not willing to give informed consent.

Patient were enrolled as per inclusion criteria and were interviewed with self- developed, pre-validated questionnaire during 3 months period. The questionnaires are designed to obtain information about various issues concerned with medication non-adherence, exercise, dietary/ fluid restrictions, and use of any non-prescribed medicines.

Morisky medication adherence questionnaire (MMAQ) was used to calculate overall adherence. Adherence which then graded as high, medium, and low. [15] It consisted of 8 questions. Total score was

calculated according to MMAQ scale. Patient with higher score (>2) indicating low adherence, patient with low score (0) indicating high adherence and with 1 or 2 score indicating medium adherence. The patient with low adherence/ non- adherence will be evaluated for the cause of non-adherence. Another 10 questionnaires was then asked to evaluate patient's knowledge and practices about medicines for chronic kidney disease. A total of 100 patients were interviewed between this 3 months of period.

Statistical Analysis

All detailed data entered in MS Excel 2010 and values expressed in counts and percentages. Spearmann correlation test was used to find correlation among adherence, number of medicines, and number of coexisting illnesses.

Results

A total of 134 patients were screened, reviewed and of whom 100 participant patients were selected and interviewed. Of which 66 were males and 34 were females. Mean age of the patients was 50.17± 13.06 (Mean ± Standard Deviation). Average number of medicines taken by each patient in a day was 6.13± 1.52 (Mean ± Standard Deviation).

Thirty-six (36%) percentages of patients did not strictly follow Medicine schedule as prescribed and seventy (70%) patients were not aware about the importance of each medicine they were taking [Table 1].

In MMAQ, high, medium, and low adherence was reported in 10%, 54%, and 36% of patients, respectively. [Fig 1]

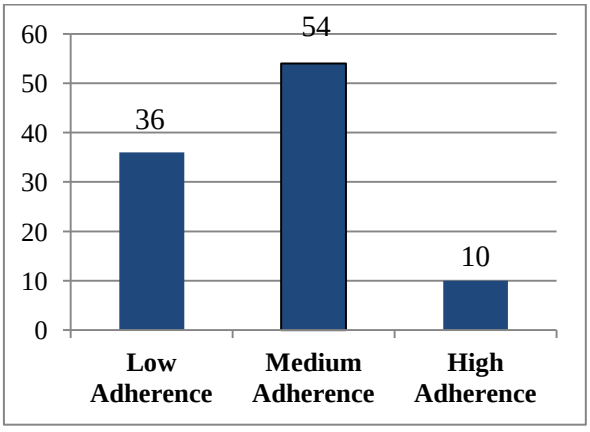

Fig 1- Adherence scale (Morisky Medication Adherence Questinnaire (MMAQ) Scale.

36 patients who were found low adherent were then evaluated for cause of it. 29 (81%) of them find complexity in dosing schedule and large pill burden as cause of being low adherent. 72 % of patients told forgetfulness as the reason for being low adherent. 17 (47%) of them found out that they were unaware about the need and usefulness of each medicine, while 15 (42%) of them were not aware about the seriousness of the condition to be treated. Only 3% of patients responded with high cost of medicine as the factor for being low adherent. [Table 1]

Table 1 – Reasons for low adherence to medication in patients with CKD (n=36)

Factors Responsible for low adherence	No. of respondents (%)
Complex dosing schedule	29 (81%)
Difficult to take large number	29 (81%)
Forgetfulness	26 (72%)
Unaware about the need/usefulness of each medicine	17 (47%)
Unaware about seriousness of the condition to be treated	15 (42%)
Personality characteristics (cognitive impairment, reduced social support and psychological stress)	11 (31%)
Fear of adverse effects	10 (28%)
Depression	07 (19%)
High cost of medicine	03 (8%)
Failure of trust in the physician	00 (0%)
Others	00 (0%)

90% of patients with chronic kidney disease were found to have at least 1 of the co-morbidity like Anemia/ Severe anemia (20%), Diabetes mellitus with Hypertension (15%), Diabetes Mellitus alone (14%), Hypertension alone (10%) etc. 31% of patients with CKD were having more than or equal to ≥ 2 co-morbidities with only 10% of them having no any co-morbidities. [Fig 2]

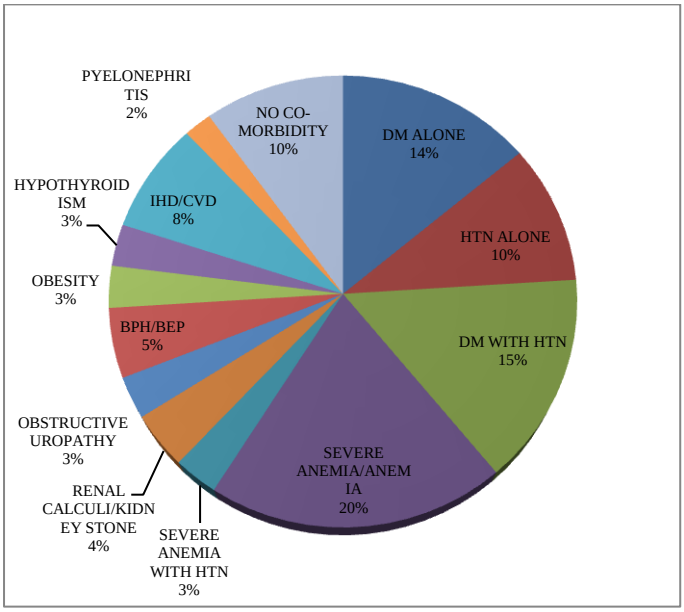

Fig 2- Co-morbidities in patients with Chronic Kidney Disease (CKD).

91% of patients were aware about how to take each medicine in a day but 70 % of them didn't know about the importance of taking each medicine. [Table 2]

76% of patients were following dietary and fluid restrictions as told by physician and 4% of them were also taking alternative system of medicines like Ayurvedic (01) and Homeopathic (03) and none of them told treating physician about it. Only 14% followed exercise schedule.

One of the significant finding noted was that 61% of total patients were having low level of education whereas from low adherent population of 36, 26 (72%) were with low level of education i.e. 10th standard and below.

No significant association was noted between adherence score and age and gender. Statistically significant positive correlation was observed between poor adherence and number of concurrent illnesses ($r=0.68$, $P<0.0001$) and number of medicines ($r=0.77$, $P<0.0001$) taken. As adherence score of more than 2 indicates poor adherence i.e. higher the score was associated with low adherence. It was also found that more the number of concurrent illnesses and more the number of medicines taken a day, poorer is the adherence.

Table 2- Patients knowledge and practices about medicines (n=100)

Question	No of respondents (%)	
	Yes	No
Know the disease suffering from	93 (93%)	07 (07%)
Strictly follow medicine schedule	92 (92%)	08 (08%)
Know the importance of each medicine	30 (30%)	70 (70%)
Aware about how to take each medicine	91 (91%)	07 (07%)
Stopped taking any medication that was prescribed	21 (21%)	79 (79%)
Stopped any medicine due to adverse effects	14 (14%)	86 (86%)
Feel sick when you miss your medicines	73 (73%)	27 (27%)
Not taking medicines would affect you in anyway	32 (32%)	68 (68%)
Tried any alternate therapies	04 (4%)	96 (96%)

Discussion

Non-adherence to medication regimens is a serious problem. It has many serious effects on prognosis of the illness and overall effectiveness of the health system. Non-adherence may signal that the patient and physician differ over the goals and priorities regarding the treatment and its schedule. Increasing the effectiveness of adherence has a greater impact on the health of the population rather than implementing any improvement in specific medical treatments. Therefore, information regarding factors influencing the optimal use of medications is vital.

In one of the study in patients with CKD 17.4 % were found non- adherent to medication at baseline and 26.8% at 1 year.[10] There is a need of uniform definition of being non- adherent, as many patients report adherence according to personal definitions rather than conventional scientific concepts of non-adherence.

Number of medicines per prescription affects inversely to adherence score. It was found that poor adherence had positive correlation with number of concurrent illnesses and number of pill burden on them. Hence, complex medication schedule along with poly-pharmacy can be considered a significant predictor of non-adherence. [10,14]

Only 3% of patients gave high cost of medications as reason for non- adherent, because many patients were getting free or subsidized government supplied medicines.

Many patients knew the disease they were suffering from. They were of opinion that continuing medicines will be affecting them anyway, which was one of the reason which influenced adherence to the treatment. Many patients were aware about schedule of administration of each medicine but 70% of them did not know about importance of each medicine. Lack of knowledge about the usefulness of each medicine was another reason reported for non-adherence. Low knowledge about medications among patients has been reported in earlier studies. [14] Thus, it is evident that low health literacy along with complex medication schedule contributes to non-adherence, hence health professionals can play an active part in overcoming this barrier to adherence.

Fear of adverse effects due to medication was another factor due to which patients are reluctant to adhere to the medication schedule. Adverse effects, if present, can play a crucial role in deciding whether or not patients will take their medications as prescribed. [16] Hence, health professionals can play a vital role in this matter in convincing patients that benefits of treatment outweigh risk of adverse effects.

76% of patients followed fluid and diet restrictions as told by treating physician. They were also following exercise and taking other nutritional supplements as prescribed. It is imperative that health professionals repeatedly emphasize upon patients about the importance of adhering to dietary and fluid restrictions and exercise.

Conclusion

Since majority of patients were not aware about importance of taking each medicine, creating awareness about same is essential for improving drug adherence. Measures to make patient aware regarding seriousness of the condition, prevention of its complication and management of co-morbidities are essential to improve adherence to medication. Physician should try to avoid poly-pharmacy. Use of long acting preparations and/or fixed dose combinations may be encouraged whenever required. Incidence of non-adherence in Chronic Kidney Disease patients was 36%. Patient-related and drug-related reasons were the two most prevalent causes of medication non-adherence.

Strategies need to be developed and implemented to address those variables in order to enhance medication adherence, and thereby achieve a better therapeutic outcome in CKD patients.

References

1. KDIGO, CKD Work Group. KDIGO 2012 clinical practice guideline for the evaluation, prevention and management of chronic kidney disease mineral and bone disorder. Kidney Int 2013;3:1-150.
2. Manley HJ, Garvin CG, Drayer DK, Reid GM, Bender WL, Neufeld TK, et al. Medication prescribing patterns in ambulatory haemodialysis patients: Comparisons of USRDS to a large not-for-profit dialysis provider. Nephrol Dial Transplant 2004;19:1842-8.
3. McDonald HP, Garg AX, Haynes RB. Interventions to enhance patient adherence to medication prescriptions: Scientific review. JAMA 2002;288:2868-79.
4. Beena Jimmy, Jimmy Jose Patient Medication Adherence: Measures in Daily Practice Oman Medical Journal (2011) Vol. 26, No. 3: 155-159
5. Spiro H. Compliance, adherence, and hope. J Clin Gastroenterol 2001 Jan;32(1):5.
6. Di Matteo MR. Adherence to treatment. In: Feldman MD, Christensen JF, eds. Behavioral medicine in primary care. A practical guide. Stamford, Connecticut: Appleton and Lange, 1997.p.136–140.
7. Roter DL, Hall JA, Merisca R, Nordstrom B, Cretin D, Svarstad B. Effectiveness of interventions to improve patient compliance: a meta-analysis. Med Care 1998 Aug;36(8):1138-1161.
8. World Health Organization. Adherence to Long-term Therapies: Evidence for Action.

Available from: http://www.who.int/chp/knowledge/publications/ adherence_report/en/. [Last accessed on 2015 Jan 12].

9. Manley HJ, Wang S, Nissenson AR. Medication Non-adherence Predicts Hospitalization Rate and Healthcare Costs in Hemodialysis Patients. Renal Week 2010 American Society of Nephrology 43rd Annual Meeting. Denver, Colorado; November, 2010.
10. Magacho EJ, Ribeiro LC, Chaoubah A, Bastos MG. Adherence to drug therapy in kidney disease. Braz J Med Biol Res 2011;44:258-62.
11. Lacey J, Cate H, Broadway DC. Barriers to adherence with glaucoma medications: A qualitative research study. Eye (Lond) 2009;23:924-32.
12. Laws MB, Wilson IB, Bowser DM, Kerr SE. Taking antiretroviral therapy for HIV infection: Learning from patients' stories. J Gen Intern Med 2000;15:848-58.
13. DiMatteo MR. Variations in patients' adherence to medical recommendations: A quantitative review of 50 years of research. Med Care 2004;42:200-9.
14. Lindberg M, Lindberg P. Overcoming obstacles for adherence to phosphate binding medication in dialysis patients: A qualitative study. Pharm World Sci 2008;30:571-6.
15. Morisky DE, Green LW, Levine DM. Concurrent and predictive validity of a self-reported measure of medication adherence. Med Care. 1986;24: 67-74.
16. Awad GA. Antipsychotic medications: Compliance and attitudes toward treatment. Curr Opin Psychiatry 2004;17:75-80.