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Original Article

EVALUATION AND PHARMACIST'S INTERVENTION FOR IMPROVING ADHERENCE AMONG RENAL FAILURE PATIENTS

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ABSTRACT

Objective: Management of renal disease may include pharmacotherapy, dialysis, life style modifications, organ transplants and immunosuppressive therapy. Lack of adherence and proper perception towards prescribed renal failure treatment is a major contributor to poor outcome. A prospective, open labeled, interventional, pre-post study which included 60 patients with Chronic Renal Failure (CRF) on Hemodialysis (HD) was conducted over a period of 6 months with an objective to evaluate the degree of adherence, perception towards various treatment recommendations and to study the effect of pharmacist's intervention in improving compliance among patients on HD.

Methods: Patients were assessed using the End Stage Renal Disease- Adherence Questionnaire (ESRD-AQ) scored questionnaire, where subjects were evaluated before and after counseling with a follow up period of 45 days and their response was scored.

Results: Based on the scored response from 58 subjects who completed the study, overall adherence were grouped into three categories such as good adherence, moderate adherence, poor adherence which at baseline was found to be 69%,24.1%,6.9% of study subjects respectively and was improved to 72.4%,25.9%,1.7% at review.

Conclusion: After pharmacist led patient counseling, patient perception towards medications, diet and fluid on showed improvement. On review the data analyzed for adherence parameters were statistically insignificant but clinically comparable with considerable improvement. Common reason cited by study subjects for non-compliance to medications was forgetfulness. From this study it can be concluded that pharmacist's intervention has a positive impact clinically on patient's perception and adherence.

Keywords: End Stage Renal Disease, Hemodialysis, End Stage Renal Disease – Adherence Questionnaire, Counseling, Adherence, Pharmacist's Intervention.

INTRODUCTION

Treatment of renal failure may include medical management, dialysis, life style changes, organ transplants and immune suppressive therapy. Lack of adherence to prescribed renal failure treatments is a public health issue, as it is a major contributor to poor outcome. Compliance rates of dietary, fluid, medication and dialysis varies. Inadequate knowledge, self-efficacy skills, forgetfulness and financial constraints were the major perceived barriers towards better compliance to fluid, dietary, medication and dialysis respectively [1].

Patient's insufficient knowledge regarding prescribed medicines and negative opinions about quality of health care services were associated with non-compliance [2]. Identification of factors determining poor adherence to medication regimens is beneficial for health care professionals since it helps them to recognise patients who may benefit from interventions to improve medication adherence [3]. An international observational study reported that non-compliance is much more common in US patients undergoing hemodialysis (HD) than Swedish and Japanese patients. The implications of these results for international differences in survival deserve further study [4].

In India, to the best of our knowledge, the adherence pattern (including dialysis, medications, diet and fluid) of patients on hemodialysis (HD) was studied rarely. Limited data is available regarding the involvement of pharmacists in the medication therapy management and provision of pharmaceutical care services to dialysis patients in Indian population.

With this background we initiated the study to

- Evaluate the patient perception and degree of adherence to various treatment modalities (medication use, dialysis, life style modifications) by renal failure patients on hemodialysis (HD).
- Assess the effect of pharmacist's interventions towards improving the adherence among the study population.

MATERIALS AND METHODS

This was a prospective, open labeled, interventional, pre-post study conducted in Dialysis unit at PSG Hospitals, Coimbatore for a period of 6 months. Approval for the study was obtained from Human Ethics Committee of PSGIMS & R, Coimbatore after which patients were informed about the study in local language and were recruited after obtaining written informed consent.

A total of 60 eligible HD patients were enrolled into the study. End Stage Renal Disease Adherence Questionnaire (ESRD-AQ), an adherence measurement questionnaire which contains scored and non-scored questions was used to assess the patient reported perception and adherence behavior.

Patients with Renal failure on Hemodialysis (HD) for at least 3months, age above 18 years and patients of either sex were considered eligible for the study.

Exclusion criteria of this study were patients with psychiatric disturbances, pregnancy, lactation and HD for less than three months.

The questionnaire used in the study (ESRD-AQ) contains information about various aspects of renal care (HD, medications, diet and fluid) on which patient response was recorded to assess the perception towards the treatment and degree of adherence. Patient response was scored as per the questionnaire to assess degree of adherence, whereas non- scored items in the questionnaire were used to evaluate perception.

At baseline interview patient's socio-demographic data, past and current co morbidities, medication history along with adherence related ESRD-AQ data were recorded.

After baseline interview, pharmacist's intervention which included oral counseling once in two weeks (total 3 sessions) was provided. In addition to oral counseling, printed information leaflets and written information on dialysis note in regional language were provided to the patients. After the follow-up period of 45 days, patients were reviewed and reassessed by using ESRD-AQ.

Adherence pattern before and after patient educational intervention was assessed using Wilcoxon sign rank test. Spearman's correlation test was used to evaluate the associations between various patient variables and reported adherence. Tests were two-tailed and a p <0.05 was considered statistically significant. Statistical analysis was carried out using SPSS, version 19.

RESULTS

Among the 60 patients who were enrolled, 58 completed the study. Follow up was lost for two patients due to discontinuation of HD after kidney transplantation and the other due to inability to provide response on review due to illness. Mean age of the study population was 46.7±13.3 years (age range 21-70 years).

Out of 58 patients, 39 (67.24%) were male and 19 (32.75%) were female. Hypertension (81.03%) was the most common co morbidity that was identified among patients with renal failure followed by Diabetes mellitus (24.10%) (table 1). There were no significant associations between age, literacy and patient adherence at 95% CI (r=0.478, 0.752 respectively) and no significant correlation was found between duration on HD and adherence.

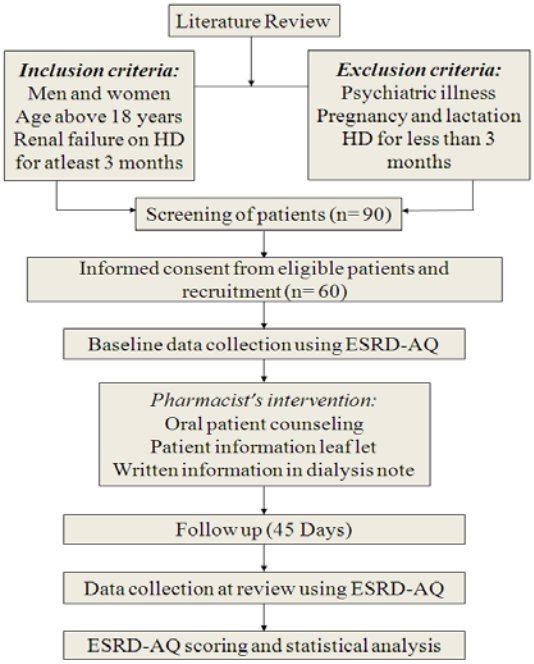

Fig. 1: Schematic representation of study methodology

Table 1: Socio-demographic data

Characeristic	Number of patients (n =58)	Percentage (%)
Age	Mean age=46.7±13.3	Range 20-70 years
Sex		
Male	39	67.24
Female	19	32.75
Literacy		
Illiterate	08	13.97
Primary	14	24.13
Secondary	22	37.93
Higher secondary	07	12.06
Graduate	05	8.62
Postgraduate	02	3.44
Duration on HD		
Less than 1 year	05	8.62
1-5 years	39	67.24
5-10 years	13	22.41
Greater than 10 years	01	1.72
Co morbidities		
Hypertension	47	81.03
Diabetes Mellitus	14	24.13
Hepatitis(HBV/HCV)	04	6.89
Others	21	36.20
Frequency of HD		
Two days or less	18	31.00
Three days	38	66.00
Four days	02	3.44

We assessed patient perception towards various treatment strategies in this study. 96.55% of patient perceived that dialysis is very important and it remained unchanged after pharmacist's intervention. Perception towards fluid, medication and diet recommendations were comparatively fair and improved further after pharmacist's intervention (table 2).

Table 2: Perception towards the importance of treatment modalities

Parameters	Percentage at baseline (%)	Percentage at review (%)
Hemodialysis	96.55	96.55
Medications & diet	87.93	94.82
Fluid restriction	79.31	81.00

In this study, based on the ESRD-AQ scoring patients were categorized into three groups (Table 3) to assess over all adherence which include all treatment modalities involved in renal care (HD, mediations, diet and fluid recommendations).

Table 3: Impact of pharmacist's intervention on over all adherence and ESRD-AQ Score

Adherence category	ESRD-AQ score	No. of patients at baseline	Percentage at baseline %	No. o f patients at review	Percentage at review %
Good	1200-1000	40	69.00	42	72.42
Moderate	999-700	14	24.10	15	25.90
Poor	<700	04	6.90	01	1.72

Improvement in adherence score was observed post pharmacist intervention.

We assessed adherence to each treatment modality in specific at baseline and post educational intervention (at review) to identify the adherence related problems and to assess the impact of patient education on each treatment modality.

Adherence to HD was evaluated which was found to be good at baseline and review respectively. P value was found to be 0.10 which was statistically insignificant but marginal improvement was observed.

Medication adherence was assessed at the baseline and after follow up. At baseline interview 58.60% of the patients reported that they have never missed the medications during the past week. On review 62.06% of study subjects reported that they never missed the medications (fig. 2). Statistical significance was not seen since P value was found to be 0.053. Reasons for medication non-compliance were also recorded (table 4).

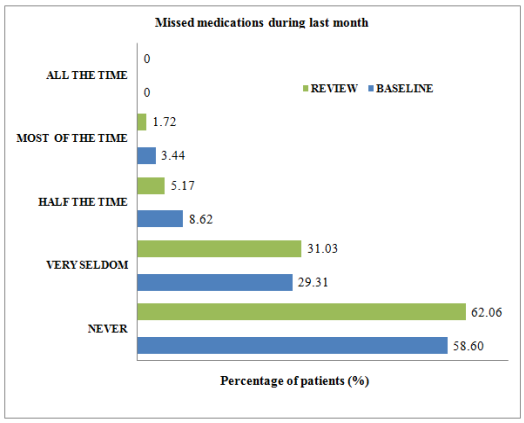

Fig. 2: Impact of pharmacist's intervention on medication adherence

Table 4: Patient reported reasons for medication non-adherence

Reasons	Number of patients	Percentage (%)
Never missed	34	58.62
Forgot to take	10	17.24
Forgot to order	03	5.17
Cost of medication	04	6.89
Physician appointment	01	1.72
Inconvenience	04	6.89
Others	02	3.44

In this study we observed that at baseline 48.20% of the patients were adherent to diet recommendations all the time and 8.62% never followed the diet recommendations. On review 46.55% of study population reported that they were adherent to the diet all the time. But improvement was observed in patients who follow diet recommendations most of the time (24.10% at baseline, 32.75%) and number decreased among patients who reported that they never follow diet recommendations (5.17%). P value was found to be 0.053 which was statistically non significant but the results obtained indicate improvement. (fig. 3)

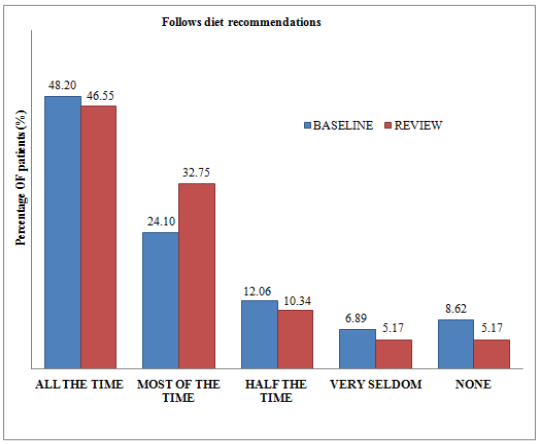

Fig. 3: Effect of pharmacist's intervention on dietary adherence

In this study, patient compliance towards fluid restriction was found to be poor when compared to other treatment aspects. At baseline interview 41.37% of patients reported that they were adherent to fluid restriction all the time 8.62% of the patients never followed fluid restriction. Marginal improvement was seen but there was no statistical significance observed as P value was 1.00. (fig. 4)

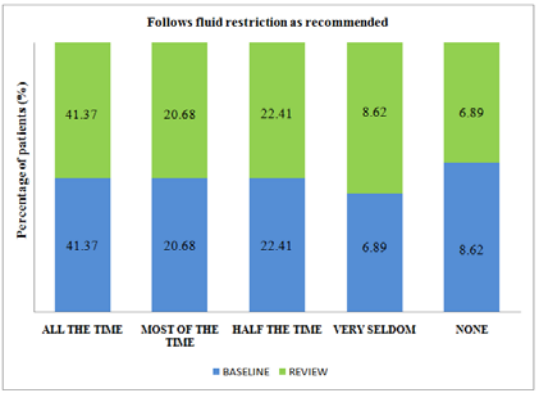

Fig. 4: Effect of pharmacist's intervention on fluid adherence Mean ESRD-AQ scores was computed for each adherence parameter which showed improvement in mean scores at review. (table 5)

Table 5: Mean Adherence scores at Baseline and Review

Adherence parameters	Mean ESRD-AQ score at baseline	Mean ESRD-AQ score at review
Hemodialysis(HD)	271.55	281.89
Medications	169.82	175.86
Diet	148.27	154.31
Fluid	139.65	140.56
Overall ESRD-AQ mean	1025	1046.55

This change in adherence related scores can be considered clinically which indicates positive role for pharmacist led patient education in management of chronic illness like renal failure.

DISCUSSION

Patient's perception towards illness and health care provided plays a key role in determining adherence pattern. Adherence to treatment is an issue in CKD patients due to long term illness, complex regimen, multiple non-pharmacological treatment strategies, patient behavior and reliance on care giver.

In the present study we assessed patient perception and adherence towards HD, medication, fluid and diet using a pre-validated ESRD-AQ questionnaire. Subsequently they were provided with structured education regarding various treatment aspects and the effect of educational intervention was assessed. Literature review revealed several factors that show impact on adherence among patients on HD which includes perception, age, literacy, frequency and duration of HD.

Older age has been reported as the predictor of higher adherence in the ESRD population [5, 7]. In contrary to previous reports in which age was the only demographic variable that had a correlation with adherence and clinical outcomes, demographic data of the current study population (age, gender and literacy) did not show any statistical significance associated with adherence in HD patients.

In an earlier study it was postulated that ESRD patients may be more eager to change their dietary habits to comply with long lists of dietary and fluid restrictions. Patients new to dialysis treatment may also show higher degree of compliance which may decrease over time [8]. In contrary to this study, we did not find any significant association between duration of dialysis and adherence behavior. In our study positive correlation was seen between frequency of dialysis and patient compliance ($r = 0.30$).

Over all adherence of the patients based on total ESRD-AQ scoring was fair and it was improved further after patient education which was not statistically significant but clinically positive.

Earlier reports revealed that skipping or shortening dialysis sessions were directly related to increased mortality risk. Compared to medication, diet and fluid, perception as well as adherence towards dialysis was found to be very high in the current study. This is consistent with the findings of a study conducted elsewhere [9]. After counseling there was improvement in the adherence score at review but statistical significance was not obtained whereas perception towards dialysis could not be influenced by pharmacist's intervention and it remained unaltered upon review.

A systemic review reported that the rate of non-adherence to oral medication ranges from 3-80% in which more than half of the studies reported non-adherence rate of more than 50% [10]. In the current study, adherence to medications was low when compared to HD and the reasons for medication non-compliance were recorded. Though the score towards medication adherence showed improvement after pharmacist led patient counseling at review there was no statistical significance seen but it was clinically comparable.

In the study population, perception and adherence towards diet is comparatively higher than that of fluid. Patient reported barriers for dietary non-compliance in this study are similar to those recorded in previous studies [9] such as inability to control food habits, lack of awareness about the type and quantity of food to be restricted and also as food was being prepared by care givers.

Patient's perception and adherence towards fluid restriction was low when compared to diet, medication and dialysis. The most commonly reported reason for non-adherence to fluid restriction was inability to control their desire for fluid followed by seasonal variation, wrong perception of the patient that dialysis will help in the removal of total fluid consumed and lack of awareness about measures to battle thirst. On review there was no change in perception and adherence to fluid restriction despite pharmacist provided patient counseling.

Compared to Western studies, perceived importance of treatment was less in our patients with an exception to HD. Patient perception towards importance of HD and adherence to it is similar to that reported in the previous studies. These variations could be due to differences in food habits, education levels, economic factors, family support, low health literacy and lack of continuous patient education.

Patient perceived barriers for adherence are similar to those reported in previous studies such as inability to control food and fluid, forgetfulness, inconvenience due to number of pills and administration timings and involvement of caregivers in management of the disease. Since the previously reported adherence rates were extremely varied, it is difficult to compare measured adherence rates in this study to those reported by others.

A randomized interventional study reported that clinical pharmacist-provided patient education was effective in increasing the medication knowledge and adherence pattern of patients on HD [11]. Similar results were observed in our study indicating positive effect of pharmacist led patient education in improving adherence.

CONCLUSION

Over all adherence of the study population was fair which improved further after pharmacist led educational intervention. Adherence towards HD was found to be high followed by medication, diet and fluid respectively. Improving patient's knowledge about disease and treatment may improve adherence. From this study, it can be concluded that pharmacist's intervention has a positive impact clinically on patient's perception and adherence though statistical significance was not obtained and it marks the role of pharmacist led patient education in the management of chronic ailments like CRF. These results emphasize the need for further study for a longer duration.

CONFLICT OF INTERESTS

Declared None.

REFERENCES

1. Chan YM, Zalilah MS, Hii SZ. Determinants of compliance behaviors among patients undergoing hemodialysis in Malaysia. PLoS ONE 2012;7(8):E41362.
2. Moreira L, Fernandes P, Mota RS, Monte F, Galvão RI. Medication non-compliance in chronic kidney disease. J Nephrol 2008;21(3):354-62.
3. Sathvik BS, Mangasuli S, Narahari MG, Gurudev KC, Parthasarathi G. Medication knowledge of hemodialysis patients and influence of clinical pharmacist provided education on their knowledge. Indian J Pharm Sci 2007;(69):232-9.
4. Bleyer AJ. An international study of patient compliance with hemodialysis. JAMA 1999;281(13):1211-3.
5. Kutner NG. Improving compliance in dialysis patients: does anything work? Semin Dial 2001;14:324-7.
6. Paul L, Kimmel. Behavioural compliance with dialysis prescription in hemodialysis patients. J Am Soc Nephrol 1995;5:1826-34.
7. Christiane Kugler, Ilona Maeding Cynthia L. Russell Non adherence in patients on chronic hemodialysis: an international comparison study. J Nephrol 2011;24(03):366-75.
8. Lam LW, Twinn SF, Chan SW. Self reported adherence to a therapeutic regimen among patients undergoing continuous ambulatory peritoneal dialysis. J Adv Nurs 2010;66(4):763-73.
9. Youngmee Kim, Lorraine S. Evangelista. Relationship between illness perceptions, treatment adherence and clinical outcomes in patients on maintenance hemodialysis. Nephrol Nurs J 2010;37(3):271–81.
10. H Schmid, B Hartmann, H Schiffl. Adherence to prescribed oral medication in adult patients undergoing chronic hemodialysis: a critical review of the literature. Eur J Med Res 2009;14:185-90.
11. BS Sathvik. Impact of clinical pharmacist-provided education on medication adherence behaviour in ESRD patients on haemodialysis. IJPS Winter 2009;5(1):21-30.