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Impact of patient counselling on perception and medication adherence of hypertensive patients with chronic kidney disease

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Abstract

Chronic Kidney Disease is a progressive and irreversible loss of renal function. The purpose of the study was to understand how patient counselling affects patient perception, and medication adherence and to identify the risk factors of medication non-adherence. A Cross-sectional prospective study was done among 109 hypertensive patients with Chronic Kidney Disease for 6 months. All study participants were interviewed to obtain detailed socio-demographic and medical data. Patient counselling was provided in two sessions. Patients were asked to fill out the Knowledge, Attitude, Practice questionnaire, and the Morisky Medication Adherence Scale -8 pre and post counselling. Patient information leaflets were provided at the end of the eighth week. The study results show that in the mean Knowledge, Attitude, Practice score, there was a significant increase in total knowledge from a baseline of 0.79 ± 0.77 to 1.22 ± 0.69 at the end of the fourth week and 1.57 ± 0.54 at the end of the eighth week. The mean adherence was improved from 0.38 ± 0.55 to 0.67 ± 0.67 to 1.10 ± 0.57 , indicating a significant improvement in medication adherence with continuous patient counselling. The most common reason for non-adherence was forgetfulness. Poor adherence to treatment and lack of knowledge remains a major obstacle in the management of Chronic Kidney Disease patients. Hypertension, diabetes, and cardiovascular disorders remain the leading causes of Chronic Kidney Disease.

Keywords: Chronic Kidney Disease; Patient Counselling; Medication Adherence; Knowledge Attitude Practice; Hypertension

1. Introduction

Chronic Renal Failure is a progressive, irreversible deterioration of renal function. It mainly occurs in patients with acute renal failure due to non-responsiveness to treatment. Diabetes and Hypertension are known to be the most common causes of Chronic Kidney Disease. Chronic Kidney Disease is also defined as the condition in which Glomerular Filtration Rate is less than 60ml/min for more than 3 months, with or without kidney damage. Anaemia, nocturia, bone pain, and hypertension are some of the symptoms of Chronic Kidney Disease [1]. Hypertension is described as a condition in which blood pressure is high which means that blood pressure lowering is desirable. According to the World Health Organization, hypertension is indeed one of the leading preventable causes of morbidity and mortality. Hypertension is a major public health concern that is linked to a global epidemiological shift from communicable to non-communicable diseases. It disproportionately affects people in low- and middle-income nations, resulting in a stroke, kidney failure, peripheral vascular disease, and early disability [2].

Knowledge, attitude, and practice are the three parts of a Knowledge, Attitude, and Practice survey. Knowledge, Attitude, and Practice questions tend to show not only common qualities in health-related information, attitudes, and behaviours, but also each person's perspective of the disease. Misunderstandings are caused mainly by these factors [3,4].

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Chronic illness management necessitates long-term lifestyle changes as well as pharmacological therapy. In the therapy of chronic illness, patient understanding of the illness is extremely crucial. Effective patient counselling improves the patient's understanding of his or her illness, essential lifestyle changes, and medicines, and so improves patient compliance. The pharmacist bears a great deal of responsibility when it comes to counselling chronically ill patients. The counselling pharmacist should have sufficient expertise and be an effective communicator, with verbal and non-verbal communication skills[5,6].

2. Material and methods

A prospective interventional study was conducted in the Nephrology Department of a tertiary care teaching hospital in Kerala. A total of 109 patients were enrolled in the study from the Nephrology department and the study was carried out for a period of 6 months from March 2021 to September 2021. The study was approved by the Institutional Ethics Committee (IEC) and informed consent was obtained from the study subjects. Inclusion Criteria includes both male and female with age greater than 18 years, Hypertensive patients with the diagnosis of Chronic Kidney Disease, both dialysis and non-dialysis patients, and Patient willing to give informed consent. Pregnancy and breastfeeding women. Mentally incompetent Patients, and Patients who are not interested in the counselling intervention are excluded from the study.

A patient data collection form was designed which includes the demographic details including age, gender, social habits, Body Mass Index (BMI), level of education, marital status, income level as per Kuppaswamy's scale, Employment, past medical history, diagnosis, and co-morbidities, and other relevant information were recorded in a tabulated data and maintained in excel sheets. Patients were counselled verbally (10-20 is/patients) regarding their disease, drugs, diet, and lifestyle modifications. Patient information leaflets are prepared in English and Malayalam and distributed to the patients. The knowledge of the patients was assessed using a self-validated Knowledge, Attitude, Practice questionnaire. The knowledge was assessed at the baseline and after each session of patient counselling.

2.1. Pre-program

At the beginning of the study, baseline characteristics were assessed and informed consent was obtained from the patients who joined the study based on the inclusion, and exclusion criteria. Patient demographic data were collected at the time of admission. The patient knowledge and adherence were assessed by administering a questionnaire before providing counseling. Patients were counseled verbally for about 10-20 minutes.

2.2. First review: (At four weeks)

The patient's knowledge and adherence were assessed using the Knowledge, Attitude, Practice questionnaire, and MMAS-8 respectively. Patients were educated about disease, medication, diet, and lifestyle modification.

2.3. Second review :(At eight weeks)

The patient's knowledge and adherence were assessed using the Knowledge, Attitude, Practice questionnaire, and MMAS-8 respectively. Patient reasons for non-adherence were assessed.

2.4. Statistical analysis

The data were analyzed using Statistical Package for the Social Sciences (SPSS) Version 21. Results were expressed as Mean \pm Standard Deviations (SD) or percentage values where necessary. Further data were analyzed using paired t-test and chi-square test, and the correlation between patient's socio-demographic data with medication adherence and knowledge was assessed using Pearson's Chi-square test. A p-value of < 0.05 was considered statistically significant.

3. Results and discussion

During the study period, a total of 150 patients who fulfilled the inclusion criteria were included in our study. Among these, 109 patients completed the follow-up. Reasons for dropping out were (a) loss to follow up due to COVID-19, (b) Death, and (c) Withdrawal at different levels of study.

In this study, the age group was categorized into two groups; ages' ≤ 60 and > 60 where 56.9 % of study participants were in the age group. Of ≤ 60 and 43.1% were >60 years of age. Of all our study participants, 47% were less than the age of 60 which was similar to a study in Ethiopia, which showed that 80.3% of the participants were below 60 years. Prevalence of Chronic Kidney Disease in Kinshasa showed that 58.1% of the participants were in the age range between 20 and 39 while the mean age was 38.6 ± 14.43 [7].

Table 1 Patient Demographics (N=109)

Sl. No	Demographics	Frequency	Percentage
1.	Male	74	67.9
2.	Female	35	32.1
3.	≤60 Yrs	62	56.9
4.	>60 Yrs	47	43.1
5.	Single	8	7.3
6.	Married	87	79.8
7.	Widowed	14	12.8
8.	Employed	81	74.3
9.	Unemployed	28	25.7

Of all 109 patients, 74 (67.9%) were males and 35 (32.1%) were females. In this study, male patients were greater than female patients. The prevalence of Chronic Kidney Disease was more in men (67.9%) than in women (32.1%) as shown in our study. A similar study by Jacob et al discussed the male predominance in their reports. However, another study by N R Hill et al showed that women had a higher prevalence of Chronic Kidney Disease than men. Women were shown to have a greater prevalence of Chronic Kidney Disease in two-thirds of studies that provided gender-specific Chronic Kidney Disease prevalence [8,9]. Contrary to this result another study conducted by Chan Y M et al and Lam L W et al reported that being male is consistently associated with non-adherence[10, 11].

In this study, 87 (79.8) participants were married, while 14 (12.8) participants were widowed and 8 (7.3%) were single.

Table 2 Educational level among Chronic Kidney Disease patients (N=109)

Sl. No.	Educational status	Frequency	Percentage
1.	Primary school	32	29.4
2.	Middle school	28	25.7
3.	Secondary school	13	11.9
4.	Higher secondary	16	14.7
5.	Graduate	20	18.3

Here, thirty-two (29.4%) of the study participants had primary level education, 28 (25.7%) had middle school education, 13 (11.9%) had secondary education, and 16 (14.7%) had higher secondary level of education and 20(18.3%) were graduate.

In table 3 study, all study participants had an income greater than 2,091. The highest number of patients comes to underscore 3 (6,214 – 10,356) with a percentage of 33.95%. Score 4(10,357 -15,356) and score 10(20,715 – 41,429) has a percentage of 16.5% respectively. This is similar to the study conducted by H K Agarwal et al. Alnaif et al also showed the study in which patients with higher income have good knowledge scores.

This study shows, that 24 (22%) patients of the study population were smokers, 15 (13.8%) were alcoholics, and 6 (5.5%) were both smokers and alcoholics, where these habits contribute to risk factors for Chronic Kidney Disease. In this study 22% were smokers, 13.8% were alcoholics and 5.5 % were both smokers and alcoholics. Similar to the study done by Olumuyiwa John Fasipe et al reported that chronic smoking and chronic alcohol consumption are one of the leading causes of Chronic Kidney Disease [12].

Table 3 Income levels of patients based on the Kuppuswamy scale (N=109).

SI. No	Income (Kuppuswamy scale)	Frequency	Percentage
1.	Score 1 (<2,091)	0	0
2.	Score 2 (2,092-6,213)	17	15.6
3.	Score 3 (6,214-10,356)	37	33.9
4.	Score 4 (10,357-15,356)	18	16.5
5.	Score 6 (15,356-20,714)	7	6.4
6.	Score 10 (20,715-41,429)	18	16.5
7.	Score 12 (>41,430)	12	11

Table 4 Comorbidity Conditions among Chronic Kidney Disease Patients

SI. No	Comorbidity	Frequency	Percentage
1.	Hypertension	109	100
2.	Diabetes	73	67
3.	CVD	33	30.3

All the patients in the study population were hypertensive, whereas 73 (67%) were diabetic, and 33 (30.3%) had Cardio Vascular Diseases (CVD). Similar to this study Chinyere Mmanwanyi Wachukwu et al showed that hypertension, hyperglycemia, and proteinuria, were all evaluated as the risk factors for Chronic Kidney Disease. The prevalence of hypertension was found to be at higher risk [13].

Table 5 Correlation between age, sex, and marital status with total knowledge score

SL.NO	Variables	Pre-program		1 st follow-up		2 nd follow-up	
		Mean ± SD	P-value	Mean±SD	P-value	Mean±SD	P-value
Age							
1	≤60 Yrs	1.16±0.72	<0.05	1.50±0.59	<0.05	1.82±0.38	<0.05
2	> 60 Yrs	0.31±0.55	>0.05	0.85±0.65	>0.05	1.25±0.56	>0.05
Sex							
3	Male	0.87±0.77	>0.05	1.27±0.70	>0.05	1.60±0.54	>0.05
4	Female	0.62±0.77	>0.05	1.11±0.67	>0.05	1.51±0.56	>0.05
Marital Status							
5	Widowed	0.14±0.36	>0.05	0.57±0.51	>0.05	±0.53	>0.05
6	Single	1.12±0.83	>0.05	1.50±0.75	>0.05	1.75±0.46	>0.05
7	Married	0.87±0.77	<0.05	1.29±0.66	<0.05	1.63±0.53	<0.05

In this study, there was a positive correlation between age and knowledge, the total knowledge of the age group less than or equal to sixty shows significant improvement in total knowledge with subsequent visits to the hospital following an educational intervention. It was also observed that the marital status of the patient showed significant improvement with educational intervention.

In this study, there was a positive correlation between income and total knowledge score. The income range (score 10) exhibited a significant improvement with educational intervention.

In this study, there was a statistically significant correlation between graduates and total knowledge and this was consistent with educational intervention in the fourth and eighth weeks. The educational status of the patients was significantly associated with improved knowledge, there was a significant improvement in the knowledge after intervention in graduates (n=18.3%). A similar study in Ethiopia by Bleachew et al shows that participants who have secondary and above level education had more knowledge compared to those who had no formal education[7].

Table 6 Paired t-test comparing total knowledge score (N=109)

Sl. No.	Assessment time	Mean \pm SD	Median	p-value
1.	Pre-program	0.79 \pm 0.77	10	<0.05
2.	After 1 st follow up	1.22 \pm 0.69	16	<0.05
3.	After 2 nd follow-up	1.57 \pm 0.54	19	<0.05

The average mean score of knowledge during the pre-program was 0.79 ± 0.77 , following 1st follow-up the mean score was to be 1.22 ± 0.69 , and after the second follow up 1.57 ± 0.69 . All of them were statistically significant.

Majority of the study population, 42.2% (n=46) shows poor knowledge, followed by average 35.7 % (n=39) and remaining exhibit high score 22.0% (n=24) before patient counselling. After implementation of patient counselling, comparing the total knowledge score after the 4th week and 8th week, there was an improvement in the high score by 60.5% (n=66) after the 2nd follow-up. There was a positive correlation between total knowledge and educational intervention.

Table 7 Correlation between Age, Sex, and Marital Status with Total Adherence Score

Sl. No.	Variables	Pre-program		1 st follow-up		2 nd follow-up	
		Mean \pm SD	p-value	Mean \pm SD	p-value	Mean \pm SD	p-value
Age							
1	≤ 60	0.19 \pm 0.39	>0.05	0.41 \pm 0.55	>0.05	0.83 \pm 0.48	>0.05
2	> 60	0.63 \pm 0.64	<0.05	1.02 \pm 0.67	<0.05	1.44 \pm 0.50	<0.05
Sex							
3	Male	0.36 \pm 0.56	>0.05	0.68 \pm 0.73	<0.05	1.12 \pm 0.59	>0.05
4	Female	0.42 \pm 0.55	>0.05	0.65 \pm 0.53	>0.05	1.05 \pm 0.53	>0.05
Marital status							
5	Widowed	0.85 \pm 0.66	>0.05	1.21 \pm 0.69	>0.05	1.50 \pm 0.75	>0.05
6	Single	0.25 \pm 0.46	>0.05	0.37 \pm 0.51	>0.05	0.62 \pm 0.74	>0.05
7	Married	0.32 \pm 0.51	<0.05	0.62 \pm 0.65	<0.05	1.08 \pm 0.48	<0.05

There was an improvement in adherence of patients above the age of sixty following medical intervention. As age increases adherence behavior of the study subject increases this was in contradiction to a study conducted by Chandrasehkar et al, in which they concluded that adherence behavior decreases as age increases. However, a similar observation supporting this study was also reported in a study conducted by Rolinicks et al [5,14]. Considering the marital status and adherence those who are married were known to be statistically significant, following the intervention.

Table 8 Paired t-test comparing total adherence (N=109)

Sl. No	Assessment time	Mean \pm SD	Median	p-value
1.	Pre-program	0.38 \pm 0.55	5	<0.05
2.	After 1 st follow-up	0.67 \pm 0.67	6	<0.05
3.	After 2 nd follow-up	1.10 \pm 0.57	7	<0.05

The average mean score of total adherences during pre-program was 0.38 \pm 0.55, following 1st follow-up the mean score was to be 0.67 \pm 0.67, and after 2nd follow up 1.10 \pm 0.57. All of them were statistically significant

Majority of the study population, 65.1% (n=71) shows poor adherence, followed by medium adherence 31.1% (n=34) and remaining exhibit high score 3.6% (n=24) before patient counselling. After the implementation of pharmaceutical care programs like patient counselling, patients with a high level of adherence increased to a percentage of 22%, as well as a medium level of adherence increased to a percentage of 66% and patients with low-level adherence decreased to a percentage of 11.9% after 2nd follow-up. There is a positive correlation between adherence and patient counselling.

Table 9 Reasons for medication non-adherence

Sr. No	Reasons For Medication Non-Adherence	Frequency	Percentage (%)
1	Forgetfulness	39	35.8
2	Cost	32	29.4
3	Fear of ADR	22	20.2
4	Illiteracy	13	11.9
5	Busy schedule	21	19.3
6	Polypharmacy	35	32.1
7	Lack of family support	15	13.8
8	Believed- medication not effective	17	15.8

In this study, it was shown that 35.8% (39) of the patients with Chronic Kidney Disease were non-adherent due to forgetfulness, while 29.4% were non-adherent due to the high cost of medications. The other reasons patients defined for their non-adherence were fear of ADR (20.2%), illiteracy (11.9%), busy schedule (19.3%), poly-pharmacy (32.1%), and lack of family support (13.8%) and believed the medication was not effective (15.8%). Another study by Geldine Chironda et al suggests that reasons for non-adherence include age, sex, level of education, income status, employment status, and lower health literacy. Which leads to the inability to support the treatment costs. A study by Chandrasekhar et al reported more than 2 factors for non-adherence [15,16,5].

4. Conclusion

In conclusion, the current study showed that near to half of the participants had good medication adherence and better knowledge regarding their disease, diet, and lifestyle after the educational intervention was provided. Some socio-demographic factors such as income, marital status, education, and age were significantly associated with patient knowledge, attitude, and practice toward Chronic Kidney Disease. Hypertension, diabetes, and cardiovascular disorders remain the leading causes of Chronic Kidney Disease. Patient counseling has shown to be effective in increasing medication adherence and patient understanding of disease and therapy. Chronic Kidney Disease patients should be encouraged to be aware of risk factors and early detection of Chronic Kidney Disease before it progresses to kidney failure. Patient awareness can be improved by providing patient information leaflets and patient counselling. Poor adherence to treatment and lack of knowledge on the disease, drug remains a major obstacle in the proper management of Chronic Kidney Disease patients. Therefore, there is a need to develop effective measures to limit medication non-adherence in Chronic Kidney Disease patients.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors have no conflicts of interest regarding this investigation.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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