

Effectiveness of Structured Teaching Programme on Knowledge Regarding Therapeutic Intervention among Chronic Kidney Disease Patients in a Selected Hospital of Nadiad City, Gujarat: A Quasi-Experimental Study

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ABSTRACT

Introduction: Chronic Kidney Disease (CKD) is a severe clinical problem which has a significant socioeconomic impact worldwide. Diet, exercise, haemodialysis, Kidney Transplantation are some of the treatment modalities used to maintain patient's health. It is necessary to create awareness regarding the therapeutic interventions that are available among these patients to improve their knowledge.

Aim: To assess the effectiveness of Structured Teaching Programme (STP) on knowledge regarding therapeutic intervention among CKD Patient.

Materials and Methods: A quantitative study with quasi experimental pre-test and post-test, two-group design was conducted at Muljibhai Patel Urological Hospital. A total of 60 CKD patients were enrolled into the study. A structured questionnaire in Gujarati language was built that contained information regarding CKD, lifestyle modifications such as diet and exercise; knowledge on haemodialysis and kidney transplantation. The structured questionnaire was used to

assess the knowledge regarding the interventions. A pilot study was conducted and was found to be feasible. The study duration was of seven days with the pre-test conducted on day one of the study followed by a structured training for three consecutive days, and the perception of the participants were evaluated on day seven using a standard questionnaire. The effect of STP was analysed by student's t-test and Chi-square test was used to find the association with selected demographic variables.

Results: The study included CKD patients. The mean age of study population is above 49 years with 65% males and their data were analysed systematically. The post-test mean knowledge score of patients in the experimental and control group was 27.36 ± 2.63 and 17.73 ± 2.37 , respectively. The result implies that there was an inadequate knowledge among patients with CKD.

Conclusion: The structured teaching Programme was effective in increasing knowledge regarding therapeutic intervention among CKD patients.

Keywords: Chronic kidney, Gujarati language, Socio demographic variable, T-test

INTRODUCTION

The Chronic Kidney Disease (CKD) also called chronic renal insufficiency or progressive kidney disease by some, is defined as a progressive loss of function occurring over several months to years, and is characterised by the gradual replacement of normal kidney architecture with interstitial fibrosis [1]. The working group of the National Kidney Foundation's (NKF) Kidney Dialysis Outcomes and Quality Initiative (K/DOQI) has developed a CKD classification system based on the presence of structural kidney damage and/or functional changes in Glomerular Filtration Rate (GFR) present for a period of three months or more. CKD is categorised by the level of kidney function (as defined by GFR) into stages one through five, with each increasing number indicating a more advanced stage of the disease [2].

In the early stages of renal failure, the changes in the clinical and laboratory markers are often subtle which may not help in identifying the severity of the disease. Additional therapies designed to eliminate or minimise the insult that might precipitate renal failure include discontinuation of the offending drug, cardiac support of the failing heart, removal of the obstruction from the urinary collection system, corticosteroids to minimise any intrinsic inflammatory process, antibiotic therapy to treat any infection, or other specific maneuvers to limit or reverse the kidney injury. Because of the poor

clinical outcomes and lack of specific therapies, the importance of preventing renal failure cannot be overemphasised. Individuals at highest risk, such as those with CKD and the elderly with chronic medical conditions, need to be identified and their exposure to harmful diagnostic or therapeutic procedures or medications minimised. The NKF has recognised the importance of early detection and has initiated the Kidney Early Evaluation Program 7 to identify, educate, and provide free screening for people at increased risk of developing kidney disease. CKD is a continuous and progressive disease state that often results in the appearance of several concomitant complications that commence at various stages in the disease [2].

Another important treatment modality identified is improving the physical activity which may further help in control of persistent illnesses, including CKD. It is reported that physical fitness levels of haemodialysis patients tends to improve their functional levels-Physical activity is an important intervention for patients with haemodialysis in improving their physical performance [3]. The early CKD stages, that is, stages 1, 2 and 3, which are the critical battleground if one hopes to minimise the number of patients who ultimately require renal replacement therapy. Further complicating these issues is the fact that the development and progression of the early stages of CKD is a complex phenomenon [4]. Although CKD is generally progressive and irreversible, there are cases in which

patients show slower progression, enabling patients to live longer without complication or the need for renal replacement therapy. The other treatment strategies include nutritional intervention, lifestyle intervention and medical management [5].

Regardless of the stage of CKD at which the patient presents, the management of secondary complications (e.g., anaemia and secondary hyperparathyroidism) and co-morbid conditions, if they are present, is critical to maximise the length and optimise the quality of the patient's life. Historically, these conditions have not been appropriately managed [6]. Action is necessary to improve outcomes, which is the ultimate goal of the study. No clinical practice guideline, irrespective of the rigor of its development, can accomplish its intended improvement in the outcome without an implementation plan. Evidence suggests that providing education to patients with chronic disease results in reduced health service utilisation and improved health behavior and health status beyond that achieved by usual care. A similar study conducted by Estrella MM et al., evaluated the effectiveness of the structured teaching programme on management of CKD. Post-test was conducted after a week. It revealed that the teaching programme was effective in improving the knowledge and attitude after the teaching programme [7].

The need of the study was felt by the investigators realising the importance of providing the information to patients regarding diet, exercise, dialysis, and kidney transplantation and to reduce the burden on the society. This training may help the health care providers to impart sufficient knowledge to their patients which help in self-care management. Learning self-care is important for patients with long-term conditions, because it creates a sense of self control and reduces their dependency on others. Mason J et al., [8] in their review assess the effectiveness of educational programme on interventions in CKD management for chronic disease patients. Their review indicated that there could be a significant improvement in knowledge and attitude after teaching programme. The structured educational intervention could be an effective way of improving knowledge and attitude among CKD patients. The investigator felt the need to sensitise and educate the patients on CKD. Therefore, the main purpose of this study was to identify, develop and evaluate the effectiveness of the STP in terms of knowledge regarding therapeutic intervention among CKD patients.

MATERIALS AND METHODS

A quasi-experimental pre-test, post-test two-group designed study was utilised to attain the aim of the study. The study was conducted in the Dialysis Department at Muljibhai Patel Urological Hospital, Nadiad, India. It was approved by the Institutional Ethical Committee, vide letter number EC/623/2019.

The sample size consisted of 60 CKD patients undergoing haemodialysis in Muljibhai Patel Urological hospital, Nadiad, Gujarat.

This is a two group study design consisting of 30 participants each in both control and experimental group. A preformulated demographic data sheet, structured questionnaire and STP were the tools used for the study.

Description of the tool:

1. Section A: The demographic variable such as age, gender, education, occupation, monthly income in rupees, marital status, family history, habit, religion, other co-morbid conditions, restriction on food or fluid by doctor, number of haemodialysis per week, other illness etc., was used in this study.

2. Section B: The structure questionnaire contained general information on CKD, life style modification like diet and exercise, haemodialysis, and kidney transplantation with STP scheduled for 3 consecutive days from the day of the pre-test. There are 30 multiple choice questions applied to all attendees of each group

before and after training in Gujarati language. The Pre and the Post-tests contained the same questions.

In order to measure the validity of tools i.e., structured knowledge questionnaire and STP was given to a panel of experts which included two doctors and eight nursing staffs who had at least 3 years of experience after MSc. Nursing in medical surgical nursing. The experts were requested to validate the relevancy, objectivity, adequacy, and appropriateness of content areas. Tools and STP was developed under expert guidance. All of them had 100% agreement on the content of the STP. The reliability refers to the degree of consistency, adequacy, accuracy of the tool [9]. The reliability of the tool was checked before pilot study. The reliability of the structured knowledge questionnaire was determined using correlation coefficient formula. The reliability of structured knowledge questionnaire was found to be 0.939. Hence, the structured knowledge questionnaire was deemed to be reliable.

After obtaining the permission from the concerned authorities, the investigator conducted the study with the selected subjects. The data collected were validated by using the reliable tools. The results of the pilot study were used to validate the consistency of the data collected, adequacy of the content, the instruments used, the feasibility and time duration required for the study. The investigator administered pre-test on day one followed by administering a structured teaching programme for three consecutive days starting from the day of the pre-test. On 7th day post-test was done by the researcher along with the practice assessment. The researcher then compared the level of knowledge among CKD patients who was categorised based on the knowledge score as above 75% adequate knowledge, 50% to 75% moderate knowledge and below 50% inadequate knowledge.

STATISTICAL ANALYSIS

The data obtained were statistically analysed using Statistical Package for Social Sciences (SPSS) version 22. The data obtained from the samples was analysed by using descriptive student's t-test was used for parametric data. Pearson Chi-square was used to explain the relationship between normally distributed quantitative variable. Descriptive statistics used were expressed as mean and standard deviation for quantitative data.

RESULTS

The study included 60 CKD patients. The study subjects were divided into two groups as experimental group and study group each containing 30 participants. The study included 16 patients (53.33%) is above 49 years of age in the experimental group and 11 (36.66%) in the control group. With regard to gender 18 (60%) of CKD patients were male in the experimental group and 21 (70%) in the control group. Educational status of the participants in the study group also reveals that 10 (33.33%) had education up to higher secondary level and 08 (26.66%) possessed education up to primary level in the control group. Occupational status of the study group reveals that 15 (50%) were unemployed and 11 (36.67%) in the privatesector in the control group [Table/Fig-1].

Along with CKD any other health problems, the study group of 28 (93.33%) had hypertension. In the control group 30 (100%) had hypertension. Regarding restriction on food or fluid by doctor in the study group of 29(96.67%) was yes. In the control group of 30 (100%) were yes. Regarding number of haemodialysis per week in the study group 29 (96.67%) had three times a week and 30 (100%) in the control group [Table/Fig-1].

Pre-test level of knowledge in the experimental group, 7 (23.33%) of patients had inadequate knowledge and 23 (76.67%) had moderate knowledge and in control group 2 (6.67%) had inadequate

Demographic variables	Experimental group (n=30)		Control group (n=30)	
	Frequency	Percentage	Frequency	Percentage
Age (In years)				
18-28	01	3.33	02	6.66
29-38	07	23.3	08	26.7
39-48	06	20	09	30
Above 49	16	53.33	11	36.66
Gender				
Male	18	60	21	70
Female	12	40	09	30
Transgender	0	0	0	0
Education				
Non formal Education	0	0	02	6.66
Primary	04	13.33	08	26.66
Secondary	10	33.33	07	23.33
Higher secondary	10	33.33	06	20
Graduate or above	06	20	07	23.33
Occupation				
Businessman	02	6.66	05	16.66
Government	02	6.66	04	13.33
Private	11	36.67	11	36.67
Labour	0	0	03	10
Unemployed	15	50	07	23.33
Monthly income in rupees				
≤5000	02	6.66	0	0
5001-10000	02	6.66	03	10
10001-15000	05	16.66	05	16.66
15001-20000	14	46.66	13	43.33
≥20001	07	23.33	09	30
Marital status				
Married	24	80	25	83.33
Unmarried	03	10	03	10
Widow/Separated	01	3.33	02	6.66
Widower/Separated	02	6.66	0	0
Family type				
Joint	26	86.7	27	90
Nuclear	04	13.33	03	10
Extended	0	0	0	0
Habit				
Smoking	01	3.33	03	10
Tobacco chewing	04	13.33	08	26.66
Alcohol consumer	03	10	01	3.33
Other	22	73.3	18	60
Religion				
Hindu	22	73.3	27	90
Muslim	02	6.66	02	6.66
Christian	0	0	0	0
Other	06	20	01	3.33
Along with chronic kidney disease any other health problem				
Diabetes mellitus	01	3.33	0	0
Hypertension	28	93.34	30	100
Any other if yes specify	01	3.33	0	0
Restriction on food or fluid by doctor?				
Yes	29	96.67	30	100
No	01	3.33	0	0
Number of haemodialysis per week				
Daily	0	0	0	0

1 time	0	0	0	0
2 times	01	3.33	0	0
3 times	29	96.67	30	100

[Table/Fig-1]: Distribution of sample characteristics according to socio demographic variables of participants.

knowledge, 27 (90%) had moderate knowledge and 1 (1.67%) had adequate knowledge. The [Table/Fig-2] shows in the post-test level of knowledge in the experimental group of 27 (90%) had adequate knowledge and 3 (10%) had moderately adequate knowledge. In control group, 28 (93.33%) had moderately adequately knowledge and 2 (6.67%) had inadequate knowledge.

	Level of knowledge	Experimental group		Control group	
		Number (30)	Percentage (%)	Number (30)	Percentage (%)
Pre-test	Inadequate (<50%)	7	23.33	2	6.67
	Moderately Adequate (50-75%)	23	76.67	27	90
	Adequate (>75%)	0	0	1	3.33
Post-test	Inadequate (<50%)	0	0	2	6.67
	Moderately Adequate (50-75%)	03	10	28	93.33
	Adequate (>75%)	27	90	0	0

[Table/Fig-2]: Frequency and percentage distribution on knowledge regarding therapeutic intervention among chronic kidney disease patient before and after administration of structure teaching Programme.

Post-test in the experimental group knowledge range was 10, mean was 27.36 ± 2.63 and the Post-test in the control group knowledge range was 09, mean was 17.73 ± 2.37 . The paired t-test was 12.90 greater than the tabulated 't' (2.05). This was statistically proved [Table/Fig-3].

In reference to the association of knowledge regarding therapeutic intervention among CKD patients with their demographic variables showed no significant association of knowledge score with their variables [Table/Fig-3].

DISCUSSION

CKD is one of the common conditions affecting up to 10% of the population in Western societies with limited data available on the prevalence of disease in India. In the present study it was found that many patients suffering from CKD do not have enough knowledge regarding therapeutic intervention. Large numbers of patients below poverty line, low gross domestic products, and low monetary allocations for healthcare have led to suboptimal outcomes. This could be one of major reasons for the higher prevalence observed in India. The present study emphasises the need to implement a program to introduce educational interventions to improve the knowledge and attitude of CKD patients.

Moreover, CKD and many other non-communicable diseases are often ignored in the face of persistent challenge competition for resources from communicable disease and a high infant and maternal mortality [10]. In the course of the present study the investigators opine that there is a need to identify each category of diseases and develop a comprehensive educational program in order to improve the life expectancy of such individuals.

The educative measure studied shows there is a significant improvement in knowledge regarding interventions among CKD patients. The post-test score of knowledge and attitude were highly significant when compared with pre-test score. However, the adequacy of knowledge depends also on the education levels the patients have received and various demographic factors associated with it. The factors such as age, sex, marital status, socioeconomic status and lifestyle habits are some of the confounding factors that influence the overall assessment of an individual.

Demographic variable		Post-test level of knowledge						Total	DF	χ^2	TV
		Inadequate		Moderately adequate		Adequate					
		F	%	F	%	F	%				
Age (in years)	18-28	0	0	0	0	1	3.33	01	3	1.032	7.82
	29-38	0	0	1	3.33	6	20	07			
	39-48	0	0	2	6.66	6	20	08			
	Above -49	0	0	0	0	14	46.7	14			
Gender	Male	0	0	2	6.66	16	53.4	18	1	0.62	3.84
	Female	0	0	1	3.33	11	36.7	12			
	Transgender	0	0	0	0	0	0	00			
Education	Nonformal education	0	0	0	0	0	0	00	3	7.41	7.82
	Primary	0	0	0	0	4	13.4	04			
	Secondary	0	0	1	3.33	9	30	10			
	Higher secondary	0	0	1	3.33	9	30	10			
	Graduate or above	0	0	1	3.33	5	16.6	06			
Occupation	Businessman	0	0	0	0	2	6.66	02	3	0.64	7.82
	Government	0	0	0	0	2	6.66	02			
	Private	0	0	1	3.33	10	33.4	11			
	Labour	0	0	0	0	0	0	00			
	Unemployed	0	0	2	6.66	13	43.4	15			
Monthly income in rupees	≤5000	0	0	0	0	2	6.66	02	4	3.81	9.49
	5001-10000	0	0	0	0	2	6.66	02			
	10001-15000	0	0	0	0	5	16.6	05			
	15001-20000	0	0	1	3.33	13	43.4	14			
	≥20001	0	0	2	6.66	5	16.6	07			
Marital status	Married	0	0	2	6.66	22	73.3	24	3	2.22	7.82
	Unmarried	0	0	1	3.33	2	6.66	03			
	Widow/Separated	0	0	0	0	1	3.33	01			
	Widower/Separated	0	0	0	0	2	6.66	02			
Family type	Joint	0	0	3	10	23	76.6	26	1	0.51	3.84
	Nuclear	0	0	0	0	4	13.3	04			
	Extended	0	0	0	0	0	0	00			
Habit	Smoking	0	0	1	3.33	0	0	01	3	9.79	7.82
	A.Tobacco chewing	0	0	0	0	4	13.3	04			
	B.Alcohol consumer	0	0	0	0	3	10	03			
	C.Other	0	0	2	6.66	20	66.6	22			
Religion	Hindu	0	0	2	6.66	20	66.6	22	2	4.24	5.99
	Muslim	0	0	1	3.33	1	3.33	02			
	Christian	0	0	0	0	0	0	00			
	Other	0	0	0	0	6	20	06			
Along with chronic kidney disease any other health problem	A. Diabetes mellitus	0	0	0	0	1	3.33	1	2	0.23	5.99
	B. Hypertension	0	0	3	10	25	83.4	28			
	C. Any other if yes specify	0	0	0	0	1	3.33	1			
Restriction on food or fluid by doctor?	A. Yes	0	0	3	10	26	86.6	29	1	0.11	3.84
	B. No	0	0	0	0	1	3.33	1			
Number of haemo-dialysis per week	Daily	0	0	0	0	0	0	0	1	0.11	3.84
	1 time	0	0	0	0	0	0	0			
	2 times	0	0	0	0	1	3.33	1			
	3 times	0	0	3	10	26	86.6	29			

[Table/Fig-3]: Association between post-test knowledge score among Chronic Kidney Disease (CKD) patient with their selected demographic variable.
 χ^2 : Chi-square, TV: Table value of Chi-square.

The study findings were consistent with the findings of Isarannavar GS et al., who described the role of dietary management. According to them 66.6% of dialysis patients had an average knowledge and about 53% of had good attitude regarding their dietary management. Their findings also revealed that 66.66% had moderately adequate knowledge; 20% had highly adequate knowledge about dietary

management [11]. In the present study 86.6% of the study population had adequate information regarding the dietary restrictions and about 66% of the study population were in agreement pertaining to improving lifestyle adjustments against CKD.

Present study findings are also supported by the study of Sherly K which was also a quasi-experimental study [12]. The effectiveness

of STP on knowledge and attitude regarding lifestyle modification among patients with CKD were established in their study. Their study revealed a significant association of knowledge and attitude of CKD patients to be improved after lifestyle adjustments. The result of present study are in concordance with the use of an effective way to develop a structured teaching programme to improve the knowledge of patients undergoing haemodialysis. This would in turn help in preventing the life threatening disease from further causing complications and prolonging their life expectancy.

Limitation(s)

A limitation of this study is small sample size and limited duration of time taken into account, all the confounding factors associated with STP.

CONCLUSION(S)

Providing the structured teaching programme, regarding therapeutic intervention among CKD patients, the level of knowledge was found to have increased in the study subjects. Despite limitations the study provides a meaningful insight into the possible intervention which can be provided to CKD patients. The study emphasises the practical clinical value and provide opportunities for future research. A similar study can be conducted using a larger sample size to develop broad generalisation in different settings using different demographic variables and different teaching techniques.

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