Tribhuvan University Journal
Vol. 39, No. 2: 64-74, December 2024
Research Directorate, Tribhuvan University (TU),
Kathmandu, Nepal
DOI: https://doi.org/10.3126/tuj.v39i2.72879

EDUCATIONAL INTERVENTION ON SELF-CARE AMONG CHRONIC KIDNEY DISEASE PATIENTS UNDERGOING HAEMODIALYSIS IN A TERTIARY HOSPITAL OF KATHMANDU, NEPAL

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Received date: 19 March 2024 – Accepted date: 01 July 2024

ABSTRACT

Introduction: The burden of chronic kidney disease (CKD) is increasing globally, and educational intervention for the CKD patients is crucial to self-manage the problems arising from disease and haemodialysis. The study aims to assess the effect of educational intervention on self-care among chronic kidney disease patients undergoing haemodialysis.

Methods: The pre-experimental design was used for assessing the effect of educational intervention on self-care among CKD patients undergoing haemodialysis in Tribhuvan University Teaching Hospital. A total of 43 patients were included using the nonprobability purposive sampling technique. Face-to-face interviews with a structured interview schedule were conducted for data collection followed by educational intervention with an educational package for each individual. After 6 weeks of intervention, a post-test was carried out with the same interview schedule for the same participants who participated in the pre-test and intervention. Both descriptive and inferential statistics were used for the interpretation of data. Inferential statistics- paired t- test was used to measure the significant difference in knowledge score on self-care before and after educational intervention.

Results: The findings of the study showed significantly increased knowledge score after the intervention in diet (p=0.001), exercise (p=0.001), infection prevention (p=0.001), stress management (p=0.001), complication prevention (p=0.001), laboratory test (p=0.001) and total knowledge score (p=0.001) with 95.0% confidence level (p-value<0.05). However, in fistula care the score increased insignificantly (p-value: 0.250).

Conclusions: Educational intervention increased the knowledge score, so it is obligatory to conduct the intervention program for improvement in self-care among chronic kidney disease patients undergoing haemodialysis.

Keywords: chronic kidney disease, educational intervention, haemodialysis, knowledge, pre-test, post-test, self-care

INTRODUCTION

In recent years, kidney-related health problems have been emerging as a major public health problem in the World. Globally, over 850 million people are affected by chronic kidney disease (CKD), which claimed over 3.1 million deaths in 2019. Kidney disease is currently the eighth greatest cause of mortality; if proper treatment is not received, it is expected to become the fifth major cause of mortality by 2040 (Superuser, 2024; Stalin, Purty & Abraham, 2020). The United States' Information System stated that about 90% of patients with chronic kidney disease are undergoing haemodialysis (Almutary, Douglas & Bonner, 2016). Haemodialysis is one of the treatment options for the longevity of the patient, which affects their daily life from different perspectives (Smeltzer, Bare, Hinkle & Cheever, 2010). CKD patients treated with haemodialysis encountered so many complications like hypotension, muscle cramps, rigors hypoglycaemia, anaemia, itching, arrhythmias, oedema and so on (Patil, Yelke, Salame & Madavi, 2023). Effective self-care is crucial for people with CKD stages 3-5 in especially due to the complexity of the daily routines that must be followed by them. Patients who practice self-care must assume accountability for their daily health care (Lorig & Holman, 2003).

In Nepal, Renal diseases affect an estimated 3 million people (10% of the total population). This number keeps going up, which puts a heavy burden on the healthcare system. Approximately 3,000 new CKD patients are added every year and 8, 000 CKD patients are undergoing haemodialysis within the country. Similarly, some CKD patients underwent kidney transplantation (Nepal Today Magazine, 2024). Proper counselling and health awareness programs are essential aspects for maintaining good health among CKD patients treated with haemodialysis. Summaries of evidence on self-care interventions for this population are lacking in Nepal, which

requires of addressing this issue. Health care providers are required to teach knowledge and skills on self-care for CKD patients so that they perform their skills on their own as well as to deal with the problems (National Kidney Foundation Primer on Kidney Diseases, E-Book, 2022). The aim of this study therefore to assess the effect of educational intervention on self- care knowledge among CKD patients undergoing haemodialysis.

MATERIALS AND METHODS

Pre-experimental (one group: pre-test post-test) design was adopted, where pre-test; intervention, and post-test experiments were carried out to measure the effect of educational intervention. A sample of 43 CKD patients under haemodialysis attending at Haemodialysis unit of Tribhuvan University Teaching Hospital (TUTH), Maharajgunj were included using a non-probability, purposive sampling technique. Both males and females, aged above 20 years' have undergone haemodialysis for at least 2 times after initiation of haemodialysis had been included in the study. Patients having dementia and severe functional impairment, critically ill were excluded from the study.

The instrument consisted of two parts: Part I included socio-demographic variables such as age, sex, level of education, marital status, employment status, economic status, type of family, health and habits related information. Part II consisted of dietary and fluid precautions, body weight, blood pressure, physical activities and exercises, prevention of infection, minimization of stress, prevention of haemodialysis-related complications, laboratory tests, and care of fistula.

A structured interview schedule for data collection and the educational package for intervention were developed by the researchers themselves through an extensive literature review and by consulting the subject experts, nephrologists, dieticians, and hemodialysis nurses. The instrument was pretested among 5 (10% of the total sample) CKD patients who were under haemodialysis in Bir Hospital, Kathmandu to identify the accuracy, adequacy and completeness. On the basis of pretesting, the instrument was modified and finalized for data collection.

The educational package consists of the introduction of CKD and hemodialysis, dietary and fluid management, rest, sleep and exercise, care of the fistula, medications, laboratory tests, symptoms management, control of disease progression, stress minimization, prevention of complications, key messages to maintain a healthy life. One-day workshop was held for the finalization of educational package participating by Nephrologists,

Dieticians, Hemodialysis Nurses, Subject experts, and other concerned authorities. Ethical approval Ref: 400(6-11-E)[2] was obtained from the Institutional Review Committee (IRC) of Institute of Medicine (IOM, TU). Written informed consent was obtained from each participant after explaining the purpose of the study. Privacy and confidentiality were maintained. The participants were not forced and they were given freedom to withdraw from the study without any fear or clarification at any time during the study.

The data was collected in two phases: Pre-test or pre-intervention phase and post-test or post-intervention phase. Face-to-face interviews were carried out to 3-5 patients per day on average. For educational intervention, one-and-a-half-hour interactive teaching session was conducted for each individual for the same patients who participated in the pre-test phase. Educational materials such as leaflets in Nepali language and real materials like soft handball for the exercise of the fistula hand were used during the intervention phase. Intervention session was conducted in morning and evening shifts and for 2-3 patients on average per day. After 6 weeks of intervention, a post-test was done to the same patients who participated in the pre-test and educational intervention phase. The duration of the study period was 2 years (January, 2018 to January, 2020).

Regarding the involvement of participants (subjects) in the study, 43 participated in the pre-test, among them, 2 died, and 2 underwent for renal transplantation. The rest of participants, 39 participated in the educational intervention. After that, again 2 died, and 2 were transferred to another hospital. So, at last, a total of 35 participated in the post-test.

All data was organized, coded, classified, and entered in Microsoft Excel 2007 and then analysed by Statistical Package for Social Science (SPSS) version 20. Both descriptive and inferential statistics were used for the interpretation of data. Frequency, percent, relevant mean, and standard deviations were calculated for the descriptive analysis. Inferential statistics paired t-test was used to measure the significant difference on self-care knowledge score among CKD patients under haemodialysis before and after the educational intervention. The correct response was marked one, and the incorrect response was marked zero.

RESULTS

The majority of participants belong to age 20-39 and 40- 69 years in both pre-test (44%) and post-test (43%) and most of them were male

comprising about 69%. The distribution shows most of them studied up to SLC accounting for 58.1% and 65.7%. Most of them were unemployed accounting for 76.7% and 85.5% while most of their income was enough for 6-12 months with 53.5% and 51.4%. Most of the participants belong to a nuclear family accounting for about 79% and 86%. Similarly, more than half (69%) belong to urban areas (Table 1).

The majority 69% (pre-test) and 80%(post-test) are to be non-vegetarian and the majority of their weight ranges between 50-64 kg accounting for 60.5% and 54.3% in pre-test and post-test respectively. Most of them were hypertensive comprising 86% in systolic while for diastolic about 65% were normotensive in pre-test and 63% were hypertensive in post-test (Table 2).

Table 1

Socio-demographic Characteristics of the Respondents

Variables	Pre-test (n=43) n (%)	Post-test (n=35) n (%)
Age		
20-39	19(44.2%)	15(42.9%)
40-69	19(44.2%)	15(42.9%)
60 and above	5(11.6%)	5(14.2%)
Sex		
Male	30(69.8%)	24(68.6%)
Female	13(30.2%)	11(31.4%)
Level of education		
Unable to read and write	7(16.3%)	4(11.4%)
Up to School leaving certificate (SLC)	25(58.1%)	23(65.7%)
Proficiency certificate level (PCL)	5(11.6%)	3(8.6%)
Bachelor's and above	6(14%)	5(14.3%)
Employment status		
Unemployed	33(76.7%)	30(85.8%%
Employed	10(23.3%)	5(14.2%)
Household income		
Enough for <6 months	18(41.9%)	16(45.7%)
Enough for 6-12 months	23(53.5%)	18(51.4%)
Enough for >12 month	2(4.7%)	1(2.9%)
Type of family		
Nuclear	34(79.1%)	30(85.7%)
Joint	9(20.9%)	5(14.3%)
Area of residence		
Rural	13(30.3%)	11(31.4%)
Urban	30(69.8%)	24(68.6%)

Table 2

Personal Health and Habits of the Respondents

Variables	Pre-test (n=43) n (%)	Post-test (n=35) n (%)
Dietary pattern		
Non-vegetarian	30(69.8%)	28(80.0%)
Vegetarian	13(30.2%)	7(20.0%)
Current weight in Kg		
Up to 49	11(25.6%)	7 (20%)
50-64	26(60.5%)	19(54.3%)
65 and above	6(14.0%)	9 (25.7%)
Current systolic blood pressure in mm of Hg		
Normotensive	6(14.0%)	5 (14.3%)
Hypertensive	37 (86.0%)	30(85.7%)
Current diastolic blood pressure in mm of Hg		
Normotensive	28(65.1%)	13(37.1%)
Hypertensive	15(34.9%)	22 (62.9%)
Smoking status		
Ever smoking	21(48.8%)	15(42.8%)
Number of cigarettes smoked/ day	**(n=21)**	**(n=15)**
Up to 5 sticks	13(61.9%)	10(66.6%)
6-10 sticks	3(14.3%)	3(20.0%)
More than10 sticks	5(23.8%)	2(13.3%)
Status of alcohol consumption		
Ever drinking	22 (51.16%)	16(45.7%)
Amount of alcohol consumed/ day	**(n=22)**	**(n=16)**
Up to 250 ml	14 (63.7%)	10(62.5%)
251-500 ml	5(22.7%)	4(25.0%)
More than 500 ml	3(13.6%)	2(12.5%)

The study findings demonstrate a comparison of mean scores of knowledge on different aspects of self-care management in pre-test and post-test using paired t-test. There are significant differences in knowledge on diet (p=0.001), exercise (p=0.001), infection prevention (p=0.001), stress management (p=0.001), haemodialysis complication prevention (p=0.001), laboratory test knowledge (p=0.001) and total knowledge score (p=0.001) at 95.0% confidence level (p-value<0.05). However, in fistula care the score had been increased insignificantly (p-value: 0.250) (Table 3).

Table 3

Comparison of Mean Score of Knowledge on Different Aspects of Self- care

Knowledge score	Pre-test (n=43) Mean (±SD)	Post-test (n=35)	Test value (t)	95% CI for Mean Difference	p-value
Diet knowledge score	63.43±9.347	88.06±4.55	-14.510	-28.078 --21.179	0.001*
Exercise knowledge score	7.05±2.716	10.46±1.704	-6.745	-4.424- -2.376	0.001*
Fistula knowledge score	12.28±2.292	13.34±1.679	-2.345	-1.973- 0.141	0.250
Infection prevention knowledge score	2.69±1.471	4.03±0.747	4.999	1.889-0.797	0.001*
Stress management knowledge score	1.46±1.482	4.29±1.045	9.347	3.444-2.214	0.001*
Complication prevention knowledge score	4.31±3.187	6.600±1.718	3.889	3.480-1.091	0.001*
Laboratory Test knowledge score	2.714±1.856	6.200±0.797	10.136	4.184-2.786	0.001*
Total knowledge score	96.83 ± 19.001	139.26±6.577	-13.003	-.49.060, -35.979	0.001*

DISCUSSION

The finding of the study reflected educating patients in different aspects of self-care like diet, rest, sleep and exercise, fistula care, complication prevention, and stress management have highly statistically significant differences in knowledge scores after educational sessions. In the present study, total mean knowledge score was 96.83 ± 19.001 to 139.26±6.577(p= 0.001), it is consistent with the findings of the previous researchers which showed improvement in self-care behavior the mean score of awareness of Hemodialysis in intervention significantly increased from 7.77±1.69 to 9.74±0.50(P< 0.001), after employing the educational program (Ramezani, Sharifirad, Rajati, Rajati & Mohebi, 2019). Nowadays, intervention by applying an educational app on hemodialysis patients regarding self-care, the result showed score on self-care significantly improved($p<0.001$) (Hosseini, Jackson, Chegini, Dehghan, Mazloum, Haghani & Bahramnezhad, 2023). In the same way, one study intervened using cognitive behavioural strategies for improvement in self-care, and findings depicted participants had a positive impression of the intervention (Shirazian, Smaldone, Jacobson, Fazzari & Weinger, 2023).

The present study documented a significant increase in the mean score of knowledge on diet after the educational session. The study is in line with the findings of other several studies which revealed improvement in nutritional knowledge scores after nutritional counselling sessions with an increase in practice with the dietary modification (Hegazy, Raghy, Abdel Aziz & Elhabashi, 2013; Deif, Elsawi, Selim & Nasr Allah, 2015; Sharaf 2016).

The study by Mohamed (2014) concluded that educational sessions for patients with haemodialysis can improve fatigue and physical capacity (Egypt & Mohamed, 2014) Likewise, Borzou and others (2016) identified improved physical activity after the intervention (Borzou, Zonoori, Falahinia & Soltanian, 2016). Similarly, the findings of Ramezani and colleagues showed an improved in rest and activity self-care scores after the conduction of the session (Ramezani, Sharifirad, Rajati, Rajati & Mohebi, 2019). The finding is the same with the present study which showed statistically significant difference in the mean score in rest and exercise after the intervention.

Ahmed Atalla and others documented highly statistically significant differences in knowledge about AVF that was noticeably improved after the intervention (Atalla, Soliman & Sallam, 2019) Another study also identified improved patients' local problems of vascular path after training program (Shahram Mohammadi & Boroumand, 2008; Atashpeikar, Jalilazar & Heidarzadeh, 2012).

Patients' ability in self-care regarding taking care of vascular accesses recorded favourable response (Atashpeikar, Jalilazar & Heidarzadeh, 2012). In contrast to the finding of these several studies, the present study did not show significant difference in the fistula care though the mean score was high after the intervention.

The educational programme aids to reduce anxiety and depression in hemodialysis patients (Sharaf, 2016; Espahbodi, Hosseini, Mirzade & Shafaat, 2015). Also, in this study, the aspect of stress management found that the score was significantly high after the educational session. The self-care score in the mental health area increased significantly after training of self-efficacy strategies that have led to reduced psychological problems especially depression and anxiety among these patients ((Ramezani, Sharifirad, Rajati, Rajati & Mohebi, 2019).

CONCLUSION

The present study concluded that significant improvement in knowledge scores after educational intervention on self-care; diet, exercise, infection prevention, stress management, complication prevention and laboratory test except for fistula care. It indicates the need to conduct educational program on self-care focusing on fistula care. However, further experimental studies with a control group design can be conducted to control the confounding effect on knowledge regarding self-care.

Limitation: It is a single-centre study with one group pre-experimental design without a control group.

Conflict of Interest: None.

ACKNOWLEDGEMENTS

It is acknowledged to University Grants Commission (UGC), Nepal to provide financial support for the study. Similarly, we are thankful to all participants and Haemodialysis Ward and TUTH management for their kind cooperation for the study. Acknowledged the language experts Ms. Bipasha Gupta and Mr. Anil Kumar Sah helped in preparing the interview schedule and educational package in English and Nepali.

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