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EFFECTIVENESS OF EMPOWERMENT PROGRAM ON QUALITY OF LIFE AND SELF EFFICACY OF PATIENTS UNDERGOING HEMODIALYSIS TREATMENT

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Abstract

Background: Chronic kidney disease prevalence is very high. Almost one out of ten people are involved globally. CKD causes a high burden on patients' physical and psychological health. Hemodialysis patients have various physical, emotional, and social health issues. Empowerment initiatives may facilitate behavioral improvements and general health.

Objective: To evaluate the effectiveness of the empowerment program on quality of life, self-efficacy, and clinical indicators of patients undergoing hemodialysis treatment.

Methodology: This was a single group pre-post quasi-experimental study. Study was conducted in three tertiary care hospitals on patients undergoing hemodialysis treatment. A total of sixty participants were selected. Patients having at least three months of dialysis were included. Quality of Life Satisfaction Index and Strategies Used by People to Promote Health were used to determine the study outcome. Quality of life and self-efficacy were measured before and after eight sessions of the empowerment program interventions.

Results: The study finding shows mean difference (Mean ± SD) in quality of life was found before (99.75±10.3) and after (132.35±5.4), and also in self-efficacy before (72.2±8.7) and after (110.95±7.8). There was a significant difference in the pre-and post-quality of life and self-efficacy with a p-value of <0.001. There was also a significant difference in the study participants' systolic blood pressure p-value <0.001, diastolic blood pressure p-value <0.01, heart rate p-value <0.03, and oxygen saturation p-value <0.02.

Conclusion: Quality of life and self-efficacy were low in hemodialysis patients. The educational sessions have been used to improve their quality of life and self-efficacy. The empowerment

program was highly effective and positively affected patients' quality of life and self-efficacy undergoing hemodialysis treatment.

Keywords: *Chronic Kidney Diseases, Hemodialysis, Quality of Life, Self-Efficacy, Empowerment Program*

Introduction

Chronic Kidney Disease (CKD) is defined as the presence of an abnormality in kidney structure or function persisting for more than 3 months. CKD is more prevalent worldwide and has a high economic burden on patients, caregivers, and payers (Wang et al., 2016). Chronic kidney disease is a widespread disease around the globe with a prevalence of 9.1% (697.5 million cases), which causes 1.2 million deaths and is the ninth top reason for death globally (Lai et al., 2021, Lee et al., 2021a). The prevalence of chronic kidney disease increases with age and, in high-income countries, is more common in people with obesity, diabetes, and hypertension(Kalantar-Zadeh et al., 2021). Similarly, the disease also had a wide prevalence range in developed countries. According to a research study, more than 10 % of the population in the USA, Australia, and Norway have kidney diseases (Bikbov et al., 2020, Venuthurupalli et al., 2018). Another study in the United States stated that 2.38 million individuals live with CKDs (Joboshi and Oka, 2017). Likewise, In the United Kingdom, the prevalence of CKD is higher, with an estimated rate of 15% among adults of age 34 or above (Hirst et al., 2020). The study had also been founded a greater prevalence in Asia. According to a study, 31 million of the Japanese population are fighting kidney diseases(Joboshi and Oka, 2017). The treatment option for ESRD is to maintain hemodialysis, fluid intake protocols, medication, and lifestyle changes(Lai et al., 2021). Since the last 50 years in the field of medical treatment, hemodialysis has evolved as a life-extending treatment for patients and is one of the common treatment modalities for patients having ESRD (Lai et al., 2021, Wong et al., 2015). It is a process in which excess fluid and wastes are removed from blood using a membrane or a medical machine instead of the kidney as a filter (El-Melegy et al., 2016). Hemodialysis is an ongoing treatment for people with ESRD used worldwide. Hemodialysis is associated with psychological disorders like anxiety, depression, isolation, denial, sleep disorders, and delusion(Aghajani et al., 2020b, Poorgholami et al., 2016). All these abnormal conditions and changes in one's health can affect the person's quality of Life (QoL) and Self-Efficacy (SE) (Mohamad Bayoumy and Care, 2017).

Self-efficacy (SE) is a key predictor of self-management in ESRD patients (Lai et al., 2021). Self-Management is a practice in which a person manages his health care and daily activities, which promotes QoL and SE (Cheng et al., 2020). Self Management has a strong impact on patients with ESRD associated with elevated mortality (Lai et al., 2021). Self-Management of patients with ESRD can be best achieved through strengthening Self-efficacy (Lee et al., 2021a). Low Self - Efficacy increases problems for the patient, while high Self-Efficacy improves the management abilities of patients that improve the QoL of patients. In kidney diseases empowerment interventions, patients improved their QoL, adherence to medication, blood pressure, and interdialytic weight gain (Baumgart et al., 2020). Care interventions such as introducing patients to nutrition, physical exercise and self-care in the presence of family members, as well as guide him/her to check their weight, edema and blood pressure at home for complete record enhance SE. Instantly its being advise to the patients to keep a balance of physical activities and rest. The personal skills trainings for taking care of themselves have been found highly effective and promotive in patients with hemodialysis(Aghajani et al., 2020b).

Different models have been used to reduce the physiological and psychological burdens on patients and promote their Quality of life and Self Efficacy. BASNEF (Beliefs, Attitude, Subjective Norms, and Enabling Factors) (Aghajani et al., 2020b) is one among them to enhance the QoL and SE of the patients undergoing hemodialysis treatment.

Methodology

Study Design

The current study was a single group pre-post quasi-experimental study design to determine the empowerment program's effectiveness on QoL, SE, and clinical indicators of patients undergoing hemodialysis treatment. The study was conducted in three tertiary care teaching hospitals. Hospitals were selected from both the public and private sectors. The study was conducted in the dialysis units of the following hospitals.

1: Ziauddin University Hospital, North Nazim, Abad Karachi

2: Tabba Kidney Institute, Karachi.

3: Abbasi Shaheed Hospital, Karachi.

The populations in the current study were the patients who underwent hemodialysis treatment for the last three months. The study was carried out and completed in 4 months, from August 2022 to December 2022, after the approval from Board of Advance Studies and Research (BASR). A consecutive sampling technique was used to approach the study participants.

Data were analyzed by IBM SPSS Statistics version 22. For descriptive analysis, mean (s.d)) was used. Frequency and percentages were calculated for demographic variables (categorical variable). Furthermore, Paired T test was used for pre and post analysis. The inclusion criteria of the study were: The participant receiving hemodialysis for the last three months, Participants whose QoL and SE were low or moderate were included, Age of 18 years or above, Patients with AV fistula and receiving hemodialysis and Chronic renal failure patients.

The data was collected through valid and reliable tools. Permission has been granted for both tools. Both the study questionnaires QoL Index and SUPPH were translated from English to Urdu through two English experts and then translated back from Urdu to English, to make it possible for easily understanding to the participants.

The researcher used the SUPPH 29 items tool for the SE of patients undergoing hemodialysis treatment. It is a Likert scale from 1 to 5, patients with scores ranging from 1 to 3 were put in low or moderate SE. Those scoring from 4 to 5 had high SE and were excluded from the study. (Total numbers of the items were 29 and no any subscales were used).

In the current study the tool was translated from English to Urdu and was checked back to English from Urdu to follow the procedure of translate and re-translate tools. A pilot study was conducted on the tools for the reliability of the tool and the chronbach's alpha was 0.83. While, the Content Validity Index (CVI) of SUPPH was checked by seven panel experts working in dialysis unit. CVI for the relevance is 0.812 and for clarity 0.81.

The QoL Index 34 items questionnaire was used in the current study for patients QoL. It is a Likert scale rating from 1 to 6 satisfactory levels. Those patients falling in satisfactory level of 1, 2, 3, and 4 were included in the study. The QoL was assessed via the determination and utilization of a valid and reliable tool. The tool was adopted from (Moattari et al., 2012) and permission was being granted from the primary author. In the pilot study the statistical result showed the reliability value of r=0.93. Similarly the CVI was assessed via the 7 panel expert for Urdu version of the questionnaire. The CVI for relevance in Urdu was 0.843 and for clarity was 0.84.

Data were collected after formal permission from the competent authorities. The study was conducted in three-phase. Pre-interventional phase, Interventional phase, and Post-interventional phase. First we take data before intervention to determine the participants who can fall in inclusion criteria. After that the participants who were eligible were included and interventions were given to them. On completion of the interventions then the data were taken to assess the effectiveness of empowerment program.

Participants were recruited from three different hospitals of both of public and private setup. Before selecting the participants pre-assessment were done to evaluate, who should be included in interventions. 47 participants from Ziauddin University Hospital North Nazimabad were approached, 25 patients from this hospital were excluded and only 22 were selected for interventions. Similarly 67 patients in Tabba Kidney Institute were approached and 41 patients were

excluded from here and only 26 patients were recruited for intervention. In the same way 20 patients from Abbasi Shaheed Hospital were approached 8 patients were excluded and only 12 patients were enlisted for interventions. Different confounding factors such as diabetes, hepatitis B & C and other chronic diseases have been noted during our data collection. However these confounders have been addressed by expanding the exclusion criteria.

In the pre-interventional phase, Informed consent was signed by participants, and the research aim was explained to them. The pre-intervention questionnaire was filled out by all the participants above 18 years who are undergoing hemodialysis. Those participants whose QoL and SE were low or moderate were recruited for the study.

In the interventional phase of the study, participants were separated into 8 different groups. In each group, there were 7 to 8 participants. Two sessions were given to each group in a week for four weeks. One session was given in the morning to one group, and the same was given to another in the evening. The time for each interventional session was 40 minutes. BASNEF Model was utilized for interventions.

After completing the interventions, a post-interventional questionnaire was filled out by participants to assess the effectiveness of Empowerment Program on QoL and SE of the study participants.

The primary researcher gave the interventions. The participants were allocated into groups based on their dialysis time. Those selected participants coming at the same time on the same day were put in the same group. A total of 134 patients were approached for the study. Only 118 patients wished to participate in the study, and they filled out the questionnaires. Out of 118 participants, according to researcher inclusion criteria and sample size, only 60 participants were selected for interventions.

Ethical research guidelines were strictly followed for study conduction purposes. Written permission was taken from concerned authorities. After that, permission was also taken from the concerned authority of study settings. Moreover, written informed consent was signed by each study participant to ensure their participation.

Results

Sixty patients participated in the study, in which the response rate of the participants was 100%. Among the 60 subjects of the study, 33 (55%) were female, and 27 (45%) were male. Majority 31(51.7%) of study participants age were between 31 to 45 years, Similarly, 49 (81.7%) subjects were married while the remaining 11 (18.3%) were un-married. Most participants lived in joint family 41(68.3%) whereas 19 (31.7%) lived in a unit family. Moreover, half 32 (53.3%) of the participants' education level were primary or middle, while 13(21.7%) subjects were passed the secondary or higher level, and the uneducated were 10 (16.7%), whereas 5(8.3%) undergraduate or above. (see table 1)

Likewise, the socio-economic status of study participants was based on monthly income; 23 (38.3%) participants' incomes were less than 50 thousand, 21 (35%) were from 50 thousand to 100 thousand, and 16 (26.7%) were more than 100 thousand. Utmost the study participants, 47 (78.3%) were unemployed, 9(15%) were employed, and 4(6.7%) had their businesses.

Similarly, half 31(51.77%) of the participants were living in their own houses, 22(36.7%) were in rented houses, and 7(11.7%) belonged to the class of other. Participants with Self-supported were 36 (60%), those supported by the government were 11 (18.3%), private company supported were 8 (13.3%), and participants belonging to others supporter 5 (8.3%).

Table 1: Demographical Characteristics of the Study Participants

N= 60 (100%)		Frequency	Percentage
1	Age of the participants 18 to 30 31 to 45 46 to 60 and above	 8 31 21	 13.3 51.7 35
2	Gender of the participants Male Female	 27 33	 45 55

3	Marital status of the participants Single Married	 11 49	 18.3 81.7
4	Family status of the participants Unit family Joint family	 19 41	 31.7 68.3
5	Educational status of the participants Uneducated Primary or middle Secondary or higher Graduate or above	 10 32 13 5	 16.7 53.3 21.7 8.3
6	Socio-economic status of the participants 50 thousand PKR or below per month From 50 to 1 lac per month Above one lac	 23 21 16	 38.3 35 26.7
7	Occupation of the participant Employed Unemployed Own business	9 47 4	15 78.3 6.7
8	Living status of the participants Home owner Rent Other	 31 22 7	 51.7 36.7 11.7
9	Financial support of the participants Government Private company Self Others	 11 8 36 5	 18.3 13.3 60 8.3
10	Family support to participants Available	 60	 100

According to the study findings, 39 (65%) were active, 16 (26.7%) were calm, and 5 (8.3%) were energetic in response to the question, "How do you rate yourself." Similarly, 24 (40%) participants said they avoid the situation, 23 (38.3%) said they stay calm, and 13 (21.7%) said they get hyper and loud during such situation in response to the question "how do you handle the tense situation." Likewise, 40(67.7%) responded "only when needed," 12(20%) replied "sometimes social," and 8 (13.3%) were very social to the question "how do you rate yourself to be social." The duration of dialysis was asked of the study participants 45 (75%) proposed that they had started dialysis last year, and some of the subjects, 8 (13.3%), replied that they had started dialysis for more than one-year duration. Only 7 (11.7%) said that they had started dialysis since the last six months. All the study subjects were asked about the dialysis cycles per week 43 (71.7%) presented with three cycles per week, while 17 (28.3%) participants answered with two dialysis cycles per week.

Table 2 Personal History of Study Participants

	SUPPH means± SD		
	N=60 (100%)	Frequency	Percentage
1	How do you rate yourself • Active • Calm • Energetic	 39 16 5	 65 26.7 8.3
2	How do you handle tense situation? • Stay calm • Avoid the situation • Get hyper and loud	 23 24 13	 38.3 40 21.7
3	How do you rate yourself to be social? • Very social • Only when needed	 8 40 12	 13.3 66.7 20

	• Some time		
4	Dialysis starts from		
	• Last 6 months	7	11.7
	• Last one year	45	75
	• Above one year	8	13.3
	Dialysis cycle per week		
5	• Two time	17	28.3
	• Three-time	43	71.7
6	Body Mass Index		
	<18.5 Underweight	0	0
	18.5-24.9 Normal	58	96.7
	25-29.9 Overweight	2	3.3
	>30 Obese	0	0

3 Clinical Information of Patients

This section reveals the clinical parameters of the patients by computing the Systolic Blood Pressure (SBP) in mmHg, Diastolic Blood Pressure (DBP) in (mmHg), heart rate in beats per minute (b/minute), Oxygen Saturation in percent (%), Interdialytic weight gain in kilogram (kg) and temperature in centigrade (℃).

Four parameters of the clinical indicators showed significance which includes SBP (p-value<0.001), DBP (p-value<0.001), Heart rate p-value<0.03), and Oxygen saturation p-value<0.02. see table (3). On the other hand, there was no significant difference in participants' interdialytic weight gain and temperature, and the p-value were 0.78 and 0.42, respectively. The results are shown in Table 3.

Table 3 Effectiveness of Empowerment Program on clinical indicators of Participants.

	Clinical Indicators	Pre	Post	P-value
1	Systolic Blood Pressure (SBP) (mmHg)	138±12.05	124±16.6	<0.001
2	Diastolic Blood pressure (DBP) (mmHg)	84±8.3	78±11.29	<0.01
3	Heart Rate (Beats/minute)	85±12.0	82±4.5	<0.03
4	Oxygen Saturation (Percent)	95±2.01	95±1.78	<0.02
5	Interdialytic weight gain in kilogram (kg)	2.6±0.5	2.58±0.4	0.78
6	The temperature of the participant (Centigrade**℃**)	37.03±0.78	37.15±0.8	0.42

Paired T-test has been applied.

P-value ≤0.05 is considered significant

The QoL and SE in public and private hospitals were compared as shown in the table below. The pre-interventions QoL and SE in private hospital were 72.2 ± 8.7 and 99.75 ± 10.3 while the post interventions score were increased to 110.95 ± 7.8 and 132.35 ± 5.4 respectively with a significant p-value < 0.001. Similarly the QoL and SE in public hospital were also determined. The pre-interventions QoL and SE in public hospital were 67.3 ± 7.9 and 97.46 ± 9.21, while the post QoL and SE were107±7.6 and 130.34 ± 6.4 respectively with significant p-value of <0.001. Table 4

Variable	**Private Hospital**			**Public Hospital**		
	pre	**Post**	**Sig.**	**Pre**	**Post**	**Sig.**
QoL	74.25±8.7	111.41±7.8	<0.001	67.3± 7.9	107.63±7.6	<0.001
SE	100.27±10.3	134.35±5.4	<0.001	97.23±9.21	127.34±6.4	<0.001

Paired T-test has been applied.

P-value ≤0.05 is considered significant.

4 Effectiveness of Empowerment Program on Quality of Life and Self-efficacy

The Strategies Used by People to Promote Health score was calculated to determine the mean differences among the pre and post-data. The study result showed the mean score in the pre-data of SUPPH was 72.2 ± 8.7, while the post mean score was 110.95 ± 7.8 (P-value<0.001). Similarly, in the Quality of life, the pre-mean scores were 99.75 ± 10.3 while post mean scores were 132.35 ± 5.4 (P-value<0.001). The findings have also been displayed in table 4 for better understanding.

Table 4: Effectiveness of Empowerment Program on Quality of Life and Self-efficacy

N = 60	Mean ± Standard Deviation			
	Pre	Post	Mean Difference	P-value
SUPPH	72.2±8.7	110.95±7.8	38.75±10.94	<0.001
QOL	99.75±10.3	132.35±5.4	34.61±10.56	<0.001

Paired t-test has been applied

P-value ≤0.05 is considered significant.

Discussion

In the current study, personal history showed improvement in the patient's positive attitude toward their health-seeking behavior. A similar finding was shown in a study conducted in Vietnam (Nguyen et al., 2022). At present, 71.7% of the subjects were on three dialysis per week, and 28.3% were on two times per week; the results were consistent with one of the international study in which 81% of participants were on three cycles per week, and 19% were on two cycles per week (Berma et al., 2021).

Clinical indicators of the result showed that the empowerment program was helpful in maintaining blood pressure and other health markers and that these improvements occurred following the intervention phase. The result was consistent with the study conducted by (Moattari et al., 2012), in which the difference in systolic and diastolic blood pressure was significant with a P-value < 0.001. The result of the current study was also similar to the finding of (Baraz et al., 2006). The QoL and SE of the participants were notably promoted after interventions at both public and private hospitals with a significant p-value of <0.001. The current study results were consistent with a study (Mousa et al., 2018) where QoL were enhanced both at public and private hospital.

The Comparison of the QoL Satisfaction Index after the intervention had maximized the score from 99.75±10.3 to 132.35±5.4 with a P value of <0.001, as shown in Table 4. The findings of the present investigation demonstrated a notable improvement. The study conducted in Taiwan by (Lee et al. 2021) to assess the efficacy of a self-management program in increasing QoL, SE, and self-care in patients receiving hemodialysis discovered that the program also encouraged patients' SE and self-care behaviors after three months of intervention. Our result was consistent with that study (Lee et al., 2021b).

In the current study findings, the patients overall quality of life satisfaction index significantly increased after the intervention, as shown in table 4, with a statistically significant difference (P value <0.001) before and after the intervention. Another study conducted on 100 patients to assess the effect of intervention of QoL and found a substantial rise in the whole mean knowledge from 48.6% pre-intervention to 86.3% post-intervention of the program (Fadlalmola and Elkareem, 2020). Through improving patients' awareness and awareness of all aspects of QoL and lifestyle adjustment, interventional programs are seen from the researcher's perspective as a very successful way to enhance the QoL for hemodialysis patients. According to current study findings, patients who participated in an empowerment program had greater levels of self-care self-efficacy, consistent with Tsay and Hung's research (Tsay and Hung, 2004).

Due to the significant correlation between self-efficacy and level of empowerment, it may be inferred that empowered patients had greater confidence by People to Promote Health and Quality of Life Satisfaction in table 4.4. According to Aujoulat et al, self-management is the main finding of the empowerment process related to the disease and therapy. According to the relation of

demographic characteristics like age, marital status, family status, socio-economic status, occupation, financial support, and ethnicity, had no differences with Strategies used by people to promote health's average score. But on the contrary, the pre-SUPPH score differed from the participants' educational and living status. A similar finding occurred in the quasi-experimental study conducted in Iran on fifty patients to assess the management of stress in hemodialysis patients that affect their quality of life. Before the intervention, no significant differences in age, gender, or hope could be seen (NAWAL and DALIA, 2018). The same finding was found in a study in Iran in 2020 on 60 patients to assess the effect of the BASNEF Model. There were no significant differences in overall health and subscales between the two groups before the intervention (P>0.05). The mean of overall health of the interventional group declined significantly after the intervention, but the difference between the two groups was insignificant (Aghajani et al., 2020a).

Conclusion

The study finding has shown that empowerment interventions positively affect the quality of life, self-efficacy, and clinical indicators of patients undergoing hemodialysis treatment. In the current study, the QoL and SE score improved as a result of empowerment program. It revealed that the QoL and SE of patients with hemodialysis could be improved by providing them empowerment program.

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