Exercise training program and self-care management for patients undergoing hemodialysis.

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Abstract
Background: Patient with end stage renal failure who started hemodialysis commonly suffer from muscle weakness, so it's important to encourage the patients to involve in physical therapy sessions which prepared to provide the patients specific skills by training and improving their knowledge to help them move activity and freely. Objective: To evaluate the effect of exercise educational program upon self-care management for patients undergoing hemodialysis. Methodology: Qausi-experimental design carry out to evaluate the effect of self-care training program upon patients scheduled for hemodialysis in hemodialysis center at Al-Hilla city, from (25. October. 2017) to (12. August. 2018). To achieve the objective of the study purposive (non-probability) sample where selected which consists of (50) patients with end stage renal disease who undergoing hemodialysis, they divided in to two groups, (control) group who provided with the routine care of dialysis care, the other group (experimental) were scheduled to attend un exercise educational program session which take about (40 min), with special questionnaire prepared to collect the data which includes three parts, first part related to demographical characteristics, the second part consist clinical information, while the third part extended to general information about hemodialysis includes (4) item, exercise self-care management which includes about (4) item, pre-test were collected from the two group. Than the experimental group attend exercise training session, after two weeks' posttest collected for both group. Result: The dominate characteristics of the participants who involved in the study (control and experimental group) presented that the higher percentages of the subjected 10(40%) and 14(56%) were between (51yrs. and more) years of age. Related to gender 14(56%), female in control group and 15 (60%) male in experimental group, high percentage in both group were married and retired. Most of the response (pre and posttest) among the control group who receive routine care in the hemodialysis unit were (poor) related to exercise. Conclusion: All the responses (post-test) among experimental group who attending training program in the hemodialysis unit during dialysis session were good related to exercise.
Keywords: Exercise, self-care management, training program, hemodialysis.

1. Introduction

The main function of the urinary systems is to maintain homeostasis by a process of regulating a fluid and electrolytes, keep acid-base balance and removing wastes. Kidneys and lower urinary tract disorder is common may be occur at any age. Data collection related to upper and lower urinary tract function consider as a part of health assessment which facilitate understanding of anatomical stature and physiology of the system (1). Making regular continuous activities is a part of healthy life, exercise consider as a best sleeping and, the sleeping become longer, deep the person feels more comfortable and refreshed when he wakes up (2). Patient can break deconditioning cycle by being active. the patient may think about it or be afraid to use up the energy he has, thinking about losing energy with activities, encourage the patient to exercise recharge his body with energy. Continuous regular exercise may keep heart healthy, give the person strength and energy to perform daily activities, maintain stretching and strengths of body muscles, moving the body muscles about 10 minutes or regularly by using, treadmill, walking, swimming, gardening, vacuuming or involving a movement class, maintain muscle strength improve activity performance which lead to comfortable feeling more enjoyment and improve self-esteem and self-confidence (2). The main types of exercises while recommended for patient with ESRD to perform are Strength Exercises when muscles are not used they become weak and flabby, using, moving them can make them strong again, result, in many studies shows that all people even who are in seventy, or eighty can maintain their strength through weight exercise by few weeks. Maintain muscle strength mean the person able to prefer many activities which keep him independent such as: drive a car, shopping and caring his own groceries, walking alone instead of depending on walking aids (walker or wheelchair), use bathroom without help, and maintain personal hygiene at any time when needed. Furthermore, muscle strength means less falling chance and decrease injuries occurrence, patient with ESRD who started hemodialysis commonly suffer from muscle weakness, so it's important to encourage the patients to involve in physical therapy sessions which prepared to provide the patients specific skills by

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training and improving their knowledge to make them move active and can move freely (2). Flexibility Exercise joint flexibility is important to maintain freely thematically and purposively movement, stretching to get an object located on the upper bowing, kneeling when preying, stepping when using bus and care, bending who tying shoes, even when wearing clothes, the person need to use may joints, so flexibility of joints is important to cover every day activities (2). The Concept of Self – Care Self-care deficit, Orem's theory adapted as a framework for this study, Orem's theory focused on the patient role to care for self. Self-care as Orem mean performance or practice activities which contribute to maintain health, promote human development and keep wellness. The main issues of self-care associated with illness are managing regular drug consumption and its side effects, learning coping mechanism to maintain emotional and psychological health in order to deal with the surrounding environment, persons, keep social life relationships and work hard to change lifestyle. (3).

Inadequate self-care, knowledge deficit increases the chance of complication and lead to stress. To be trained about methods of self-care efficiently the nurse must assess the patients mental and physical abilities, respect his dignity, the patient must be motivated by goal setting, his/her positive attitude encouraged. Patients try to make individual effort toward elevating degree of independence by learning and caring out the responsibility of self-care (4).

2.Methodology

Study design: Quantitative- qausi-experimental design selected to offer proper solution for the detected potential problem in specific health setting from the period between (25. September. 2017 to 12. August. 2018).

Setting and sampling: Hemodialysis center in Marjan Teaching Hospital and Imam Al-sadaq Hospital. Purposive sample of (50), patient was selected according to special criteria (Patient are not less than (30) years old, Patient who scheduled for hemodialysis not less than (6 month) before, Oriented, Free from disability (blindness, deafness or any mental illness), Free from hepatitis virus or immune deficiency syndrome, agree to participate in the study), divided in two group (25) as control and other (25) for experimental.

Objectives: Assess exercise training self-care management program (pre-test), demonstrate exercise training self-care management program, evaluate effective ness of exercise training self-care management program (post-test), identify demographic characteristic.

Ethical consideration

1. Patient who scheduled for hemodialysis not less than (6 month) before.
2. Oriented.
3. Free from disability (blindness, deafness or any mental illness).
4. Free from hepatitis virus or immune deficiency syndrome.
5. Agree to participate in the study.
6. Can read and write.

Data collection: Data were collected by face to face individual interview the questionnaire need to completely filled about (15-20) minutes for each participant, (50) patients selected and dividable into two group, the first group treated as control group (25) pretest conducted to the patients according to their weekly appointment to hemodialysis, sessions, their posttest obtained squancelly after two weeks, the other (25) patient managed as experimental group, pretest obtained according to their attendance to the hemodialysis unit than they exposed to designed self-care educational program session. Small group teaching method performed according to the capacity of the unit and the number of the patients how scheduled to hemodialysis session related to the number of available machines. After two weeks later posttest obtained from (25) patient who attended session of the educational program which takes about (40) min extended for (3) days. Data collection started from the period from (7 April to 11 May 2018).

2. 3.Results

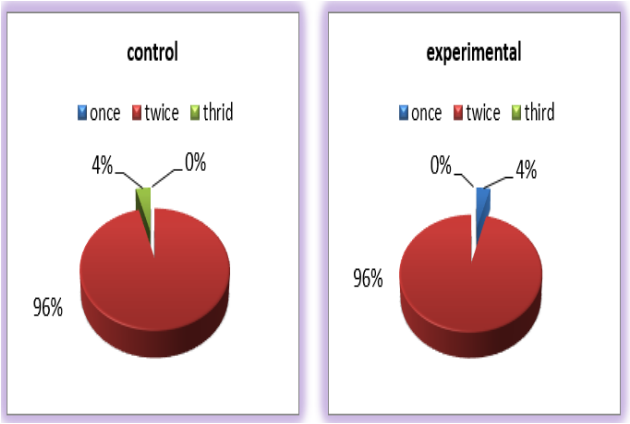

Figure (1): Distribution of control and experimental group related to number of hemodialysis session per week.

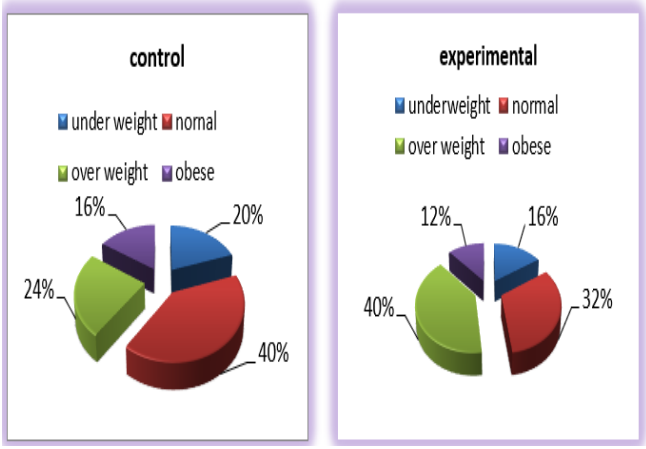

Figure (2) Distribution of the control and experimental group of the study related to body mass index (BMI).

Table (1): Distribution of study sample according to their socio-demographic variables

Variable	Parameters	Control group=25		Experiment group=25	
		F	%	F	%
Age	40yrs and less	6	24.0	4	16.0
	41 -50 yrs.	9	36.0	7	28.0
	51yrs and more	10	40.0	14	56.0
	Total	25	100	25	100
Gender	Male	11	44.0	15	60.0
	Female	14	56.0	10	40.0
	Total	25	100	25	100
Marital Status	Single	5	20.0	0	0.0
	Married	20	80.0	25	100.0
	Total	25	100	15	100
Education level	Read and wright	8	32.0	2	8.0
	Primary	7	28.0	8	32.0
	Secondary	4	16.0	6	24.0
	Preparatory	2	8.0	3	12.0
	College	1	4.0	3	12.0
	Institute	3	12.0	2	8.0
	Postgraduate	0	0.0	1	4.0
	Total	25	100	25	100
Residency	Urban	12	48.0	13	52.0
	Rural	13	52.0	12	48.0
	Total	25	100	25	100
Occupation	Unemployed	6	24.0	1	4.0
	Free business	0	0.0	7	28.0
	Govern. Employee	3	12.0	4	16.0
	House wife	2	8.0	6	24.0
	Retired	14	56.0	7	28.0
	Total	25	100	25	100
Monthly Income	Enough	6	24.0	11	44.0
	Not Enough	19	76.0	14	56.0
	Total	25	100	25	100

F = Frequency, % = Percentage, Yrs.= years.

Table (2): Distribution of the control group related to hemodialysis general information (pre – post) test.

	Items	Frequency			M.S	L		Frequency			M.S	L
		A	S	N				A	S	N		
Pre test	1. Main function of the kidney formation of urine and remove the waste product and electrolytes?	7	11	7	2	F	Post test	8	11	6	2.08	F
	2. Hemodialysis helps to remove the accumulated fluid in the body and electrolytes?	13	4	8	2.2	F		14	4	7	2.28	F
	3. Do you think their relation between anemia and hemodialysis?	4	3	18	1.44	P		5	3	17	1.52	P
	4. Is it necessary to calculate weight when preparing for hemodialysis?	5	11	9	1.84	F		6	11	8	1.92	F
	Total	29	29	42	1.87	F		33	29	38	1.95	F

P = poor, F= fair, G = good……A = always, S = sometime, N = no, L = level

This table shows that the responses of the participants in the control group presented (Fair) in their pre and post-test related to general information.

Table (3): Distribution of the experimental group related to hemodialysis general information pre – post test.

	Items general information	Frequency			M.S	L		Frequency			M.S	L
		A	S	N				A	S	N		
Pre test	1. Main function of the kidney formation of urine and remove the waste product and electrolytes?	3	6	16	1.48	P	Post test	24	1	0	2.96	G
	2. Hemodialysis helps to remove the accumulated fluid in the body and electrolytes?	7	8	10	1.88	F		25	0	0	3.00	G
	3. Do you think their relation between anemia and hemodialysis?	3	2	20	1.32	P		21	2	2	2.76	G
	4. Is it necessary to calculate weight when preparing for hemodialysis?	10	5	10	2.00	F		22	3	0	2.88	G
	Total	23	21	56	1.67	F		92	6	2	2.90	G

The table show the responses of the participant in the experimental group presented (Fair) in the pretest and (Good) in the posttest related to general information.

Table (4): Distribution of the control group related to hemodialysis exercise pre – post test.												
	Items of exercise	Frequency			M.S	L		Frequency			M.S	L
		A	S	N				A	S	N		
Pretest	1. It's important to perform regularly exercise to maintain your health status?	1	2	22	1.16	P	Post test	1	2	22	1.16	P
	2. you perform daily exercise for not exceeding than (30) minutes regularly?	0	1	24	1.04	P		0	1	24	1.04	P
	3. Do you exercise strength exercises?	0	1	24	1.04	P		0	1	24	1.04	P
	4. Do you Exercise flexibility exercises?	0	0	25	1.00	P		0	0	25	1.00	P
	Total	1	4	95	1.06	P		1	4	95	1.06	p

This table shows that the responses of the participant in the control group presented (Poor) in their pre – post test related to exercise.

Table (5): Distribution of the experimental group related to hemodialysis exercise pre – post test.												
	Items of exercise	Frequency			M.S	L		Frequency			M.S	L
		A	S	N				A	S	N		
Pre test	1. It's important to perform regularly exercise to maintain your health status?	0	0	25	1	P	Post test	20	3	2	2.72	G
	2. you perform daily exercise for not exceeding than (30) minutes regularly?	0	0	25	1	P		6	14	5	2.04	G
	3. Do you exercise strength exercises?	0	0	25	1	P		17	7	1	2.64	G
	4. Do you Exercise flexibility exercises?	0	0	25	1	P		17	7	1	2.64	G
	Total	0	0	100	1	P		60	31	9	2.51	G

The table represents that participant in the experimental group presented (Poor) in the pretest and (Good) in the posttest related to exercise.

Table (6) : Response of (control – experimental) group along general information about hemodialysis.						
Question of general information	Control		P	Experimental		P
	Pretest	Posttest		Pretest	Posttest	
	Mean±SD	Mean±SD		Mean±SD	Mean±SD	
1. Main function of the kidney formation of urine and remove the waste product and electrolytes?	2.00±0.76	2.08±0.76	0.636 NS	1.48±0.71	2.96±0.20	0.000**
2. Hemodialysis helps to remove the accumulated fluid in the body and electrolytes?	2.20±0.91	2.28±0.89		1.88±0.83	3.00±0.00	
3. Do you think there relation between anemia and hemodialysis?	1.44±0.77	1.52±0.82		1.32±0.69	2.76±0.60	
4. Do you think there relation between anemia and hemodialysis?	1.84±0.75	1.92±0.76		2.00±0.91	2.88±0.33	
Overall Mean	1.87±0.80	1.95±0.60		1.67±0.58	2.90±0.18	

This table presented that the mean of the responses for the control group were (1.87±0.80) in pretest and (1.95±0.60) in posttest, while the mean of the response for the experimental group were (1.67±0.58) in the pretest and (2.90±0.18) in the posttest. So there is significant change in the responses of the experimental group, while no significant change in the result of the control group related to general information.

Table (7): Response of (control – experimental) group along exercise about hemodialysis						
Question of exercise	Control		P	Experimental		p
	Pretest	Posttest		Pretest	Posttest	
	Mean±SD	Mean±SD		Mean±SD	Mean±SD	
1.It's important to perform regularly exercise to maintain your health status?	1.16±0.47	1.16±0.47	1.000 NS	1.00±0.00	2.72±0.61	0.000**
2.you perform daily exercise for not exceeding than (30) minutes regularly?	1.04±0.20	1.04±0.20		1.00±0.00	2.04±0.68	
3.Do you exercise strength exercises?	1.04±0.20	1.04±0.20		1.00±0.00	2.64±0.57	
4.Do you Exercise flexibility exercises?	1.00±0.00	1.00±0.00		1.00±0.00	2.64±0.57	
Overall Mean	1.06±0.22	1.06±0.22		1.00±0.00	2.51±0.51	

This table presented that the mean of the responses for the control group were (1.06±0.22) in pretest and (1.06±0.22) posttest, while the mean of the response for the experimental group were (1.00±0.00) in the pretest and (2.51±0.51) in the posttest. So there is significant change in the responses of the

experimental group, while no significant change in the result of the control group related to exercise.

3. Discussion

The result of table (1) which presented the socio-demographical characteristics show that the high percentage of the participant in both groups were with 51 and more yrs. of age. While the gender in control group 14(56%) were female, 15(60%) of the experimental group were male and 20(80%) married in the control group in the experimental 25(100%) were married. the highest percentage of education level in control group 8(32%) were read and write and 8(32%) primary in the experimental group. The result agree with the finding of published study in 2013, which carried on hemodialysis patients who attended dialysis unit, which indicated that the majority of the study sample (54.7%) were male and the remaining were female, the highest percentage of them were (51-60) years old and accounted for (24.66%), In regards to the subject marital status, the majority of the sample were married and they consist of (67.3%) of the whole of the study sample. Relative of their educational status, the greater percentage of them were primary school graduates and they accounted for (24.7%) of the sample. Related to residency of the control group 13 (52%) were located in rural area, while the experimental group 13 (52%) were urban area resident, this result agree with survey study of young adults with end stage renal disease (5) which indicate that the majority of the study subjects were live in the capital (6). This study carried out in hemodialysis units which only located in Al-Hilla city, all patients who located in the city and rural area attend this unit to obtain the dialysis therapy. Indicated that the high percentage 14(56%) were retired in the control group, the high percentage among the experimental group subjects were 7(28%) were retired and free business, this result go with a line to the study which carried out upon (161) patients who scheduled to regular hemodialysis which find that 123 (76%) of the sample were retired and 4(2.5%) employed (7), related to the occupational structure, the low level of employment may be related to age, demised and limited physical activities regarding disease process. Related to monthly income shows that the monthly income in both group (control and experimental) 19 (76%) and 14(56%) were not enough. The result disagrees with a study carried out on hemodialysis patient at Rahman medical instituted Peshawar which stated that the economically satisfied were found among of the study sample (8), because of continuous life-long therapy is expensive need medication mentainance, frequent follow up visits and most of the study sample were retired with limited monthly income.

The result in figure (1) shows that the number of hemodialysis session per week in both control group 24(96%) and experimental 25(100%) were twice per week, this result agrees with a study carried among patients undergoing hemodialysis therapy found that (75%) patients took twice weekly dialysis session (9).

Figure (2) high percentage of patients in the control group 10(40%) were wit normal BMI, while the higher percentage of the patient in the experimental group 10(40%) were overweight. related to their BM, these results agree with Bossola et al., (2006) (17) and Carrero, et al., (2008) (18) they found that (4%) of patient who scheduled for hemodialysis present below 18.5 Kg, while (48%) of them recorded normal body mass index the remain sample number (38%)were presented over weight (10). Alteration of weight for patient undergoing hemodialysis were mainly depended up water retention and nutritional pattern, so body weight, and anther parametric measurement are impotent indicators evaluate the nutritional status of the individual with renal.

The result of table (2,4) for the control group which presented revealed that the control group shows (Fair) related to general information of dialysis, related to exercise the control group shows (Poor) responses,

this result go along with the study publish in 2013, which find that with referee to general information and exercise management the patient undergoing hemodialysis, and they didn't follow instruction related to exercise consumption and they ignore to follow the instruction they receive from health personal (11).

The result of self-care domains for the experimental group who participate in the study which presented in these tables (3,5), demonstrated that the experimental group patients recoded clear improvement between their (pre and posttest) after they participate in the self-care educational program, this finding agrees with a study which find that patients under hemodialysis to be engaged in self-care activities necessitate continuous education on self-care. The researches in this field showed that training in self-care to hemodialysis patients can lessen the patients' physical problems and enhance the quality of their life and reduce dependency (12).

Related to general information in table (6). The client's/family member should provide with proper information and education toward nature of end stage kidney disease with regard to optional therapies to help them to think about and make their decision related to proper management. There is an argument that designed educational program for dialysis patient are active in simplifying a planned approach to hemodialysis session, impact the dialysis outcomes and improve the quality of life, lead to increase the patient self-care and patient's satisfactions (13).

Most patient with end stage renal disease who undergoing hemodialysis did not exercise enough and they also did not receive adequate information or encouragement from the health personals on the related issue (14). Table (7) recorded that significant improvement appears clearly on p(0.000) for experimental group pre-posttest related to exercise, while no significant change shows among control

group posttest. Research carried out to study exercise muscle strength in hemodialysis patients. This studies were experimental with pre-test and post-test and with both experiment and control groups. The results of this study showed quality of life of these patients had improved significantly ($p>0.05$) after 5 months of exercise while the control group had not any significant inclination; also muscle strength in the experiment group had a significant increase comparing to control group members in ($p <0.05$), outcome presented that exercise training had an effect on quality of life and fatigue and improve muscle strength in hemodialysis patients. (15).

The researcher points of view related to exercise topic, when health personnel's plan and put proper strategies to exercise training for the patient during dialysis session, this way well more applicable for patients, it didn't take any extra time because already the patients in the hospital for many hours during a week, this method is effective, when the patients see the exercise presented by health care personnel's and encouraged to involve in this exercise session, such activities may improve interpersonal relationship and communication among patients and health care, decrease drop out of patients, increasing self-esteem and improve. A study which conducted in 2002, concluded that exercise training may improve cardiorespiratory capacity of the patients on dialysis (14).

4. Conclusion

The results presented significant change in the responses related to self- care for experimental group who receive designed training program while, no significant change in the responses of self –care among control group, that mean the training program was effective and its enhance self-care for patient who undergoing hemodialysis.

5. 6.Recommendation

It's the time to prepare an training program for patients who undergoing hemodialysis focused on self-care to enhance their practice, help them to make proper decision related to exercise consumption.

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