

Effect of Educational Program for Hemodialysis Patients Regarding Their Knowledge and Practice About Self Care Behaviour

Omar F. Hamza¹, Safaa A.M. Kotb², Rabaa H. Hassanen³ & Abeer M. Elmaghawry⁴

¹ Assistant lecturer in Community Health Nursing, Faculty of Nursing, Beni-Suef University, Egypt

² Professor of Community Health Nursing, Faculty of Nursing, Assuit University, Egypt

³ Professor of Community Health Nursing, Faculty of Nursing, Assuit University, Egypt

⁴ Assistant Professor of Community Health Nursing, Faculty of Nursing, Damietta University, Egypt.

Abstract:

Chronic kidney diseases affect up to one in ten adults globally, and it is always permanent and progressive. **Aim:** To determine the effect of educational program regarding self-care behavior for hemodialysis patients at Beni-Suef University Hospital. **Subject and methods:** A quazi-experimental research design has been used. It was conducted at Beni-Suef University Hospital. 55 patients who attended the dialysis unit at Beni-Suef university hospital were selected to participate in the current study. **The first tool:** A structured interviewing questionnaire that includes two parts; **Part 1:** Their socio-demographic characteristics. **Part 2:** include past history of hemodialysis patients. **Part 3:** Knowledge assessment data sheet used to assess knowledge about kidney and renal failure. **Second tool:** Self-care measurement scale was used to measure practice regarding self-care behavior of hemodialysis patients. **Results:** The mean age of the participants was 32.60 ± 20.88 , 90.9% of studied sample had poor scores of knowledge at pretest which improved to good scores at immediate posttest. The total universal self-care practice scores of the studied hemodialysis was 75.82 ± 9.90 at pre-test which improved at post and follow-up tests to (100.27 ± 14.02 and 94.38 ± 11.65) respectively, while the total health deviation self-care practices mean scores of the studied hemodialysis was 59.13 ± 6.01 at pre-test which improved in post and follow-up tests to 83.67 ± 6.27 and 80.95 ± 5.25 respectively. **Conclusion:** The implemented program about self-care behavior had a good impact on hemodialysis patients' knowledge and practice. **Recommendations:** Dietary counseling and dietary education programs should be held for hemodialysis patients, which promote hemodialysis patients dietary intakes of appropriate food.

Keywords: Educational Program, Hemodialysis Patients & Self Care Behavior.

Introduction:

Normal healthy kidneys conduct a variety of critical activities. Kidneys are vital in maintaining homeostasis, eliminate waste products, maintain water and electrolyte balance in the body, and release numerous hormones such as erythropoietin, renin, thrombopoietin, prostaglandins, and others. Renal disease causes the kidneys to be unable to accomplish these activities, resulting in water and salt retention in the body. Chronic kidney disease is defined as a persistent abnormality in kidney structure or function (eg, glomerular filtration rate <60 mL/min/1.73 m² or albuminuria ≥ 30 mg per 24 hours) for more than 3 months (Ashraf, et al., 2019 & Chen, et al., 2019).

Chronic kidney disease affects up to one in ten adults globally, and it is always permanent and progressive (Foreman, et al., 2018 & Bikbov, et al., 2020). According to the Centers for Disease Control and Prevention, chronic kidney disease affects 37 million people in the United States, or 15% of the adult population (CDC, 2021).

Chronic renal disease can be caused by a number of factors. Nontraditional chronic kidney disease risk factors include developmental and gestational factors, kidney stones and exposure to nephrotoxic medications, in addition to traditional risk factors such as developmental, physical, social, cultural, structural, environmental, and genetic factors (Garcia-Garcia, et al., 2015 & Levin, et al., 2017). Hemodialysis is a treatment that involves passing blood through a specific filter or semi-permeable membrane. The surplus water, bodily waste, and harmful compounds are then removed from the blood by the filter. This technique cleans the blood, maintains the body's homeostatic environment, and maintains normal blood pressure. (Ashraf, et al., 2019). However, in order to perform hemodialysis, the patient must have vascular access. The optimum hemodialysis vascular access is one that gives dependable, complication-free access to deliver prescription dialysis while also being appropriate for the needs of a certain patient (Lok, et al., 2020).

The global kidney health community advocates for the detection of kidney disease, as well as effective identification and management of its risk factors as a vital contributor to lower worldwide of non-communicable disease burden and the implementation of an integrated and people-centered approach to care (Li, et al., 2020).

Self-care is a strategy for coping with life's ups and downs that can improve one's independence and quality of life (Banaye, et al., 2017). Patients on hemodialysis have a lot of problems with self-care. To improve self-care, patients must be able to control and manage the problem. Self-care behavior can be improved through educational intervention (Ramezani et al., 2019).

Hemodialysis patients encounter a lot of difficulties with self-care. Patients must be able to control and manage their symptoms in order to improve self-care. Self-care behaviour can be enhanced with the help of education (Ramezani, et al., 2019). Even though self-care for hemodialysis patients may require significant restrictions in lifestyle habits and behaviors, but participation in self-care behaviors may thus represent one way to mitigate adverse outcomes associated with chronic kidney disease. (Wong, et al., 2018; Kim & Kim, 2019).

Nurses can assist patients take control of their condition and promote well-being by identifying and managing risk factors. They can also provide patient-specific education to help patients take charge of their condition and promote well-being. Complications of chronic renal disease include fluid overload, electrolyte abnormalities, and anemia, all of which require treatment. Nurses assist in the delivery of therapy by assessing, planning, implementing, and evaluating care plans in collaboration with patients and clinicians (Chicca, 2020).

Significance of the study:

Chronic kidney disease is a serious public health problem and a major economic burden worldwide (Saadi; El-Nahid, 2020 & Burgos-Calderón, et al., 2021). Chronic kidney disease affects more than 10% of the world population and there were 649.2–752.1 million people with chronic kidney disease in the world in 2017 (Duan, et al., 2019 & Bikbov, et al., 2020). According to statistics and trends of rising prevalence rates of end-stage renal disease around the world, particularly in developing countries as Egypt, there is a need for ongoing active patient education, support, and evaluation in order to increase patients' involvement and self-reliance in managing their renal health problems and avoiding complications (Abo Deif, et al., 2015).

Aim of study:

To determine the effect of educational program for hemodialysis patients regarding their knowledge and practice about self-care behaviour.

Research hypotheses:

- 1- Improve knowledge of hemodialysis patients regarding self-care behavior after implemented educational program.
- 2- Improve practice of hemodialysis patients regarding self-care behavior after implemented educational program.

Subject and Methods:

Research design:

Quasi-experimental research has been used.

Setting: The study was been conducted in dialysis unit at Beni-Suef university hospital.

Sample: By using **Purposive sampling** technique, total coverage of all patients who were attended in dialysis unit at Beni Suf university hospital and meet the inclusion criteria (55 patients) were selected to participate in the current study.

Inclusion criteria:

1. Having a history of dialysis for at least 3 months.
2. Being physically able to perform body activities and routine affairs.
3. Negative hepatitis (B and C) patients.

Tools of the study:

Two tools were developed by the researcher to collect necessary data after review of current related literature design in simple Arabic language; included the following:

Tool I: A structured interviewing questionnaire form:

It consisted of three parts:

First part: included the socio-demographic characteristics as (age, gender, social class, residence and level of education and occupation) (AbdEltwab scale, 2012).

Second part: included patient past history of chronic diseases as hypertension, diabetes mellitus, and chronic glomerulonephritis as well as chronic renal failure family history, and taking medications as analgesics for long period, smoking and post hemodialysis session complains.

Third part: knowledge assessment data sheet: this part used to assess knowledge of hemodialysis patients. It included (33) questions in (4) areas of knowledge; patients' knowledge about kidney disease and dialysis included (10) questions as (anatomy of kidney, physiology of kidney, definition of chronic renal failure, causes of chronic renal failure,...etc). Patients' knowledge about prescribed medication regimen and its complication included (4) questions as (prescribed medications for a renal failure patient receiving dialysis are, complications/side effects of

prescribed medication,...etc.). Patients' knowledge about management of renal failure included (6) questions as (ways of treatment, main goal of dialysis, signs of inflammation of vascular access, methods of care of vascular access,...etc.). Also, patients' knowledge about diet and exercises regimen related to renal failure and dialysis included (13) questions as (can a patient with renal failure eat fast and canned foods, the optimal diet for patients with renal failure, is it necessary to record the quantities of fluids that they drink and the amounts of urine that they excrete,...etc.) (Abo Deif, et al., 2015).

Scoring system for knowledge: the total scores of knowledge were; it developed as one grade for each correct answer and zero for each incorrect answer and do not know. For each area of knowledge, the scores of the items were summed-up and converted into a percentage. The patients' knowledge was considered (Poor if < 50%, Fair if 50% < 70% and Good if >70%) (Whdan, et al., 2019).

Tool (2): this tool used to measure practice regarding health behavior of hemodialysis patients. This scale originally developed by (Shintani Keiko, 2014) to evaluate the degree of universal self-care requisites and health-deviation requisites. The scale consists of two subscales: universal self-care factor and health-deviation self-care factor.

1- The universal self-care factor consists of (5) factors and (35) requisites. These factors included patients' self-care about the dietary regulation included (12) questions as (do not eat late at night, keep salt intake low, stop eating when you are approximately full, keep sugar intake low, always drink water after the bath, consume less-sweet foods, eat home-prepared meals, drink water daily, always drink water after exercise,...etc.). Patients' self-care about food safety included (5) questions as (check calories and sodium content when buying food, check the nutrition information panel when buying food,...etc.). Patients' self-care about exercise regulation included (5) questions as (walk often, you do not use a car to go short distances, use stairs rather than the elevator / use stairs to climb one or two floors,...etc.). Patients' self-care about stress prevention included (9) questions as (if made to feel unhappy, attempt to calm down as soon as possible, use methods to avoid getting angry,etc.). Also, patients' self-care about habit regulation included (4) questions as (make time for prayer or religious activities, read books/watches movies,...etc.).

2- Health deviation self-care: consists of (3) factors and (25) requisites. These factors included shunt preservation factor, therapeutic diet implementation factor and the observations of care instructions

factor. Patients' self-care about shunt preservation included (10) questions as (keep the shunt area clean, watching out for reddening or swellings,...etc.). Patients' self-care about therapeutic diet implementation included (8) questions as (do you maintain the amount of water recommended by the doctor, do you keep your salt intake within the limits recommended by your doctor,...etc.). In addition to, patients' self-care about the observations of care instructions included (7) questions as (preserve all urine produced during that day, avoid doing heavy labor with the arm used for blood shunting, always undergo hemodialysis on the set days, ...etc.).

3- Scoring system for hemodialysis patients' self-care measurement scale

Each item requisite was rated on 4 point scale ranging:-

- 4 point = very applicable.
- 3 point = somewhat applicable.
- 2 point = minimally applicable
- 1 point = not applicable at all

Scoring in this study

Total scoring for universal self-care =140 points classified as follow:-

- 1: 35 = not applicable at all.
- 36: 70 = minimally applicable.
- 71: 105 = somewhat applicable.
- 106: 140 = very applicable.

Total scoring for health deviation self-care = 100 points classified as follow:-

- 1:25 =not applicable at all.
- 26:50 = minimally applicable.
- 51:75 = somewhat applicable.
- 76:100 = very applicable.

For each part, the scores of the items were summed-up and the total divided by the number of the items, giving a mean score for the part (Mahmoud & Abdelaziz, 2015).

Validity of tools: The study tools were constructed after review of relevant literature. These tools were revised by family and community health nursing and medical and surgical nursing experts to who reviewed the instrument for clarity, relevance, comprehensiveness, understanding and applicability. Recommended modifications were fulfilled.

Reliability: Reliability was applied by the researcher for testing the internal consistency of its questions. Test-retest reliability was done during the pilot study. The Cronbach's alpha coefficient test for knowledge = 0.848 and for self-care measurement scale were 0.768 implying that the instrument was consistent and reliable in achieving.

Methodology:**Administrative phase:-**

An official approval was obtained from the Dean of the Faculty of Nursing, Assiut University to the head of the hemodialysis unit at Beni-Suef university hospital, to carry out the study explained the purpose of the study, and asking for permission to conduct the study.

Pilot study: After developing the necessary tools of the study. A Pilot study included 10% of patients was carried out to ensure clarity and applicability of the developed tools and to estimate the time required to fill the questionnaire. Patients included in the pilot study were included in the study.

Ethical consideration:

The researcher followed all ethical issues in conducting the research. Research proposal has been approved from Ethical committee in the Faculty of Nursing at Assiut University, there is no risk for study subject during application of the research, the study has been followed common ethical principles in clinical research, confidentiality and anonymity will be assured, study subject have the right to refuse to participate and or withdraw from the study without rational any time, study subject privacy has been considered during collection of data and agree to participant in this study (oral agreement).

Data collection:**Field work:**

An official letter approval was obtained from president of Beni-Suef University Hospital to obtain necessary approval to conduct the study at the hemodialysis unit. This letter included permission to collect the necessary data and explain the purpose and nature of the study. Each hemodialysis patients was informed about the purpose and nature of the study at hemodialysis unit.

The program phases:**1. Assessment phase :**

Based on the pretest; the researcher developed this program to improve patients' knowledge to change their lifestyle pattern after educational program regarding self-care behavior. So, the program media (**educational program handout**) were prepared.

2. Planning phase:

The arrangement of conducting the program was done during this phase; the sessions and time of the program decided. In this phase other facilities were arranged as the teaching place, teaching media as handout and pictures.

3. Implementation phase:

Pre-test was been conducted in dialysis unit at Beni-Suef university hospital, before implementation of the educational program to assess the patients' knowledge. The educational program was conducted in the period from first of August 2019 until the end

of June 2020 and included nine sessions for each patient and each session took from 45-60 minutes. The researcher attended dialysis unit at Beni-Suef university hospital in all sessions often for 3 days/week (Tuesday, Wednesday and Thursday) for 5-6 hours/day to collect data from 3 patients/ shift individually (6 patients/ day).

At the first session, before the application of the program, the researcher introduced himself to the participants to establish the necessary rapport and gain their attention and interest, an orientation to the program and its purpose was done and the participants were informed about the time and place of session taken. Further, application of the program content was done; the researcher explained for participants about definition of renal failure, types of renal failure, symptoms of renal failure, the causes and risk factors of renal failure, the diagnostic methods for renal failure. After that, **the second session**, contained definition of hemodialysis, determination vascular connections and their types, identification steps of blood connections care (vistula, graft and catheters), some health problems caused by vascular connection and how to deal with it, identification importance of exercises, determination of allowed types of exercises and identification frequency of exercise. **The third session**, included determination types of allowed food and appropriate quantities of each type.

Additionally, **the fourth session**, contained determination the dietary regulation, food safety and the ways of treatment renal failure and the main role of hemodialysis. **The fifth session** composed of identification health problems that can occur for a hemodialysis patient and how to deal with it. **The sixth session**, contained identification of health problems that can occur for hemodialysis patients, how to deal with it, medication that must be taken and its complications. **The seventh session**, included determination habits regulation, causes of death of hemodialysis patients, how to increase their immunity and infection prevention as well as stress regulation. Then, **the eighth session**, contained determination of appropriate weight or dry weight and how it can be determined and about dietary sources of some important vitamins and minerals. Finally, **the ninth session**, contained identification of sexual problems related to hemodialysis, its causes and how to deal with it. Follow up test was done after 3 months using the same format of the pre and posttest.

4. Evaluation phase:

Immediately after program implementation and after 3 months; the patients' knowledge and practice have been evaluated by the researcher through filling the tool. The same tools used at the pretest.

Statistical analysis:

Data entry and data analysis were done using SPSS version 25 (Statistical Package for Social Science). Data were presented as number, percentage, mean,

standard deviation. Chi-square test, a nova test, pearson's correlation test, paired sample t-test and independent sample t test were used. P-value is considered statistically significant $P < 0.05$.

Results:

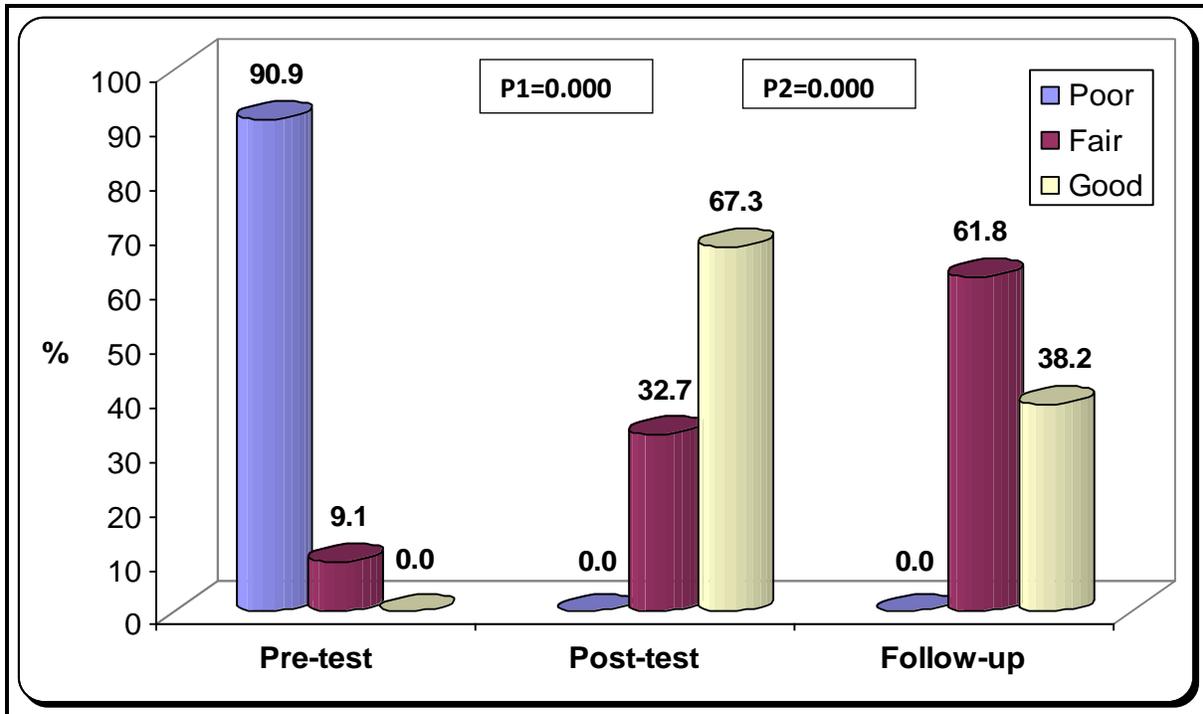
Table (1): Socio- demographic characteristics of studied patient at Beni-Suef University Hospital, 2018

Variables	No. (55)	%
Age: (years)		
< 20	20	36.4%
20 – 40	16	29.1%
> 40	19	34.5%
Mean \pm SD	32.60 \pm 20.88	
Gender:		
Male	31	56.4%
Female	24	43.6%
Residence:		
Rural	44	80.0%
Urban	11	20.0%
Level of education:		
Illiterate	11	20.0%
Basic education	14	25.5%
Secondary	22	40.0%
University	8	14.5%
Occupation:		
Employee	10	18.2%
Free business	9	16.4%
Housewife	13	23.6%
Skilled worker	7	12.7%
Student	16	29.1%
Social class:		
Low	13	23.6%
Middle	28	50.9%
High	14	25.5%

Table (2): Distribution of patients regarding to medical history at Beni-Suef University Hospital, 2018.

Variables	No. (55)	%
#Presence of chronic diseases:		
Hypertension	8	14.5
Diabetes mellitus	11	20.0
Nephritis	14	25.5
Others (e.g. Systemic lupus Erythematosus (SLE))	3	5.5
Taking medications for long periods as analgesics:		
Yes	30	54.5
Presence of chronic renal failure in your family members:		
Yes	9	16.4
Smoking:		
Smoker	8	14.5
#Post hemodialysis session complains:		
Hypotension	33	60.0
Nausea	1	1.8
Vomiting	0	0.0
Restlessness	28	50.9
Headache	11	20.0
Muscle cramps	8	14.5

Response aren't mutually exclusive



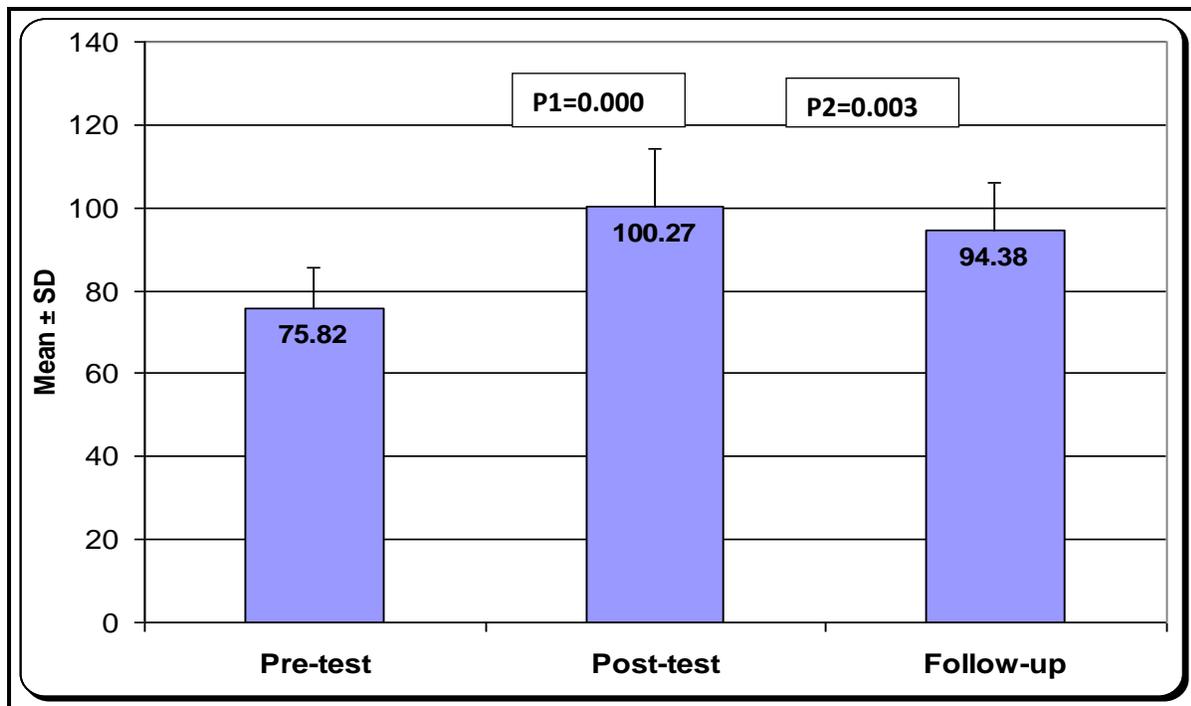
P-value1 :Pretest V.s Posttest&P-value2

Pretest V.s Follow up test

(*) Statistically significant difference at $p < 0.05$

Paired sample t-test is used.

Figure (1): Total knowledge scores for patient at pre/immediate post and follow up tests at Beni-Suef University Hospital, 2018 (Paired sample t-test is used).



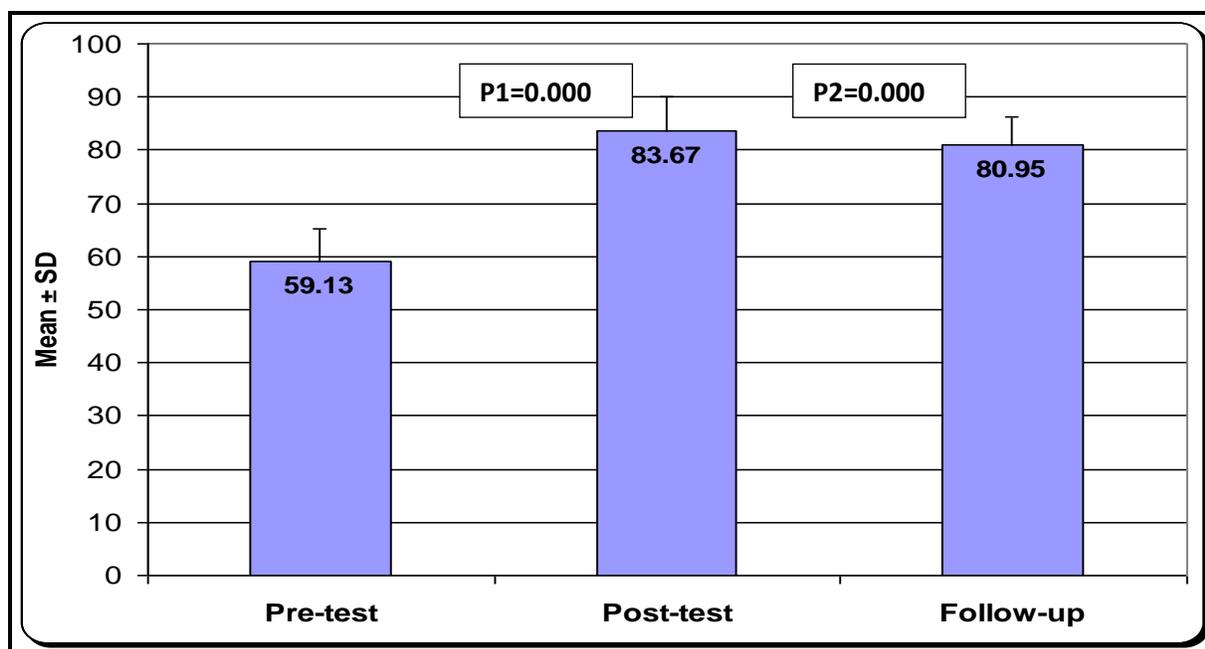
P-value1 :Pretest V.s Posttest&P-value2

Pretest V.s Follow up test

(*) Statistically significant at $p < 0.05$

Paired sample t-test is used.

Figure (2): Total universal self-care practice scores for patient at pre/immediate post and follow up tests at Beni-Suef University Hospital, 2018.



P-value1 :Pretest V.s Posttest&P-value2

Pretest V.s Follow up test

(*) Statistically significant difference at $p < 0.05$

Paired sample t-test is used.

Figure (3): Total health deviation self-care practices mean scores at pre/mediate post and follow up tests at Beni-Suef University Hospital, 2018

Table (3): Relation between socio-demographic characteristics of studied hemodialysis patients and their knowledge score about renal failure at Beni-Suef University Hospital, 2018.

Socio- demographic characteristics	Knowledge score about renalfailure		
	Pre-test Mean ± SD	Post-test Mean ± SD	Follow-up Mean ± SD
Age: (years)			
< 20	23.75 ± 6.48	74.10 ± 3.84	70.75 ± 3.97
20 – 40	26.79 ± 4.91	74.56 ± 3.61	71.37 ± 4.22
> 40	33.05 ± 8.93	73.74 ± 4.01	70.32 ± 4.37
P-value	0.045*	0.818	0.758
Gender:			
Male	31.13 ± 7.16	74.03 ± 4.35	70.26 ± 4.02
Female	24.37 ± 8.13	74.21 ± 2.98	71.46 ± 4.25
P-value	0.032*	0.866	0.289
Residence:			
Rural	28.48 ± 8.31	74.39 ± 3.65	70.91 ± 4.09
Urban	27.00 ± 8.91	73.00 ± 4.27	70.27 ± 4.45
P-value	0.711	0.281	0.652
Level of education:			
Illiterate	22.88 ± 6.15	73.64 ± 5.18	70.82 ± 5.04
Basic education	24.68 ± 7.05	73.07 ± 4.18	71.29 ± 4.27
Secondary	25.82 ± 4.40	74.59 ± 2.91	70.77 ± 3.80
University	38.57 ± 7.02	75.25 ± 3.06	69.88 ± 4.09
P-value	0.001*	0.521	0.903
Social class:			
Low	19.54 ± 8.44	74.77 ± 3.37	71.08 ± 4.15
Middle	27.79 ± 5.54	73.57 ± 4.22	71.39 ± 4.12
High	32.39 ± 9.07	74.57 ± 3.25	69.29 ± 4.05
P-value	0.003*	0.565	0.289

(*) Statistically significant difference at $p < 0.05$ Independent sample t test

A nova test are used.

Table (4): Relation between socio-demographic characteristics of patients and their universal self-care practices mean scores for at Beni-Suef University Hospital, 2018.

Socio-demographic characteristics	Universal self-care practices		
	Pre-test	Post-test	Follow-up
	Mean \pm SD	Mean \pm SD	Mean \pm SD
Age: (years)			
< 20	70.85 \pm 9.82	100.65 \pm 12.63	97.65 \pm 11.94
20 - 40	78.94 \pm 10.43	101.00 \pm 13.50	91.19 \pm 11.69
> 40	78.42 \pm 7.63	99.26 \pm 16.36	93.63 \pm 11.01
P-value	0.016*	0.928	0.244
Gender:			
Male	76.45 \pm 11.05	104.16 \pm 12.63	93.77 \pm 11.97
Female	75.00 \pm 8.33	95.25 \pm 14.37	95.17 \pm 11.42
P-value	0.594	0.018*	0.664
Residence:			
Rural	75.75 \pm 10.06	99.59 \pm 13.90	93.73 \pm 12.26
Urban	76.09 \pm 9.67	103.00 \pm 14.86	97.00 \pm 8.80
P-value	0.920	0.476	0.410
Level of education:			
Illiterate	69.79 \pm 9.98	97.00 \pm 17.52	91.36 \pm 11.81
Basic education	76.25 \pm 8.31	101.93 \pm 13.09	94.62 \pm 12.00
Secondary	78.00 \pm 7.43	100.68 \pm 14.83	96.73 \pm 8.75
University	78.41 \pm 10.35	100.75 \pm 8.71	97.14 \pm 13.18
P-value	0.039*	0.852	0.448
Social class:			
Low	70.00 \pm 3.61	97.62 \pm 10.83	86.21 \pm 12.05
Middle	74.86 \pm 10.40	99.39 \pm 15.64	96.00 \pm 9.42
High	83.14 \pm 8.75	104.50 \pm 13.13	97.71 \pm 10.71
P-value	0.001*	0.404	0.007*

(*) Statistically significant difference at $p < 0.05$ Independent sample *t* test A nova test are used.

Table (5): Relation between socio-demographic characteristics of patients and their Health deviation self-care practices mean scores for at Beni-Suef University Hospital, 2018

Socio-demographic characteristics	Health deviation self-care practices		
	Pre-test	Post-test	Follow-up
	Mean \pm SD	Mean \pm SD	Mean \pm SD
Age: (years)			
< 20	58.10 \pm 7.12	84.20 \pm 6.23	80.35 \pm 4.40
20 - 40	59.69 \pm 5.83	83.75 \pm 7.34	81.63 \pm 6.34
> 40	59.74 \pm 4.96	83.05 \pm 5.58	81.00 \pm 5.27
P-value	0.640	0.853	0.775
Gender:			
Male	59.77 \pm 6.25	84.29 \pm 6.35	80.68 \pm 5.10
Female	58.29 \pm 5.70	82.88 \pm 6.20	81.29 \pm 5.52
P-value	0.369	0.411	0.671
Residence:			
Rural	58.84 \pm 6.14	83.55 \pm 5.83	81.05 \pm 5.52
Urban	60.27 \pm 5.57	84.18 \pm 8.08	80.55 \pm 4.16
P-value	0.485	0.766	0.780
Level of education:			
Illiterate	58.37 \pm 2.92	82.73 \pm 6.57	79.13 \pm 4.82
Basic education	59.21 \pm 6.76	83.93 \pm 4.67	80.86 \pm 3.21
Secondary	58.50 \pm 6.65	84.45 \pm 7.48	81.45 \pm 6.22
University	60.82 \pm 5.67	82.38 \pm 5.24	82.09 \pm 5.41
P-value	0.754	0.820	0.393
Social class:			
Low	57.69 \pm 6.51	84.77 \pm 8.13	80.69 \pm 6.34
Middle	58.46 \pm 6.13	82.96 \pm 5.42	81.89 \pm 4.15
High	61.79 \pm 4.73	84.07 \pm 6.22	79.29 \pm 6.04
P-value	0.048*	0.674	0.315

(*) Statistically significant difference at $p < 0.05$ Independent sample *t* test A nova test are used.

Table (1): Shows that the age group <20 years represents 36.4% with mean age \pm SD 32.60 ± 20.88 , 56.4% of them were males and 80% of them were from rural areas. This table also found that 40% of them had secondary education as well as 18.2%, 29.1% and 50.9% of them were governmental employee, were students and had a middle social class respectively.

Table (2): Illustrates that 25.5% and 20% of studied patients had nephritis and diabetes mellitus respectively. It was also observed that 83.6% of studied hemodialysis patients hadn't family history of chronic renal failure and 54.5% of them were taking medications for long periods as analgesics.

Figure (1): It was found that 90.9 % of studied patients have poor knowledge scores at pretest while their knowledge improved at immediate posttest to good= 67.3%, after three month of posttest their knowledge slightly declined to 38.2%. Finally figure indicates that highly statistically significant difference between total knowledge scores of studied hemodialysis patients at pre, immediate posttest and follow up test ($P= 0.000$).

Figure (2): Illustrates that total universal self-care practice scores of the studied patients was 75.82 ± 9.90 at pre-test which improved at post and follow-up tests to (100.27 ± 14.02 and 94.38 ± 11.65) respectively. There is highly statistical significant difference between studied hemodialysis patient's universal self-care practice scores at pre, immediate posttest and follow up test ($P= 0.000$).

Figure (3): Illustrates that total health deviation self-care practices mean scores of the studied patients was 59.13 ± 6.01 at pre-test which improved in post and follow-up tests to 83.67 ± 6.27 and 80.95 ± 5.25 respectively. There is highly statistical significant difference between studied patient's health deviation self-care practices mean scores at pre, immediate posttest and follow up test at $P= 0.000$. (Paired sample t-test is used).

Table (3): Demonstrates that there is a statistical significant difference between knowledge and (age, sex, education level and social class) of studied patients at pretest at $p= (0.045, 0.032, 0.001$ and $0.003)$ respectively.

Table (4): Reveals that there is a statistical significant difference between studied patients' practice mean scores regarding universal self-care for health behavior and patients' age at pretest at $P=0.016$, education level, at $P=0.039$ and social class at $p= 0.001$.

Table (5): Shows that there is a statistical significant difference between studied patients' practices mean scores regarding health deviation self-care for health behavior and patient's social class at pretest at $P=0.048$.

Discussion:

Worldwide, hemodialysis is one of treatment modalities for patients with end stage renal diseases before transplantation, non-adherence to hemodialysis is the most common cause for morbidity and mortality (Khan & Ahmad, 2020).

Self-care of hemodialysis patients includes diet and water intake, symptom management, maintenance of arteriovenous fistula, medication and exercise instruction. Except for regular dialysis, end-stage renal disease patients need to take care of themselves at home most of the time, but the longer the dialysis treatment lasts, the worse the self-care ability of the patients and some daily activities need to rely on the help of others (Zhang & Xu, 2021).

The present study aimed to determine the effect of educational program regarding self-care behavior for hemodialysis patients at Beni-Suef university hospital.

The current study indicated that the age range varied from less than 20 years old to more than 40 years old as well as studied hemodialysis patients aged less than 20 years old and more than 40 years old having a higher age group. This result is supported by Shrestha, et al., (2016) who found that the age varied from less than 20 yrs to more than 40 yrs, with a higher age group of 60 yrs or above. It is observed that chronic kidney disease affects not only the elderly, who were considered as risk group, but also young aged people and middle age. Ardissino, et al., (2012); Anjos; Oselame, (2013) & Pereira, et al., (2015) reported that it suggests that puberty is associated with increased deterioration of renal function in chronic kidney disease. The mechanism(s) underlying this unique and specific (to children) pattern of progression have not yet been identified, but it may be that sex hormones play a role in this puberty-related progression of chronic kidney disease. Also the structure and renal function deteriorate with age, and the glomerular filtration rate slowly decreases with aging when, at 40 yrs of age; there is a decline of 25%.

The present study illustrated that more than half of studied hemodialysis patients were males. These result findings agree with Gunes, et al., (2020) who found that more than half of studied hemodialysis patients were males.

Regarding residence, the current study results showed that majority of studied hemodialysis patients were living in rural area. These result findings were in contrast with Mahjubian, et al. (2018) who reported that the vast majority of studied hemodialysis patients were living in urban area.

The present study also demonstrated that about two fifths of studied hemodialysis patients had secondary school. These results agree with Kim & Kim (2019)

who proved that the highest percentage had secondary school. The level of education is a critical aspect, as higher education provides greater access to knowledge and improves economic conditions. On the other hand, illiteracy or even a lack of education might obstruct the learning of self-care and adherence to healthy lifestyle practices.

The current study showed that only more than one tenth of studied hemodialysis patients were governmental employee. These result findings were congruent with **AL-Abedi, et al., (2020)** who indicated that more than one tenth of studied hemodialysis patients were governmental employee. Constraints develop as a result of changes in physical capacity; hemodialysis treatments, which occur three times per week and last four hours (excluding travel time to and from the dialysis center); physical disorders, and the need for self-care. All this will be obstacles to routine work as well as considerable number of them were young age.

Concerning the social class, only more than half of studied hemodialysis patients had middle social class. These study findings stand in the line with **Gunes, et al., (2020)** who found that more than half of studied hemodialysis patients had middle social class. It can be paired with the fact that an increase in medical-hospital expenditures, age, and associated health problems (heart, hypertension, diabetes mellitus, anemia) all have a detrimental impact on economic standards and produce financial challenges for the majority of hemodialysis patients.

The present study revealed that the most common chronic diseases of hemodialysis patients were glomerulonephritis may the cause of chronic renal failure in hemodialysis patients. These results aren't in the same line with **Plumb, et al., (2021)** who illustrated that diabetes mellitus was the most common chronic diseases of hemodialysis patients. **Wetmore, et al., (2016)** reported that glomerulonephritis is a prominent cause of renal impairment. It leads to 10% to 15% of end-stage renal disease cases in the United States.

The current study showed that more than half of studied hemodialysis patients were taking regular medications. The current study result was consistence with **ZainELdin, et al (2018)** who found that the majority of HD patients get medication for long period.

The current study indicated that studied hemodialysis patients' total knowledge scores improved, where vast majority of them had poor knowledge at pretest to about two thirds of studied hemodialysis patients had good level of knowledge that slightly declined at follow up test to about two fifths and there was statistically significant difference between hemodialysis patient's knowledge in pre, immediate

posttest and follow up test ($P= 0.000$). These findings go in the same line with the result findings of **Fadlalmola & Elkareem, (2020)** who indicated that there was an improvement in patients' knowledge from the pre- to posttest after implementation of the educational intervention program about hemodialysis. All the components of knowledge were significantly improved in the posttest compared with pretest evaluation ($p < 0.05$). These findings may be explained by lack of knowledge of studied hemodialysis patients about renal failure and improved knowledge of studied hemodialysis patients at posttest due to implementation of educational program had a good impact in their knowledge and improved it.

The results of the current study showed that total mean scores of studied hemodialysis patient's universal self-care practice improved at posttest than pretest and slightly declined at follow-up test. There is highly statistical significant difference between pre, post and follow-up test at P value = 0.000. This may be due that most of patients have a strong desire to minimize complications of dialysis as well as who are keen to assume daily living activities. The results of present study is consistent with **Ramezani, et al., (2019)** who reported that mean scores of hemodialysis patient's behavior improved significantly in all dimensions (adherence to dietary, fluids-intake restriction, activity and rest and mental health) at posttest after conducting the educational intervention on self-care program ($P < 0.001$).

Also, the present study indicated that total mean scores of hemodialysis patient's health deviation self-care practice improved at posttest than pretest and slightly declined at follow-up test. There is highly statistical significant difference between pretest, posttest as well as follow-up test at P value = 0.000. The results of current study is consistent with **Ramezani, et al. (2019)** who reported that mean scores of hemodialysis patient's behavior improved significantly in all dimensions of (fistula care and skin care) at posttest after conducting the educational intervention on self-care program ($P < 0.001$). Treatment that does not incorporate the patient's participation and certain self-care chores is unsuccessful in achieving the desired results. While with certain lifestyle changes and devotion to researchers' and physicians' recommendations enhance condition management, can help living with life-limiting disease and reducing its consequences.

In addition to, the present study clarified that there was a statistical significant difference between studied hemodialysis patients' age and education level and their knowledge to renal failure at pretest. This result is in contrast with **Whdan, et al. (2019)** who showed that no significant correlation was

observed between age and patient's knowledge about renal failure ($P > 0.005$). However, significant correlation was detected between patients' education levels and their knowledge about renal failure, knowledge related to diet regimen and fluid and vascular access and medication for client hemodialysis.

The current study revealed that there was a statistical significant difference between mean scores of studied hemodialysis patient's universal self-care practice and their education level, social class as well as age at pretest at $P=0.039$, 0.001 and 0.016 respectively. This result similar to study done by **Hermawati, et al., (2016)** who found a statistical significant difference between practice regarding universal self-care for health behavior of studied hemodialysis patients and their age, education level and family income at $P=,0.003$, 0.006 and 0.034 respectively.

Furthermore, the present study revealed that there were no statistical significant difference between studied hemodialysis patients' age and education and their practice mean score regarding health deviation self-care for health behaviors at P (0.640 and 0.754) respectively. This result is similar to study **El Sayed, (2018)** who found no a statistical significant correlations were observed with age but, that there was statistically significant relation between health deviation self-care behavior and level of education at $P=0.037$.

Conclusion:

This study was been conducted in dialysis unit at Beni-Suef university hospital for hemodialysis patients to determine effect of educational program for them regarding their knowledge and practice about self-care behaviour.

Based on the findings of the present study it could be concluded that: The educational program succeeded in improving the studied hemodialysis patients' knowledge and practices regarding self-care behavior. There was a statistical significant relation between studied hemodialysis patients' total knowledge mean scores and their total practice mean scores regarding universal self-care and health deviation self-care for health behavior.

Recommendation: The study recommended that:

1. Dietary counseling and dietary education programs should be held for hemodialysis patients, which promote hemodialysis patients dietary intakes of appropriate food.
2. Hemodialysis patients should be encouraged to ask health care professionals about self-care measures and to report any obstacles or errors in order to save their lives.

3. Further studies are needed in relation to incorporating the results of the current study into interventions that enhance dialysis nurses' awareness toward teaching hemodialysis patients how to engage in the care required by their health condition and its significance.
4. Reapplication of the study on a large sample from different hospitals as well as from different geographical area in Egypt to evaluate the effect educational program for hemodialysis patients regarding self-care behavior and obtain more generalizable data.

References

- **AbdEltwab A, (2012):** socioeconomic scale, Faculty of Education. Assiut University.
- **AboDeif H, ElSawi K, Selim M, & NasrAllah M, (2015):** Effect of an Educational Program on Adherence to Therapeutic Regimen among Chronic Kidney Disease Stage5 (chronic kidney disease 5) Patients under Maintenance Hemodialysis. Journal of Education and Practice, 6, 21-33.
- **Al- Mawsheki E, Ibrahim M & Taha N, (2016):** Nurses' Knowledge and Practice Regarding Care for the Patients during Hemodialysis, Med. J. Cairo Univ, 84(1): 1135-1141
- **AL-Abedi H, Al- Khafajy Z, Eidan A, Al-Mossawy D & Al-Zeyadi A, (2020):** Assessment Self-Care of Patients' Undergoing Hemodialysis with end Stage Renal Disease. Indian Journal of Forensic Medicine & Toxicology, 14(1), 980-987.
- **Anjos M & Oselame G, (2013):** Nursing Care for Elderly Patients with Arteriovenous Fistula in Hemodialysis. Therapy Rev Uniand, 14(3): 251-62.
- **Ardissino G, Testa S, Daccò V, Paglialonga F, Viganò S, Felice-Civitillo C, & Battagliano F (2012):** Puberty is associated with increased deterioration of renal function in patients with CKD: data from the ItalKid Project Archives of Disease in Childhood, 97:885-888.
- **Ashraf U, Mehmood Y, Ali I & Zahra K, (2019):** Hemodialysis; acute intradialytic complications found on maintenance hemodialysis in patients at a public hospital Lahore. Professional Med J, 26(1):45-50.
- **BanayeJeddi M, Shariat F, Moradi F & Kiani A, (2017):** The effect of self-care behaviors education on quality of life in patients with type 2 diabetes: A randomized clinical trial]. J FasaUniv Med Sci, 6(4):538-47. Persian.
- **Bikbov B, Purcell C, Levey A, Smith M, Abdoli A, Abebe M, & Adebayo O (2020):** Global, regional, and national burden of chronic kidney disease, 1990–2017: A systematic analysis for the Global Burden of Disease Study. Lancet, 395(10225) 709–733.

- **Burgos-Calderón R, Depine S & Aroca-Martínez G, (2021):** Population Kidney Health. A New Paradigm for Chronic Kidney Disease Management. *International journal of environmental research and public health*, 18(13), 6786.
- **Centers for Disease Control and Prevention, (2021):** Chronic Kidney Disease in the United States, available at: <https://www.cdc.gov/kidneydisease/pdf/Chronic-Kidney-Disease-in-the-US-2021-h.pdf>.
- **Chen T, Knicely D & Grams M, (2019):** Chronic Kidney Disease Diagnosis and Management: A Review. *JAMA*. 322(13):1294–1304
- **Chicca J, (2020):** Adults with chronic kidney disease: Overview and nursing care goals. *American Nurse Journal*, 2020; 15 (3)16-23.
- **Duan J, Duan G, Wang C, Liu D, Qiao Y & Pan S, (2020):** Prevalence and risk factors of chronic kidney disease and diabetic kidney disease in a central Chinese urban population: a cross-sectional survey. *BMC Nephrology*, 21: e115.
- **El Sayed S, (2018):** Assessment of Self-Care Behaviors, Self-Efficacy and Level of Physical Activity of Patients Undergoing Hemodialysis at hemodialysis center. *Port Said Scientific Journal of Nursing (PSJN)*, 1(5) 73-94.
- **Fadlalmolaa H & Kareem El, (2020):** Impact of an educational program on knowledge and quality of life among hemodialysis patients in Khartoum state, 12:100205.
- **Foreman, K, Marquez N, Dolgert A., Fukutaki, K., Fullman, N., McGaughey M, & Carter A (2018).** Forecasting life expectancy, years of life lost, and all-cause and cause-specific mortality for 250 causes of death: reference and alternative scenarios for 2016-40 for 195 countries and territories. *Lancet*, 392(10159): 2052–2090.
- **Garcia-Garcia G, Jha V, & Tao Li P (2015):** Chronic kidney disease (chronic kidney disease) in disadvantaged populations. *Clin Kidney J*, 8(1):3-6.
- **Gunes D, Baskan S & Kasimoglu N, (2020):** Evaluation of Self-Care Agency and Perceived Social Support in Patients Undergoing Hemodialysis. *International Journal of Caring Sciences*, 13(1) 250- 257.
- **Hermawati W, Titiek H, Nur C & Stikes A, (2016):** Faktor-Faktor yang Mempengaruhi Self Care Diet Nutrisi Pasien Hemodialisa di RSUD DR. Moewardi Surakarta. *Gaster*, 14 (2):38-49.
- **Khan S & Ahmad I, (2020):** Impact of hemodialysis on the wellbeing of chronic kidney diseases patients: a pre-post analysis. *Middle East Current Psychiatry*, 27(1)1-5.
- **Kim B, & Kim J (2019):** Influence Of Uncertainty, Depression, And Social Support On Self-Care Compliance In Hemodialysis Patients. *Ther Clin Risk Manag*. 2019; 15:1243-1251
- **Levin A, Tonelli M, Bonventre J, Coresh J, Donner J, Fogo A, & Fox C (2017):** Global kidney health 2017 and beyond: a roadmap for closing gaps in care, research, and policy. *Lancet*. Oct 21;390(10105):1888-1917.
- **Li P, Garcia-Garcia G, Lui S, Andreoli S, Fung W, Hradsky A, & Kumaraswami L (2020):** Kidney health for everyone everywhere from prevention to detection and equitable access to care. *Clin Nephrol*, 93(3):111-122.
- **Lok C, Huber T, Lee T, Shenoy S, Yevzlin A, Abreo K, & Allon M (2020):** KDOQI Clinical Practice Guideline for Vascular Access: 2019 Update. *Am J Kidney Dis*, 75 (Suppl 2):S1-S164
- **Mahjubian A, Bahraminejad N & Kamali K, (2018):** The Effects of Group Discussion Based Education on the Promotion of Self-Management Behaviors in Hemodialysis Patients. *J Caring Sci*, 7(4):225-232.
- **Mahmoud S & AbdElaziz N (2015):** Association between Health Locus of Control, Self-care and Self-efficacy in Patients with End Stage Renal Disease Undergoing Hemodialysis. *Life Science Journal*. 2015;12(11):59-60
- **Pereira A, Costa M, Sampaio J, Teixeira O, Pinheiro M & Leite E, (2015):** Renal disease: social, clinical and therapeutic profile of the elderly attended in a nephrology service. *Espaç.saúde (Online)*, 16(2):77-85.
- **Plumb T, Alvarez L, Ross D, Lee J, Mulhern J, Bell J, & Abra G (2021):** Self-care training using the Tablo hemodialysis system. *HemodialInt*, 25(1):12-19.
- **Ramezani T, Sharifirad G, Rajati F, Rajati M & Mohebi S, (2019):** Effect of educational intervention on promoting self-care in hemodialysis patients: Applying the self-efficacy theory. *J Educ Health Promot*, 14;8:65.
- **Saadi G & El Nahid M, (2020):** Renal Disease Burden in Sample Countries from Five Continents. *Int. J. Nephrol. Kidney Failure*, 6(4):1-8.
- **Shintani, K. (2014):** Association between the components of self-care and health locus of control among hemodialysis patients. *The Niigata Journal of Health and Welfare* (1):7.
- **Shrestha B, Rajbanshi L & Lopchan M, (2016):** Self-Care Knowledge among Chronic Kidney Disease Patients Undergoing Maintenance Hemodialysis. *Ann Nurs Pract*, 3(5): 1061
- **Wetmore J, Guo H, Liu J, Collins A & Gilbertson, D (2016):** The incidence, prevalence, and outcomes of glomerulonephritis derived from a large retrospective analysis. *Kidney international*, 90(4), 853–860.

- **Whdan S, Soliman N, Mekhemar S & Abd El-Moneem H, (2019):** Home self-care for client with hemodialysis at Ashmon district Hospital. *Egyptian Journal of Health Care*, 10 (3)255-287.
- **Wong K, Velasquez A, Powe N, & Tuot D (2018):** Association between health literacy and self-care behaviors among patients with chronic kidney disease. *BMC Nephrol*.19(1):196.
- **ZainELdin, N Omar T, Younis J & Ahmed G (2018):** Effect of Self-Care Model Intervention on Quality of Life of Children Undergoing Hemodialysis. *Res & Rev Health Care Open Acc J*.2(2)129-137
- **Zhang X & Xu C, (2021):** Research Progress on Self-Care Ability of Hemodialysis Patients. *Open Journal of Nursing*, 11(05):320-330.