



African Journal of Biological Sciences



Effect of Nursing Instructions on Knowledge among Patient undergoing Hemodialysis

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Abstract:

Nursing instructions is focused on the development and promoting of knowledge for hemodialysis patients. **This study aimed to** assess the patient knowledge about hemodialysis, design nursing instructions about hemodialysis, implement and evaluate the effect of nursing instructions on patient's knowledge. **Research design:** This study was quasi experimental (pre /post- test) research design. **Sample:** A Convenience samples of one hundred adult patients among regular hemodialysis, their age range between (18 - 65) from both sexes and who are willing to participate in the study. **Setting:** The study was conducted in Hemodialysis Unit at Assiut University Hospital. **Tool:** A structured interview questionnaire sheet, patient knowledge assessment sheet and Nursing instructions for hemodialysis patients protocol were used. **Results:** There were a statistical significant difference between total scores of knowledge (pre / post-test) (after two month) after implementing nursing instructions (P=0.001). **Conclusion:** Designed nursing instructions protocol was effective in improving knowledge for patients undergoing hemodialysis.

Key words: Hemodialysis, Nursing Instructions, Knowledge.

Article History

Volume 6, Issue 5,

Received: 01 May 2024

Accepted: 09 May 2024

doi:10.33472/AFJBS.6.5.2024.2576-2586

Introduction:

End stage Renal Disease (ESRD) has been emerged as a major public health problem around the world. In Egypt, the prevalence of ESRD is one of the highest diseases in comparison to other countries. End Stage Renal Disease is a total or almost total permanent kidney failure. It is progressive and frequently irreversible decline in kidney function, which is ultimately fatal without the intervention of intermittent dialysis or kidney transplantation¹.

In Egypt, the total prevalence of patients on dialysis increased from 225 person per million (pmp) in 1996 to 483 pmp in 2008 (according to last Egyptian renal registry)².

Chronic Renal Failure (CRF) is a kidney illness that progresses and cannot be cured. At this point, the body's capacity to preserve water and electrolytes and manage their balance would be ruined, which would lead to uremia. The renal function is also being harmed and destroyed. Numerous issues with the patient's life are brought on by this kidney malfunction, which necessitates the usage of kidney replacement therapy such hemodialysis³.

Patients with chronic kidney disease (CKD) are a growing population. Living with CKD is a long-term challenge creating a need for sufficient knowledge via education for treatment adherence and patient empowerment⁴. Sufficient knowledge can be defined as adequate amount and time of essential, multidimensional knowledge enabling patient empowerment. Sufficient knowledge can be supported with patient education. It is necessary for patient empowerment, supports patient's self-management and treatment adherence⁵.

Patients with end-stage renal disease have only two options in order to stay alive: life-long dialysis (hemodialysis or peritoneal dialysis) or renal transplantation. Of these options, dialysis is considered the treatment of choice⁶. The majority of patients receive hemodialysis, as patients on hemodialysis account for approximately 98.7% of patients receiving hemodialysis and 1.3% who received peritoneal dialysis⁷.

Hemodialysis (HD) is a method that is used to achieve the extracorporeal removal of waste products such as creatinine and urea also free water from the blood when the kidneys are in a state of renal failure⁸. The HD cannot replace all the functions of the kidney, so fluid and dietary restrictions are important, and great compliance is required by the patients. On the other hand, patients on hemodialysis require managing and compliance to a complex treatment regimen of dietary restrictions and fluid limitations⁹⁻¹⁰.

Patients with hemodialysis are required to follow a complicated treatment protocol that includes frequent HD sessions, severe dietary restrictions, a complex medication regimen, and exercise prescription¹¹. Failure to follow this regimen may result in short and long term consequences for health and survival. In short term, non-compliance to treatment regimens may increase the likelihood of emergency and hospital admissions¹².

Dialysis nurses (registry nurses) must have an exceptional expert knowledge of the processes that take place of the patients, proper function of all dialysis-related equipment and keep these pieces of equipment in proper working in order to providing care that does not cause complications or infections in the patients and provide an effective patient education to each of their dialysis patients¹³.

The role of dialysis nurse (registry nurse) is monitor patients before, during, and after they have completed their dialysis treatments, provide guidance for patients in the area of proper dialysis management, including proper diet and activities in which to avoid and ensure that the dialysis equipment is always working properly for patients.¹⁴

Significance of the study

The nephrology nurse functions as a coordinator of patient care collaborating with other care providers and health team members to provide required care as effectively as possible. The nephrology nurse acts as a patient teacher and advocate, assisting the patient in seeking information.¹⁴

This study will help such group of patient's how-to maintain sufficient knowledge about dialysis. Furthermore this study could be helpful for all renal failure patients undergoing hemodialysis.

Aim of the study:

- 1- Assessthe patient knowledge about hemodialysis.
- 2- Design nursing instructions about hemodialysis.
- 3- Implement and evaluate the effect of nursing instructionson patient's knowledge.

Research Hypotheses:

H₁.To fulfill the aims of the study the following hypothesis are formulated

The post mean patient's knowledge scores after implementing nursinginstructions will be higher than pre.

H₂.Patient's Knowledge after implementing nursing instructions will be improved.

Patients and method:

A Quasi experimental (pre –posttest) research design was used on samples of (100) adult patients on regular hemodialysis, their age range between (18 - 65) from both sexes and are willing to participate in the study. According to sample size formula (100) patients were enrolled from (287) patients admitted to the hemodialysis unit under study by random sampling. Sampling was conducted at morning and evening shift.The study was conducted in Hemodialysis Unit at Assiut University Hospital.A **structured interview questionnaire** developed by the researcher based on literature review which included consist Socio- demographic data characteristics;patients knowledge of hemodialysis patients.

Scoring system for knowledge:

The total scores of knowledge were; it developed as one grade for each correct answer and zero for incorrect answer and doesn't know. For each area of knowledge, the scores of items were summed-up and converted into a percentage. The patients' knowledge will considered (poor if <50%, Fair if 50% <70% and Good if >70 %)

Content validity:

The content validity of study tools were checked by 3 expert professors in field of nursing and medicine they reviewed the instruments for clarity, relevance, comprehensiveness, understanding, applicability and easiness for administrative minor modifications that required correction was carried out accordingly.

A pilot study:

A pilot study carried out in June 2023 to test the feasibility and practicability of the study tools and conducted on 10% of the sample (10 patients) of sample. It had also provided an estimate of time needed to fill out the tools.

Data were collected from Hemodialysis Unit at Assuit University Hospital for 4 months during the period from July 2023 to October 2023. (Summer season) The study was carried out at morning and afternoon shifts for all available patients.

At initial interview the researcher introduce herself to initiate line of communication, explain the nature and purpose of the study to the selected patients who are willing to participate in the study and fill out the questionnaire sheet.

After assessment of the patients using the structured interviewing questionnaire that filled through the researcher and then assess Knowledge for patients by knowledge assessment sheet that filled through the researcher. A designed nursing instruction for hemodialysis patients had been developed; the content meet the patients needs, and their levels of understanding. All patients received the contents of designed nursing instructions by the researcher herself. The patients was divided into small group contain of (5-6 patient). A designed nursing instructions protocol was conducted through (5 sessions) and the duration of each session was around 30 to 40 minutes include 10 minutes for discussion and feedback.

Each of the following session usually started by a briefing about what had been discussed in the previous session, using simple Arabic Language. Each session ended by a summary of what has been taught during the previous session and the objectives of new topics.

Feedback and reinforcement of designed nursing instructions protocol was performed according to patients need to ensure their understanding.

Giving recognition to the interested patients was emphasized for motivation during the instructions. Each patient obtained a copy of the designed nursing instructions protocol booklet that included the instructions content.

An official Permission to carry out the study was obtained from the responsible hospital authorities of the Hemodialysis Unit at Assiut University Hospital. To achieve validity and reliability of tools, it will be reviewed by experts (medical and nursing) in the field of the study and necessary modifications will be done.

Protection of human right:

Each patient was informed with the purpose of the study. The investigator emphasized that the participation is voluntary and confidentiality and anonymity of subjects will be assured through coding of the data, and protection of the patient from hazard. Verbal consent was obtained from each patient prior to his/here contribution in the present study. Confidentiality of any obtained information was secured.

Oral permission from the participating patients was obtained.

Ethical considerations:

1. Research proposal was approved from Ethical Committee in the faculty of nursing.
2. There is no risk for study subject during application of research.
3. The study was following common ethical principles in clinical research.
4. Oral consent was obtained from patients or guidance who are willing to participate in the study, after explaining the nature and purpose of the study.
5. Confidentiality and anonymity will be assured.
6. Study subject have the right to refuse to participate and or withdraw from the study without any rational any time.
7. Study subject privacy was considered during collection of data.

The statistical design:

The data obtained had reviewed, prepared for computer entry, coded, analyzed and tabulated, Descriptive statistics include (frequencies and percentages, mean and standard deviation test were done using computer program (SPSS).

Results:**Table (1): Distribution of demographic data for participant (n=100)**

Variables	N	%
Variables	No.	%
age		
18<40yrs	28	28.0
40<50yrs	25	25.0
50-65yrs	47	47.0
Sex		
Male	51	51.0
Female	49	49.0
marital status		
Single	12	12.0
Married	76	76.0
Divorced	2	2.0
Widow	10	10.0
level of education		
Illiterate	20	20.0
primary school	15	15.0
secondary school	50	50.0
high education	15	15.0
occupation		
Working	20	20.0
not work	80	80.0
residence		
Rural	47	47.0
Urban	53	53.0

Table (2): Total level of patient knowledge (pre / post) Nursing Instructions (n=100)

Level of Knowledge		pre	post	Total
poor= <50%	N	86	0	200.000 P=0.001
	%	86.0%	0.0%	
Fair=50% <70%	N	14	0	
	%	14.0%	0.0%	
Good=>70 %	N	0	100	
	%	0.0%	100.0%	
mean±SD		19.320±3.85	40.06±1.420	55.262 P=P=0.001

Chi-Square Tests *=Significant difference *p≤0.05 **= highly significance *p≤0.01
 Ns= Non significant difference P>0.05

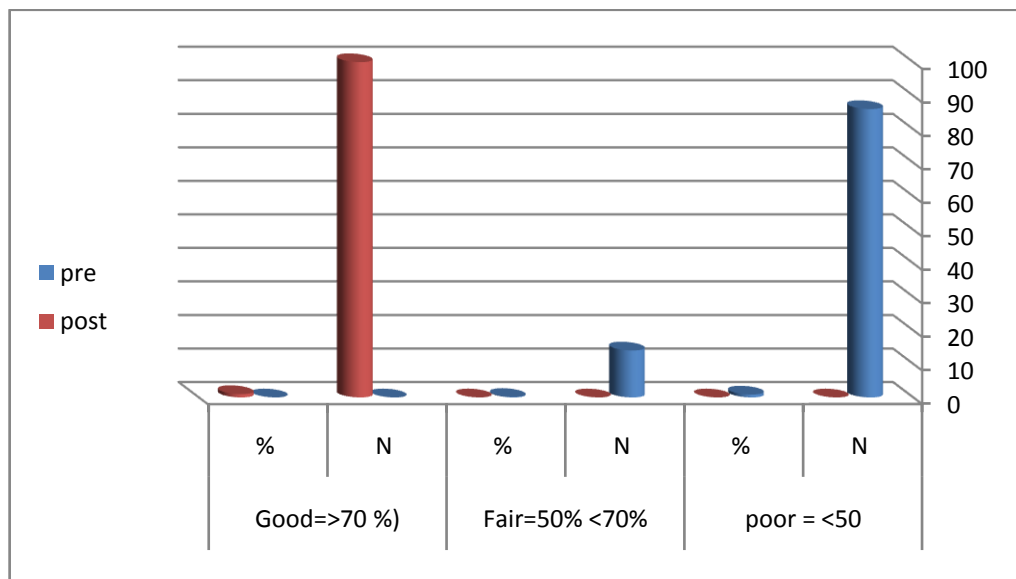


Fig. (1): Total Level of patient knowledge (pre / post) Nursing Instruction (n=100)

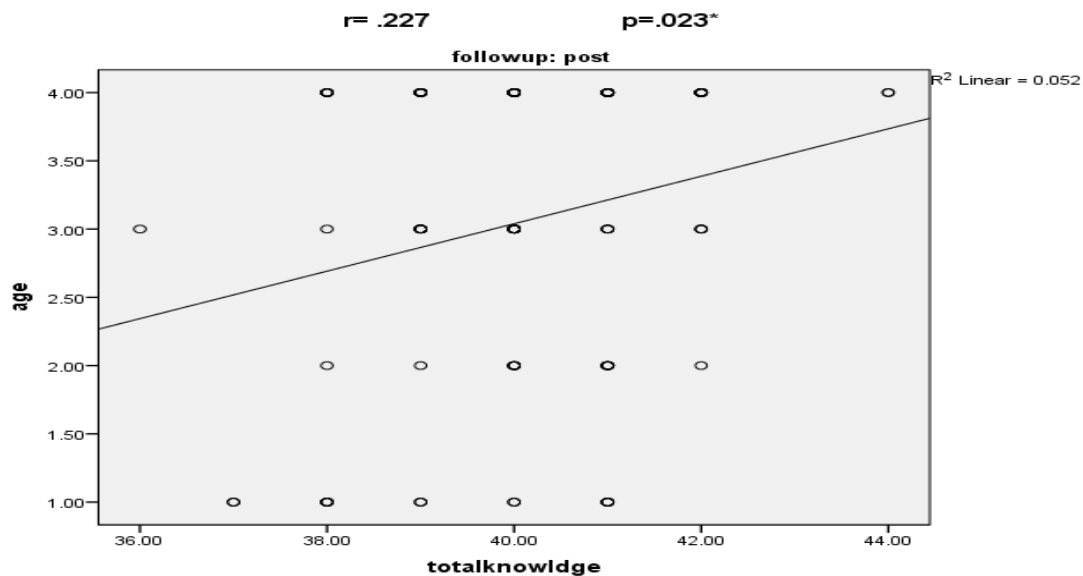


Fig. (2): Correlation between demographic data and knowledge (n=100)

Table (1): Reveals that there was high percentage of the studied sample male than female(51%), the highest percentage of the studied sample (76%) were married, their age ranged from (50 to 65) years old (47%) regarding to level of education about (50%) were secondary school, also the majority of them were not working (80%), and living in urban (53%).

Table (2): Show that there was a highly statistical significant difference of total level of patient knowledge regarding hemodialysis in the (pre /post-test) (after two month) for the study sample with a p. value =0.001.

Discussion

Chronic kidney disease (CKD) is one of the most prevalent global health problems. The number of CKD patients transitioning to maintenance hemodialysis has increased in recent years. Nearly 25 million patients required dialysis therapy in 2020, which is expected to double by 2030¹⁵.

Hemodialysis has been considered a standard alternative treatment for patients with kidney failure¹⁶. 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 pressure¹⁷

Regarding to socio-demographic characteristics of the studied patients, the current findings showed that the majority of the studied patients were male, the highest percentage were married, more than half of them living in urban area and their age ranged from (50 to 65) years old, half of them had secondary school and the majority of them not work . This result agree with¹⁸(Wafaa, et al., 2023) who found that that more than half of the studied patients aged between (41 to 50 years) with a mean age of 42.14 ± 6.96 years, slightly less than three quarters of them were males, slightly more

than half of them had secondary education, less than two thirds of them were working as governmental employees. And with ¹⁹(Fernandes and D'silva ., 2020) who found that the majority of clients were males. And with³(Mosavi et al., 2020)who found that that 61.8 percent of the intervention group in their study at Shahrekord University of Medical Sciences in Shahrekord, Iran, were men. with the study done by ²⁰(Wahyuni., et al., 2019) which conducted in Surabaya, Indonesia, revealed that most of their respondents (77.2%) were between the ages of 46 and 59 and nearly half (46.8%) had high school . Also disagreed with ²¹(Hamza et al., 2021), their study conducted at Beni Suef University in Egypt, (36.4%) of the participants were between the ages of (20 and 40), with a mean age of 38.61 ± 6.32 . Additionally (58.1%)of them were illiterate.

Finally, this study indicated that regarding total Knowledge of the study sample (pre- post test) there was that a highly statistical significant difference of total level of patient knowledge regarding hemodialysis , This agree with ²²(Alikari et al., 2019), who found that there was a significant difference in knowledge scores for their intervention group and with ²³(Ebrahimi et al., 2019), who found that there was a significant increase in the level of patients' knowledge regarding hemodialysis after educational intervention implementation and also agree with²⁴(Fadlalmola&Awad, 2020), who found that their was an improvement in various knowledge areas and showed that patients' knowledge about hemodialysis had improved from the pre- to posttest following the execution of the educational intervention program. In the posttest evaluation compared to the pretest evaluation, all knowledge components considerably improved ($p < 0.05$). This result finding wasn't in agreement with ²⁵ (Goma et al., 2021), who mentioned that less than half of their participants (42.5%) had poor total knowledge score and more than one quarter of them (26%) had good total knowledge score regarding hemodialysis.

Conclusion:

According to the result of this study, nursing instructions has a favorable effect on the knowledgeamong hemodialysis patient and based on the result of the present study, it can concluded that there was a highly statistical significance difference between total scores of knowledge,pre and post-test (after two month) $P=0.001$.After nursing instructions in Hemodialysis Unit at Assiut University Hospital.

Recommendations:

Developing strategies aimed to improve knowledge for hemodialysis patients by in-service training programs related to nursing instruction for hemodialysis patients must be frequently conducted in the unit for continuous maintain and improve knowledge.

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