

## EFFECT OF UREMIC PRURITUS EDUCATIONAL INTERVENTION ON KNOWLEDGE LEVEL FOR HEMODIALYSIS PATIENTS

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### Abstract

Hemodialysis (HD) is one of the most important and effective treatment modalities that can help to sustain life of end stage renal disease patient. A large number of HD patients suffer from uremic pruritus (UP). Patient education is an important aspect of clinical management that encourages a continuous and interactive process that looks to improve the patient's lifestyle and thereby prevent or decrease the UP related complications. **Aim of this study:** Evaluate effect of uremic pruritus educational interventions on knowledge level for hemodialysis patients. **Method:** Quasi experimental research design was used in this study. **Setting:** The current study was conducted in hemodialysis unit at General Kafr Elsheikh governorate hospital. **Sample:** A purposive sample of (80) HD patients with uremic pruritus was randomly divided into two groups with equal size. **Tools:** Interview questionnaire sheet consisted of three parts such as demographic data, medical data, and assessment of patient knowledge. **Results:** The current study showed that the average knowledge scores are nearly the same in both study and control groups at pretest, while at posttest there was a statistical significant difference between study and control groups as the average knowledge scores are significantly higher in study group compared to control group. **Conclusion:** Hypothesis of the current study was accepted as patients who receive the uremic pruritus educational interventions have an increased level of knowledge.

**Key Words:** Educational intervention, Hemodialysis, Uremic Pruritus, Patients' knowledge.

### Introduction

Hemodialysis (HD) is the main modality treatment for end stage renal disease patients. It removes the waste products like urea, creatinine, and excessive fluids from the body. Although, HD reduces the disease symptoms and improves patients' lifestyle, but their quality of life is affected by the disease and its complications. Lack of information and non-adherence to treatments is a common issue among those patients and can affect many care aspects<sup>(1)</sup>.

Uremic pruritus is one of a disabling and distressing symptom among HD patients it accounts 50% to 90% during dialysis treatment. It has a negative impact on patients' physical, psychological and social wellbeing, and distressing for family members that lead to strongly affect patient quality of life and increase morbidity and mortality rate among those patients<sup>(2)</sup>.

Health education is a corner stone in management of UP among HD patients. It can assist patients with managing

their complex therapeutic regimens. Thus, it seems that lack of information is the most important factor contributing to noncompliance with therapeutic regimens, which in turn may lead to exacerbation of the UP complications<sup>(3)</sup>.

Educational strategies towards improving knowledge of the UP patients have been carried out using different methods. These include life style modifications, administration of UP medications, and nutritional regimen. Therefore, nurses play an important role in performing the educational interventions for those patients concerning long-term measures to promote health, putting in consideration functional limitations, mental disorders, and their educational needs<sup>(4)</sup>.

Nurses play an important role in improving patient outcomes; they have more face-to-face interactive time to reinforce the importance of compliance compared to other health care professionals. Nurse's role is important to teach and facilitate patient's adoption to new therapeutic regimen, nurses can conduct nursing management for UP patients that help patients better understand their renal disease condition; acquire self-care skills in order to improve compliance and quality of life<sup>(5)</sup>.

## **2. Significance of the study:**

Uremic pruritus is a common and distressing symptom for patients with HD. It leads to many complications such as sleep deprivation, depression, negative effect on quality of life, as well increased risk of death<sup>(6)</sup>. Hemodialysis patients who are suffering UP need for a multidisciplinary approach for uremic pruritus management in which nurses have an important, primary responsibility

in providing management for those patients.

Through clinical observation of the researcher at hemodialysis unit, it was noticed that pruritus was the most common complain of HD patients that affect their sleep, daily living activities, and quality of life. Unfortunately, large proportion of HD patients had knowledge deficit regarding management of uremic pruritus.

Lack of information and non-adherence to treatment regimen is a common issue among hemodialysis patients and can affect many care aspects. About 50 percent of hemodialysis patients are estimated not to follow at least a part of their hemodialysis therapeutic regimen<sup>(7)</sup>. Thus, it's crucial to conduct a study to evaluate effect of uremic pruritus educational interventions on knowledge of hemodialysis patients.

**3. Aim of this study:** was to evaluate effect of uremic pruritus educational interventions on knowledge level in hemodialysis patients.

## **4. Subjects & Method**

### **4.1-Study Design:-**

Quasi- experimental research design was used in this study.

### **4.2- Setting: -**

The current study was conducted in hemodialysis unit at General Kafr Elsheikh governorate hospital.

### **4.3- Subjects: -**

A purposive sample of 80 adult male and female patients on maintenance hemodialysis was enrolled in this study after calculating sample size through clin calc.com sample size calculator software, at 1%  $\alpha$  error (99.0% significance) and 5.0  $\beta$  error (95.0% power of the study), The calculated sample size is 37 in each group, we can add 5.0% for better quality of data, so the sample size will be 40 in each group.

They enrolled in this study based on the following criteria:

**Inclusion criteria**

- patients aged from 21 to 60 years old,
- patients received two to three HD sessions per week.
- Patients who suffered from UP.

**Exclusion criteria**

Patients suffered from liver, hematological, and dermatological diseases.

**Tools of the study: -**

One instrument was used for data collection and achieves the aim of the study as the following:

**Instrument I:** Structured Interview Questionnaire, it consisted of three parts as follow:

**Part I: Demographic data:** This part was designed by researcher to collect base line and personal data such as gender, age, marital status, educational level, and occupation.

**Part II: Medical data:** This part was designed by researcher to collect clinical data such as causes of renal failure, family history of renal failure, duration of hemodialysis, hemodialysis sessions per week, previous exposure of uremic pruritus, and previous hospitalization due to uremic pruritus.

**Part III: Patient knowledge assessment:** This part of tool was developed by the researcher to assess patients' knowledge regarding uremic pruritus, causes, signs and symptoms, and its management as pre and posttest. Thirty questions have correct or incorrect response as they have only one correct answer.

**Scoring system:** the total scores of the knowledge ranged from 0 – 30. One

mark awarded for each correct answer and zero for unknown or incorrect one.

Total knowledge score was categorized into three levels:

- Poor knowledge level <50% of total score (score 0 to less than 15).
- Fair knowledge level 50% - 75% of total scores (score 15 to less than 22.5).
- Good knowledge level is >75% of total scores (score 22.5 to 30).

**Validity & Reliability:**

The content validity was established by a panel of five expertise of professors academic nursing, who reviewed the tools for feasibility, clarity, relevance, comprehensiveness, understanding, applicability and simplicity for implementation and according to their opinion some modification were done.

**Pilot Study**

Testing of the selected tools was carried out before starting the data collection, it was applied to group of 10% of total number of hemodialysis patients (8) to ensure the clarity, applicability, and feasibility of the tool will be excluded from the study sample.

**Ethical considerations**

Administrative preparations such as official permission were attained from the faculty of nursing of Mansoura University. In addition, official letter was obtained from the hospital administrative authority after sending official letter from the faculty and clarifying the aim and nature of the study. Oral consent was obtained from the patients after illustration the aim and nature of the study. Patient was reported that they have the right to refuse participation in the study and this wouldn't influence their care. Anonymity, privacy, safety and confidentiality were absolutely assured throughout the study. The researcher

emphasized to the patients that they can pull out of participation at any time.

**5. Data collection**

Data was collected over a period of six months from the beginning of September 2018 to end of February 2019, in which the researcher interviewed with each patient of both groups in three constructive phases namely: assessment, intervention and evaluation phase.

**Assessment phase: -**

**Assessment phase:** During this phase the researcher explained purpose and instruments of the study. Assess the patients who meeting the sampling criteria using tool one. The needed time to perform the pretest was ranged from (20-30) minutes for each patient.

**Implementation phase:**

**Implementation phase:**Each patient interviewed individually, written colored booklet was given to memorize patient about UP nursing management. In this phase the content was presented in form of two sessions for a period of 20 -30 minutes in each session as follows: **first session:** the researcher provided patients with knowledge about kidney, its function, renal failure and hemodialysis, and uremic pruritus **Second session:** the researcher refreshed the previous given knowledge and then covered how to intervene uremic pruritus.

**Evaluation phase**

In order to evaluate impact of uremic pruritus educational interventions on level of patient knowledge each patient in the study and control group was evaluated by posttest.

**6- Results:**

**Table (1)** Distribution of the studied subjects according to their demographic characteristics.

Characters	Items	Study Group (40)		Control Group (40)		Significance test
		No	%	No	%	
<b>Gender</b>	Males	25	62.5	25	62.5	
	Females	15	37.5	15	37.5	
<b>Age (years)</b>	30<40	6	15.0	6	15.0	$\chi^2 = 0.620,$ <b>P 0.733</b>
	40<50	9	22.5	12	30.0	
	50≤60	25	62.5	22	55.0	
	Mean ±SD	50.75 ± 8.82		51.13 ± 8.17		
<b>Marital status</b>	Single	3	7.5	1	2.5	$\chi^2 = 2.253,$ <b>MEP 0.554</b>
	Married	26	65.0	25	62.5	
	Divorced	5	12.5	9	22.5	
	Widow	6	15.0	5	12.5	
<b>Education</b>	Illiterate	16	40.0	9	22.5	$\chi^2 = 6.051,$ <b>P 0.109</b>
	Primary	4	10.0	12	30.0	
	Secondary	14	35.0	14	35.0	
	University	6	15.0	5	12.5	
<b>Occupation</b>	Not working	35	87.5	36	90.0	<b>FET,</b> <b>P 1.00</b>
	Working	5	12.5	4	10.0	

$\chi^2$ , P:  $\chi^2$  and P values for Chi square test.

Table 1 show that percentage of males and females are the same in study and control group (62.5% & 37.5%) respectively. The average age in study group is 50.75 ± 8.82 compared to 51.13 ± 8.17 years in control group. Marital

status is nearly the same in both groups as 65% of the study group and 62.5% of the control group were married. As regard occupational status, 87.5% of the study group and 90% of the control group were not working.

Table (2) Distribution of the studied subjects according to their medical data.

Characters	Items	Study Group (40)		Control Group (40)		Significance test
		No	%	No	%	
Causes of renal failure	Kidney diseases	8	20.0	5	12.5	$\chi^2=1.557$ , P 0.669
	Hypertension	12	30.0	16	40.0	
	DM	9	22.5	7	17.5	
	HTN+DM	11	27.5	12	30.0	
When RF occurred (years)	< 1 year	0	0.0	0	0.0	$\chi^2=1.727$ , P 0.413
	1< 5	7	17.5	4	10.0	
	5< 10	26	65.0	25	62.5	
	≥ 10 years	7	17.5	11	27.5	
Family history of RF	No	31	77.5	29	72.5	$\chi^2=0.267$ , P 0.606
	Yes	9	22.5	11	27.5	
Duration of hemodialysis	< 5 years	7	17.5	4	10.0	$\chi^2=1.727$ , P 0.413
	5 – 10 years	26	65.0	25	62.5	
	>10 years	7	17.5	11	27.5	
Hemodialysis sessions/week	Twice	1	2.5	0	0.0	FET, P 1.00
	Three times	39	97.5	40	100.0	
Duration of session/day	3 hours	2	5.0	1	2.5	FET, P 1.00
	4 hours	38	95.0	39	97.5	
How many cig./day	10-	5	38.5	4	26.7	FET, P 0.396
	20-30	8	61.5	11	73.3	
Previous uremic pruritus	No	0	0.0	0	0.0	
	Yes	40	100.0	40	100.0	
Its types?	Interrupted	31	77.5	27	67.5	$\chi^2=1.003$ , P 0.317
	Continuous	9	22.5	13	32.5	
Its duration (years)	< 5	7	17.5	6	15.0	$\chi^2=5.577$ , P 0.062
	5-	15	37.5	25	62.5	
	10+	18	45.0	9	22.5	

Table 2 shows medical data of the studied groups, hypertension was the major risk factor associated with renal failure as it was found in 30% of the study group and 40% in the control group. Moreover, HD sessions were

three times per week for 97.5% of the study group 100% for the control group, also a session prolonged to 4 hours per day in 95% of study group patients and 97.5% in the control group patients.

**Table (3)** Average total scores of patients' knowledge regarding uremic pruritus at pre and posttest.

Variables	Pre test			Post test		
	Study Group (40)	Control Group (40)	Significance test	Study Group (40)	Control Group (40)	Significance test
	Mean ± SD	Mean ± SD		Mean ± SD	Mean ± SD	
1- Patient knowledge regarding uremic pruritus	4.13 ± 0.99	4.13 ± 1.11	t=0.000, P1.000	6.75 ± 0.59	4.13 ± 1.11	t=14.580**, P<0.001
2- Patient knowledge regarding sooth & relaxing bath	1.00 ± 0.55	0.78 ± 0.69	t=1.597, P0.114	4.73 ± 0.51	0.78 ± 0.69	t=27.266**, P<0.001
3- Patient knowledge regarding life style habits	2.05 ± 0.50	2.08 ± 0.42	t=0.242, P0.810	5.23 ± 0.58	2.08 ± 0.42	t=23.751**, P<0.001
4- Patient knowledge regarding treatment by medications	1.60 ± 0.63	1.48 ± 0.68	t=0.852, P0.397	3.73 ± 0.45	1.48 ± 0.68	t=17.755**, P<0.001
5- Patient knowledge regarding nutrition	2.30 ± 0.85	2.45 ± 0.81	t=0.804, P0.424	7.57 ± 0.75	2.45 ± 0.81	t=30.454**, P<0.001
total Patients' knowledge	11.10 ± 2.13	10.90 ± 1.97	t=0.455, P1.664	28.00 ± 1.91	10.90 ± 1.97	t=40.164**, P<0.001

t, P, t and P values for student t-test. \*: Statistically significant at P≤0.05. \*\*: a highly statistically significant relation.

Regarding patients' knowledge about UP at pretest it was found that, the average scores are nearly the same in both study and control groups, with no statistical significant difference (P > 0.005). while at posttest there was a

statistical significant difference between study and control groups as the average scores are significantly higher in study group (28 ± 1.91) compared to control group (10.90 ± 1.97).

**Table (4)** Level of Patients' knowledge regarding uremic pruritus at pre and posttest.

Knowledge level	Values	Pre test				Significance test	Post test				Significance test
		Study Group (40)		Control Group (40)			Study Group (40)		Control Group (40)		
		No	%	No	%		No	%	No	%	
Poor	< 50.0%	37	92.5	39	97.5	0	0.0	39	97.5		
Fair	50.0 - < 75.0%	3	7.5	1	2.5	χ <sup>2</sup> =1.053, P 0.615	1	2.5	1	2.5	χ <sup>2</sup> =70.00**, P < 0.001
Good	≥ 75.0%	0	0.0	0	0.0		39	97.5	0	0.0	

χ<sup>2</sup>, P, χ<sup>2</sup> and P values for Chi square test. \*: Statistically significant at P≤0.05. \*\*: a highly statistically significant relation.

This table shows that according to pretest assessment of patients' knowledge, it was found that 92.5% of study group and 97.5% of control group patients had poor knowledge level, with no significant difference between both

groups. While at posttest assessment of patients' knowledge, it was noticed that 97.5% of the study group patients had good knowledge level and 92.5% of the control group patients had poor knowledge level, with a high statistical significant difference between the both groups.

## **7. Discussion**

### **Demographic data characteristics:**

Results of the current study revealed that near two thirds of study subjects were males, ranged between thirty and sixty years old, the mean age for study and control group was  $50.75 \pm 8.82$ ,  $51.13 \pm 8.17$ , respectively, more than half of them were married. These findings are in agreement with the finding of<sup>(8)</sup> who study Epidemiological study of patients on regular hemodialysis at Kafr El-Sheikh Governorate, Egypt, and stated that the mean age was  $51.34 + 13.5$  years.

Additionally, in relation to occupation it was noticed that majority of the study subjects were unemployed. This is in a line with<sup>(9)</sup> who study socio-demographic data, clinical analysis and projecting burden of hemodialysis in Jordan, and found that majority of study sample were not working.

In researcher point of view, this may be due to nature of disease as patients had to receive dialysis three times a week, each session lasting for four hours, in addition to physiological, psychological changes that affect patients' physical, mental, and social abilities to perform tasks of their job.

### **Medical data characteristics:**

Regarding medical data and history of the study subjects, the present study revealed that hypertension was the major risk factor associated with renal failure. This is in agreement with a study by<sup>(10)</sup> found that Hypertension, diabetes mellitus, and hyperlipidemia were the most common co-morbidities observed in end stage renal disease patients with pruritus.

Moreover, it was found that more than two thirds of the study subjects were receiving their hemodialysis treatment since five to less than ten years ago. All

patients received hemodialysis three times per week that prolonged four hours for each session. This is in accordance with<sup>(11)</sup> perform a comprehensive description of HD treatment and reviewed that all patients received hemodialysis 3 times per week, and the mean duration of a hemodialysis session was  $4.08 \pm 1.02$  h. otherwise,<sup>(12)</sup> mentioned that most of HD patients had to receive hemodialysis three times a week, each session lasting for four hours.

### **Level of Patients' knowledge regarding uremic pruritus at pre and posttest.**

Results of the current study illustrated that knowledge about modifications of life style habits in UP patients is an important aspect of UP management whereas, patients' knowledge regarding life style habits changed in the study group after providing the UP educational interventions. This is in accordance with<sup>(13)</sup> who confirmed that, changing habits of skin care through administration of moisturizing skin lotions and cooling soothing agents is a simple, safe, inexpensive and easily administered treatment that had positive effects on itching.

Furthermore, it was noticed through our study results that knowledge about UP patients' nutrition is an important aspect of UP management whereas, patients' knowledge regarding nutrition improved in the study group after providing the UP educational interventions. This is in accordance with<sup>(14)</sup> who confirmed that, dietary regimen and restrictions are imposed on maintenance dialysis patients who suffered UP such as restrictions of phosphorus, potassium, sodium, and limiting fluid intake that help in reducing itching intensity.

In our study, it was found that most of study and control group patients had poor knowledge at pretest assessment, with no significant difference between both groups.

While at posttest assessment, it was noticed that most of the study group patients had good knowledge level, with a high statistical significant difference between the both groups ( $P < 0.001$ ). This is in accordance with<sup>(15)</sup> who mentioned that, their findings showed significant statistical differences in knowledge between the control and study groups after implementing the intervention, with a positive significant effect on increasing the mean scores in the intervention group ( $P < 0.05$ ).

Results of the current study are matched with results of<sup>(16)</sup> who researched impact of educational interventions on hemodialysis patients' adherence and found that educational interventions in patients undergoing hemodialysis leads to increased their knowledge and adherence level as there is a high statistical significant improvements were noted in the mean and standard deviation of percent knowledge score as compared to pre interventions assessment.

Moreover, results of the current study are equivalently with results of<sup>(17)</sup> in which the educational interventions resulted in significant improvement in patients' knowledge in all knowledge aspects, as the majority of the patients attained a score of knowledge less than "good" before the educational intervention while their knowledge score improved dramatically after the intervention so that three quarters of them scored levels of "very good" to "Excellent", and there was a statistically significant difference in the improvement of the scores attained after the educational intervention

#### **8. Conclusion:**

Hypothesis of the current study was accepted as patients who receive the

uremic pruritus educational intervention have an increased level of knowledge.

#### **9. Recommendations:**

- Written, colored booklet about UP nursing management should be provided for HD patients.
- Replicate the study on a larger study sample in different settings to generalize the results.
- Periodically and continuously evaluation of hemodialysis patients' knowledge about uremic pruritus to improve patients' health status and decrease incidence of UP complications.

#### **10. References:**

1. **Stavropoulou, A., Grammatikopoulou, M. G., Rovithis, M., Kyriakidi, K., Pylarinou, A., & Markaki, A. G. (2017).** Through the patients' eyes: The experience of end-stage renal disease patients concerning the provided nursing care. In *Healthcare* (Vol. 5, No. 3, p. 36). Multidisciplinary Digital Publishing Institute.
2. **Perdue, C., (2016).** Management of pruritus in palliative care. *Nursing Times*, 112, 24, pp. 20-23.
3. **Baraz, S., Parvardeh, S., Mohammadi, E., & Broumand, B. (2010).** Dietary and fluid compliance: an educational intervention for patients having haemodialysis. *Journal of advanced nursing*, 66(1), 60-68.
4. **Broome, M. E. (2011).** Integrative literature reviews for the development of concepts. *Concept development in nursing: foundations, techniques and applications*. Philadelphia: WB Saunders Company, 231-50.
5. **Mansour, M.A., Youssef, H.M., Salameh, T.N., & Yaseen, R.W.**

- (2014): Impact of education program on protein balance among hemodialysis patient. *World Journal of Medical Sciences*; 11 (1): 69-77.
6. **Sultan, M.M., Mansour, H.H., Wahby, I.M. & Houdery, A.S. (2010).** Cutaneous manifestation in Egyptian patients with chronic renal failure on regular hemodialysis. *J Egypt Women Dermatol Soc.*, 7, 1-9.
  7. **Parvan, K. (2013).** Quality of sleep and its relationship to quality of life in hemodialysis patients. *Journal of caring sciences*, 2(4), 295.
  8. **Ahmed, H., A. , Yassine, S., Y., Tawafe, A., R. , Ebazaway, M.,M.( 2015).** Epidemiological study of patients on regular haemodialysis at the Kafer El-Shakh Governorate, Egypt. (28): 267-271.
  9. **Shdaifat, E., A., Manaf, M., R., (2013).** Haemodialysis in Jordan: Socio-Demographic Data, Clinical Analysis and Projecting Burden, *Middle-East Journal of Scientific Research* 14 (5): 624-632.
  10. **Rehman, I. U., Munib, S., Ramadas, A., & Khan, T. M. (2018).** Prevalence of chronic kidney disease-associated pruritus, and association with sleep quality among hemodialysis patients in Pakistan. *PloS one*, 13(11), e0207758.
  11. **Redenna, L., Basha, A.S.& Reddy, K.S. (2014)** Dialysis treatment: a comprehensive description. *Int J Pharmac Res Allied Sci.* 2014;3(1):1-13.
  12. **Gerogianni, S., Babatsikou, F., Gerogianni, G., Grapsa, E., Vasilopoulos, G., Zyga, S., & Koutis, C. (2014).** 'Concerns of patients on dialysis: A Research Study'. *Health Science Journal*, 8(4), 423-437.
  13. **Opadeyi, A. O., Fourier-Réglat, A., & Isah, A. O. (2019).** Educational intervention to improve the knowledge, attitude and practice of healthcare professionals regarding pharmacovigilance in South-South Nigeria. *Therapeutic advances in drug safety*, 10, 2042098618816279.
  14. **Karadag, E., Kilic, S. P., Karatay, G., & Metin, O. (2014).** Effect of baby oil on pruritus, sleep quality, and quality of life in hemodialysis patients: Pretest–post-test model with control groups. *Japan Journal of Nursing Science*, 11(3), 180-189.
  15. **Kalantar—Zadeh, K., Tortorici, A. R., Chen, J. L., Kamgar, M., Lau, W. L., Moradi, H.& Kovesdy, C. P. (2015, March).** Dietary restrictions in dialysis patients: is there anything left to eat?. In *Seminars in dialysis* (Vol. 28, No. 2, pp. 159-168).
  16. **Sharaf, A. Y. (2016).** The impact of educational interventions on hemodialysis patients' adherence to fluid and sodium restrictions. *IOSR Journal of Nursing and Health Science*, Ghaziabad, 5(3), 50-60.
  17. **Yousif, K. I., Abu-Aisha, H., Abboud, O. I. (2017).** The Effect of an Educational Program for Vascular Access Care on patients' Knowledge at Dialysis Centers in Khartoum State, Sudan. *Saudi J Kidney Dis Transpl.*;28(5):1027-1033. © 2017 Saudi Center for Organ Transplantation.