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Effectiveness of an Educational Intervention on Patients' Knowledge of Dietary Management during Maintenance Haemodialysis

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ABSTRACT

Background: Dietary management is a crucial aspect to take into account for patients with end-stage renal disease who are on maintenance haemodialysis. Additionally, Nutrition education and services can contribute to slowing or postponing the advancement of chronic kidney disease and assisting in the management of haemodialysis patients. **Objectives:** The current study aims to evaluate the effectiveness of an educational intervention on haemodialysis patients' knowledge about dietary management. **Methods:** A quasi-experimental study was conducted at the haemodialysis unit of Al Zahraa Teaching Hospital in Wasit Governorate, Iraq, from October 15th, 2023, to April 15th, 2024. A non-probability (purposive) sample comprises 70 patients undergoing maintenance haemodialysis who were divided randomly into a study group and a control group. The study instrument was a questionnaire that consisted of demographic data, clinical information, and the Scale for Dietary Knowledge in Haemodialysis Patients (SDKHP) to evaluate patients' knowledge about dietary management. The descriptive data were analysed by frequency, mean, and percentage. Inferential data were analysed by the Mann-Whitney U test, the Wilcoxon signed rank test, and the Kruskal-Wahllis test. **Results:** The findings of the study demonstrated that patients have poor knowledge about dietary management in the pretest for the study and control groups at the mean score (0.33±0.31, 0.31±0.30). While there was an improvement in knowledge of study groups at the post-test (0.81±0.17), with a highly significant difference between the pre- and post-test at a p-value ≤ 0.000. **Conclusion:** It is concluded that the application of an educational intervention through lecture, discussion, and booklet administration significantly enhanced the maintenance of haemodialysis patients' knowledge of dietary management. **Recommendation:** It is recommended to provide flyers, audiovisuals, posters, and booklets related to dietary management to the patient's undergoing haemodialysis and their caregivers.

Keywords: Dietary Management; Educational intervention; Haemodialysis Patients; Knowledge

INTRODUCTION

One major global health concern is chronic kidney disease (CKD), which can lead to renal failure, coronary artery disease (CAD), and early death, with increasing incidence and prevalence (Hussein & Ahmed, 2020). According to the Global Burden of Disease, chronic kidney disease has emerged as a prominent cause of death in the 21st century. Additionally, it is more widespread in low- and middle-income countries compared to high-income nations (Escamilla *et al*., 2024). Renal failure occurs when the kidneys cannot eliminate the metabolic waste products from the body or carry out their regulatory functions. The compounds typically excreted in urine accumulate in bodily fluids due to decreased renal excretion (Hameed & Sachit, 2018). In addition, end-stage renal disease prevalence is higher in diabetic patients, and among those who are receiving renal replacement treatment, it accounts for between 24 and 51 percent of the cases (Alotaibi *et al*., 2017).

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Haemodialysis is a treatment option for those with chronic renal failure. Haemodialysis therapy purifies the blood by selectively removing large molecules from ions and small substances in a solution, utilising variations in the rate of diffusion across a semipermeable membrane (Putri *et al*., 2024). This treatment can partially substitute for the function of the kidney. Nevertheless, it is not a cure for renal failure; however, it can help patients feel better and live longer (Saeed & AL-Mosawi, 2020). Hence, compliance with drug regimens and the capacity to stick to prescribed therapy are crucial for effectively controlling symptoms, delaying or preventing the advancement of diseases, and avoiding early impairment and death (Al-Ganmi *et al*., 2019).

The dietary status of patients undergoing haemodialysis is a significant determinant of their clinical condition. It is a crucial therapeutic approach for these patients (Tayebi *et al*., 2023). Hence, the patients' lack of awareness regarding their nutritional requirements as well as poor adherence to the knowledge due to a negative attitude toward practicing the modified lifestyle are the root causes of renal failure, which is considered to be one of the most significant health problems in the world (Kanagarajah, Velraja & Arambakkam, 2022). Moreover, multiple studies have demonstrated that end-stage renal disease (ESRD) patients have inadequate awareness of proper nutrition (Shinjar, Bakey & Khudur, 2018).

Nutrition is a crucial aspect to consider for patients with end-stage renal disease who are undergoing maintenance haemodialysis. Nutrition's significance in improving the health of haemodialysis patients is crucial for reducing problems and improving their quality of life. Therefore, ensuring that these patients receive sufficient and appropriate nourishment as part of their treatment program (Bhalla, Bhargava & Meena, 2019). Consequently, insufficient nutrition diminishes the quality of life and raises the occurrence of morbidity and mortality in haemodialysis patients (Jarupala *et al*., 2023).

The objectives of nutrition-based therapy are to reduce uremic level-related symptoms, address fluid and electrolyte imbalances, provide optimal nutritional status by providing sufficient calories, protein, vitamins, and minerals, and enable the patients to consume an appetising and pleasurable meal (Oddi *et al*., 2023). Hence, Nutrition education and services can contribute to slowing or postponing the advancement of CKD and assisting in the management of HD patients. However, effective nutrition management necessitates meticulous planning, regular evaluation of nutritional status, and monitoring of dietary adherence (Ripon *et al*., 2023).

Nurses play a leading role in providing patient education, assistance, and screening, as well as reinforcing information. Nurses participate in assessing the effectiveness of the treatment and reinforcing all prescriptions, including the dietary prescription. Nurses in the field of haemodialysis have a unique role in providing care to patients. Through their direct interactions with patients, they possess a heightened awareness of their issues and are able to offer appropriate suggestions and recommendations (Shinjar, Bakey & Khudur, 2018).

The objectives of the study were to evaluate the effect of an educational intervention on patients' knowledge concerning dietary management during maintenance haemodialysis and to find out the association between patients` knowledge about dietary management and their demographic variables. The current study has the following hypotheses as follows:

Null Hypothesis

There are no notable disparities observed in the haemodialysis patients' knowledge about dietary management after the administration of the educational intervention for the study group participants.

Alternative Hypothesis

The participants of the study group showed notable disparities in the haemodialysis patients' knowledge about dietary management after the implementation of an educational program.

METHODOLOGY

Study Design

A quasi-experimental design was applied to achieve the objectives of the study. This study is consistent with Mohammed and Hassan (2023), who conducted a quasi-experimental study at Kirkuk General Hospital

(haemodialysis unit).

Setting

The study was conducted at Al Zahraa Teaching Hospital at the haemodialysis unit in Wasit Governorate.

Sample Size

The total population in the haemodialysis unit was 218 patients; using Richard Geiger's equation (Harmon *et al.*, 2008), the sample size became 140 patients. In addition, after applying the study criteria, 70 patients remained (40 patients were unable to read and write, 10 declined to take part in the research, 12 patients were less than 20 years old or older than 70 years old, five patients were blind, and three patients suffered from hearing loss).

Sampling Method

This is a non-probability (purposive) sample of 70 patients on maintenance haemodialysis. The study and control groups were selected based on the same criteria. The sample was split into two groups: 35 patients for each group. Only the study group was given the educational intervention.

Inclusion Criteria

The study sample Criteria include the adult patients that read and write, male and female patients, adult patients aged between 18-70 years, and patients with maintenance haemodialysis sessions.

Exclusion Criteria

The exclusion criteria for study sample including the adult patients that not read and write, patients age below 18 and above70 years, and patients who did not complete the educational intervention.

Instrument of the Study

The study instrument was a questionnaire, which consisted of two parts:

Part one: Demographic data and clinical information: The researcher developed this part based on a review of related literature to collect baseline and individual information, including gender, age, marital status, level of education, occupation, monthly income, chronic diseases, period of starting renal failure, period of starting haemodialysis, and number of sessions per week.

Part two: This part concerns patient knowledge assessment. To evaluate patients' knowledge about dietary management, the Scale for Dietary Knowledge in Haemodialysis Patients (SDKHP) was developed by Duzalan and Pakyuz (2017).

Validity and Reliability of Study Instrument

The Scale for Dietary Knowledge in Haemodialysis Patients (SDKHP) was the instrument used in the current study. According to Beaton *et al*. (2000), knowledge instruments were translated into Arabic by two faculty members from the College of Nursing at the University of Baghdad. Subsequently, a third member reviewed both translations and created a unified version. Following that, a back-translation was conducted by providing equipment to another individual affiliated with the nursing faculty. The original English and back-translated versions are compared to identify any discrepancies. This was accomplished by faculty members from the College of Nursing at the university. Finally, a translated version in Arabic was produced.

The content validity of the study questionnaire was established by employing a list of experts to assess the questionnaire's clarity and adequacy in relation to the aims of the current study. The questionnaire was administered to ten professors from the College of Nursing at the University of Baghdad. According to their suggestions, several elements were changed and adjusted. Lawshe's technique employs the Content Validity Ratio (CVR) of the Scale for Dietary Knowledge in Haemodialysis Patients (SDKHP). The responses provided

by the specialists were assessed by computing the content validity ratio or index using Lawshe's method for each topic. The Lawshe's minimum content validity index yielded a score of 0.62 for ten experts.

A pilot study consists of 10 samples of patients with maintenance haemodialysis who were excluded from the study sample. The reliability of the Scale for Dietary Knowledge in Haemodialysis Patients (SDKHP) was assessed using Cronbach's alpha coefficient, which yielded a value of 0.86. SDKHP can be classified as highly reliable.

Educational Intervention

After obtaining ethical approval for participation and completion of the questionnaire by each patient in both groups, the researcher conducted three-session educational interventions covering topics such as kidney function, causes of renal failure, haemodialysis, and basic information about dietary management for the study group that extended for one month in the Wasit governorate at Al Zahraa Teaching Hospital in the haemodialysis unit. The researcher delivered an educational intervention using a PowerPoint presentation of lectures and discussions with patients during the session. Additionally, each patient in the study group received a booklet specifically created to be easily comprehensible. Each session of the educational intervention lasted for approximately 45 to 60 minutes.

Data Collection

The researcher began collecting data for the period from December 28th, 2023, to March 31st, 2024, for a period of three months, through an individual interview with each patient in both groups (study and control).

Data Analysis

The data analysis was done by the Statistical Package for the Social Sciences (SPSS) version 26. The demographic and clinical variables for participants were analysed by descriptive statistics in terms of frequency, mean, and standard deviation. As well, non-parametric statistical tests were used to measure the effectiveness of educational interventions regarding patients' knowledge toward dietary management, which are the Mann-Whitney U test, the Wilcoxon signed rank test, and the Kruskal-Wallis test. A level of significance ≤ 0.05 is considered significant.

Ethical Consideration

The researchers obtained ethical clearance from the ethical committee of the Nursing College of University of Baghdad, Iraq, with reference number 4112 in the second session of 22nd November 2023

The researcher was authorised by the Wasit Health Directorate/Training and Development Centre to conduct the study. An official letter was sent to the responsible authorities of the hospital on December 27th, 2023. After providing the patients with an explanation of the study's goal and nature, verbal consent was obtained. Furthermore, they were notified to withdraw from the research at any time as per their right. The personal information of study respondents is strictly confidential and solely utilised for valid scientific research purposes.

RESULTS

Table 1 findings indicated that the vast majority of studied respondents for the study and control groups, 21 (60.0%) and 24 (68.0%), respectively, were male. The results showed that both the study and control groups, 11 (31.4%) and 14 (40.0%), were within the 44-54% age group, respectively. Also, findings indicated that more than three quarters of the samples in the study group were married (28, 80.0%), and more than half of the participants (25, 71.4%) in the control group were married. the results reported that both groups had a high percentage of respondents—11 (31.4%) and 14 (40.0%) were primary school graduates, respectively, for the study and control groups. Furthermore, the findings presented that more than one third (13-37.1%) of the study group participants were housewives with a monthly income (300,000-600,000 thousand) of which a vast majority (29-82.9%) were and a high percentage (12-34.3%) of respondents in the control group were unemployed with a monthly income (300,000-600,000 thousand) of which more than two-thirds (28-80.0%) of them were.

Table 1: Descriptive Socio-Demographic Characteristics Analysis

Demographic Variables	**Study Group (*N*=35)**			**Control Group (*N*= 35)**	
	Groups	***F****	**%**	***F***	**%**
Gender	Male	21	60.0	24	68.6
	Female	14	40.0	11	31.4
Age	21- 32	9	25.7	3	8.6
	33-43	8	22.9	6	17.1
	44-54	11	31.4	14	40.0
	55 and above	7	20.0	12	34.3
	MS±SD =43±14			MS±SD = 49±12	
Marital Status	Single	5	14.3	5	14.3
	Married	28	80.0	25	71.4
	Widow and Separated	2	5.7	5	14.3
Educational Level	Read and Write	7	20.0	10	28.6
	Primary School	11	31.4	14	40.0
	Intermediate School	4	11.4	5	14.3
	Preparatory School	2	5.7	1	2.9
	Diploma	4	11.4	2	5.7
	Bachelor	6	17.1	3	8.6
	Master's or Ph.D.	1	2.9	0	0.0
Demographic Variables	**Study Group**			**Control Group**	
Occupation	Groups	F	%	F	%
	Governmental employee	7	20.0	3	8.6
	Retired	3	8.6	7	20.0
	Unemployed	6	17.1	12	34.3
	Free Business	5	14.3	3	8.6
	Student	1	2.9	0	0.0
	Housewife	13	37.1	10	28.6
Monthly Income	300,000-600,000 thousand	29	82.9	28	80.0
	601,000-900,000 thousand	3	8.6	5	14.3
	901,000 -1.200,000 thousand	2	5.7	2	5.7
	1.201,000 -1.500,000 thousand	0	0.0	0	0.0
	1.500,000 thousand and above	1	2.9	0	0.0

F= frequency, %= percent

Table 2: Descriptive Clinical Characteristics Analysis

Clinical Characteristics	**Study Group**				**Control Group**	
Chronic Diseases History	**Groups**		***F***	**%**	***F***	**%**
	Hypertension	Yes	30	85.7	32	91.4
		No	5	14.3	3	8.6
	Diabetes mellitus	Yes	17	48.6	17	48.6
		No	18	51.4	18	51.4
	Other	Yes	5	14.3	6	17.1
		No	30	85.7	29	82.9
Duration of Renal Failure	≤ 1 year		7	20.0	5	14.3
	2-3 (years)		10	28.6	10	28.6
	4-5 (years)		9	25.7	11	31.4
	≥ 6 (years)		9	25.7	9	25.7
Period of Haemodialysis	≤ 1 year		11	31.4	9	25.7
	2-3 (years)		10	28.6	15	42.9
	4-5 (years)		8	22.9	5	14.3
	≥ 6 (years)		6	17.1	6	17.1
Number of Dialysis Session / Week	One time / week		1	2.9	2	5.7
	Two times/week		8	22.9	12	34.3
	Three times/week		26	74.3	21	60.0

F= frequency, %= percent

Table 2 presents that the highest percent, 30 (85.7%) and 32 (91.4%) of study and control groups experienced hypertension, respectively and approximately half, 17 (48.6%), of both groups had diabetes mellitus, with the lowest percent, 5 (14.3%) and 6 (17.1%), having other chronic disease histories for both groups, respectively.

Related to the duration of renal failure More than one quarter of samples 10 (28.6) of the study group were within 2–3 years, and more than one-quarter, 11 (31.4) of the control group were within 4–5 years. With respect to the period of haemodialysis for the studied samples, about one-third (31.4) of the study group participants were within the ≤ 1 year class, and less than half (154.2%) of the control group respondents were within 2–3 years, with more than half of the samples for both groups. It was seen that 26 (74.3%); 21 (60.0%), respectively underwent three sessions per week for haemodialysis purposes.

Table 3: Comparison of Studied Samples Knowledge Regarding Dietary Management

Variables	Test Period	Study Group (*N*=35)		Control Group (*N*=35)		Mann-Whitney Test	
		Mean Rank	Sum of Ranks	Mean Rank	Sum of Ranks	Test Value	Asymp. Sig. (2-tailed)
Knowledge Variable	Pre-test	36.69	1284.00	34.31	1201.00	571.000	0.611
	Post-test	53.00	1855.00	18.00	630.00	630.000	

N= Number, sig. = significance level

This table 3 showed that there are no significant mean rank differences regarding knowledge of dietary management between both groups of the current study before giving the educational intervention (p=0.611). In contrast, there are highly significant mean rank differences (53.00, 18.00), respectively, for the study and control groups toward knowledge of dietary management after the educational intervention, as indicated by the computed Mann-Whitney test value (630.000) at $p \leq 0.000$.

Table 4: Comparison of Studied Samples Knowledge Regarding Dietary Management of the Study Group

Variables	Pre-test (*N*=35)		Post-test (*N*=35)		Wilcoxon Signed Ranks Test	
	Mean of Total Score	SD	Mean of Total Score	SD	*z* value	*p* value
Knowledge Variable	6.08	1.14	14.65	0.83	-5.245	**0.000**

SD=Standard deviation ; N= Number

This table 4 shows the results of the Wilcoxon Signed Ranks Test. The findings indicate that there is a highly significant mean difference regarding dietary management knowledge between the pre-test and post-test periods of the study group, as indicated by the z value (-5.245) at $p \leq 0.000$.

Table 5: Association of Socio-Demographic with Patients' Knowledge Variable toward Dietary Management of the Study Group Respondents at the Post-Test Period

Demographic Variables	Study Group (N=35)			Sig. (2-tailed)
	Groups	Mean or mean rank	Test value	
Gender	Male	21.43	*z*= -2.62	0.009
	Female	12.86		
Age	21-32	14.55	*p* = 0.276	0.108
	33-43	14.25		
	44-54	14.54		
	55 and above	15.42		
Marital Status	Single	19.80	Chi-Square =1.626	0.443
	Married	18.25		
	Widowed and separated	10.00		

Education Level	Read and Write		14.00	$\rho = 0.706$	0.000
	Primary School		14.18		
	Intermediate School		15.00		
	Preparatory School		14.50		
	Diploma		15.25		
	Bachelor		15.50		
	Master's or Ph.D.		16.00		
	School		14.18		
Occupation	Governmental employee		15.00	Chi-Square 16.907	0.005
	Retired		27.14		
	Unemployed		24.67		
	Free Business		18.17		
	Student		15.40		
	Housewife		32.00		
	Groups		11.38		
Monthly Income	Groups		Mean or mean rank	Test value	Sig. (2-tailed
	300,000-600,000 thousand		14.44	ρ =0.543	0.001
	601,000-900,000 thousand		15.66		
	901,000 -1.200,000 thousand		15.50		
	1.201,000 -1.500,000 thousand		16.00		
	0.000 thousand and above		14.44		
Chronic Disease History	Hypertension	Yes	14.63	Pearson Chi-Square=0 .172	0.679
		NO	14.80		
	Diabetes Mellitus	Yes	14.82	Pearson Chi-Square=0 .972	0.324
		No	14.50		
	Other	Yes	14.60	Pearson Chi-Square=0.172	0.679
		No	14.66		
Duration of Renal Failure	≤ 1 year		14.85	p = -0.026	0.882
	2-3 (years)		14.70		
	4-5 (years)		14.22		
	≥ 6 (years)		14.88		
Period of Haemodialysis	≤ 1 year		14.81	p = 0 .031	0.860
	2-3 (years)		14.40		
	4-5 (years)		14.37		
	≥ 6 (years)		15.16		
Number of dialysis session / week	One time / week		14.00	p = 0.261	0.129
	Two times/week		14.37		
	Three times/week		14.76		

sig. =level of significance, significant, ρ = Spearman correlation coefficient

This Table 5 shows that the findings indicated a highly significant relationship between the following demographic variables (gender, occupation) and level of knowledge toward dietary management at $p < 0.01$. Furthermore, the findings showed that there is a highly significant moderate positive correlation between educational level and level of knowledge at $p < 0.01$ and a highly significant fair positive correlation between monthly income and level of knowledge at $p < 0.01$.

DISCUSSION

Studies have shown that patients with ESRD have inadequate awareness of proper nutrition (Shinjar, Bakey & Khudur, 2018). It is important to ensure that haemodialysis patients receive sufficient and appropriate nourishment as part of their treatment program (Bhalla, Bhargava & Meena, 2019). Especially the educational interventions may be a contributing factor in raising their knowledge level regarding dietary management. The results showed that there are no significant mean rank differences regarding knowledge of dietary management between groups of the current study before the educational intervention (p= 0.611). Hence, it is possible that the low level of knowledge is due to not implementing such intervention in the haemodialysis unit, or that the patients did not receive sufficient information from their healthcare practitioners and nurses regarding dietary management (researchers` viewpoint).

While there are highly significant mean rank differences regarding knowledge of dietary management

between the study and control groups after the educational intervention at $p \leq 0.000$. Also, the findings indicate that there is a highly significant mean difference regarding dietary management knowledge between the pre-test and post-test periods of the study group, as indicated by the z value (-5.245) at $p \leq 0.000$. Thus, it has been agreed that the alternative hypothesis and null hypothesis have been rejected. This results in agreement with the study conducted by Shinjar, Bakey and Khudur (2018), which finds a highly significant mean difference between pre- and post-tests in the intervention group related to all items of the study.

Moreover, the study outcome agrees with the findings of Hermis and Abed (2021), which evaluate the impact of the self-regulation fluid intervention on haemodialysis patients and self-efficacy for fluid compliance. The study found that educational interventions for haemodialysis patients led to statistically significant improvements in the mean of the knowledge scores at the post-test period compared to the period before the intervention.

Also, the present study's results align with the findings of a previous study conducted by Alkhafaji and Al-Mayahi (2023); Aliwy and Mohammed (2018), in which the findings showed that there was no statistically significant difference between the study group and the control group during the pre-test evaluation (p value = 0.750). Furthermore, there were substantial and meaningful variations in the average scores of uremic pruritus domains between the study group and the control group during the post-test period (Alkhafaji & Al-Mayahi, 2023)

The results of the current study, supported by Zatton, Taha and Metwaly (2023), who concluded that patients' satisfaction with their post-test knowledge of nutritional requirements and prescription drugs differed significantly from their pre-test knowledge at (p<0.0001).

Also, the current outcome was in agreement with the study conducted by Khaleel and Hassan (2019), which demonstrated no significant difference in patients' knowledge concerning self-care in the pretest time between the study and the control group (p value = 0.231). But there is a highly significant difference in patients' knowledge concerning self-care in the post-test time between the experimental and the control groups (p value = 0.000). From the researcher's viewpoint, the participants in the study group had increased their level of knowledge regarding nutritional management. This improvement was a result of the patients receiving sufficient information after implementing the educational intervention.

The results of the study have shown a highly significant moderate positive correlation between educational level and level of knowledge at $p < 0.01$. This result agrees with a study conducted by Naser and Mohammed (2016), who stated that the educational level had a significant association with the knowledge level of patients with vascular access in the post-test of the study group at a p value < 0.05. Additionally, the results showed a highly significant relationship between occupation and level of knowledge toward dietary management ($p <$ 0.01). The result is supported by Shanmugapriya *et al*. (2024). This study stated that there is a highly significant association between occupation and the level of knowledge on dietary management with a p-value <0.05. The current study's findings found a highly significant relationship between the gender variable and the level of knowledge toward dietary management ($p < 0.01$). This outcome agrees with a study conducted by Goma *et al*. (2021), who found a significant association regarding gender with adherence to therapeutic regimens at p=0.019.

The results of the current study have shown a highly significant, fair, positive correlation between monthly income and level of knowledge at $p < 0.01$. This result is consistent with the outcomes from a research study conducted by Kanagarajah, Velraja and Arambakkam (2022), who found that there is a significant association between nutrition knowledge and family income per month among the subjects ($p = 0.000$). The current study faced some limitations, as follows: Some haemodialysis patients cannot read or write. Certain patients did not participate in the study, and some of them discontinued their participation after completing the pre-test questionnaire. Moreover, certain patients exhibited noncompliance with their scheduled haemodialysis sessions. Furthermore, a non-probability (purposive) sample may limit the generalisability of findings to the whole population of haemodialysis patients. Furthermore, the fact that different nurses administered educational intervention in different ways could have had an impact on its efficacy. Individual variations in communication styles and instructional strategies may have impacted patient engagement and learning

outcomes even in the face of standard training. Moreover, the study's primary focus was on nurse-led education, which is beneficial but may have obscured the advantages of a multidisciplinary strategy involving psychologists, dietitians, and other medical specialists. Using a team-based approach could give patients more thorough support, taking into account the complex aspects of diet management in haemodialysis.

Limitation

Most haemodialysis patients cannot read and write. Certain patients refuse to participate in the research, some discontinue participation after completing the pre-test questionnaire. Additionally, certain patients exhibit noncompliance with their scheduled haemodialysis sessions.

CONCLUSION

Based on the findings in this study, the application of an educational intervention through lecture, discussion and booklet administration significantly enhanced the maintenance haemodialysis patients' knowledge toward dietary management. As well, it is highly important that the following demographic variables be taken into consideration when delivering health education to these groups of patients: gender, age, occupation and monthly income, due to the highly significant relationship between these variables and haemodialysis patients' knowledge. Additionally, research can focus on how improved dietary knowledge through educational interventions influences clinical parameters, such as serum potassium, phosphorus, and calcium levels, as well as reducing hospitalization rates. Hence, this expanded scope will help refine educational strategies, improve patient outcomes and contribute to the overall effectiveness of dietary management in the context of chronic kidney disease.

Recommendation

The haemodialysis units should distribute brochures, audiovisuals, posters and booklets to educate patients receiving haemodialysis and their caregivers on dietary management. Furthermore, it is recommended that the health promotion unit in hospitals organise ongoing educational workshops on dietary management for patients with chronic kidney disease who are undergoing haemodialysis. Finally, it is recommended to conduct further similar research in other settings to evaluate educational methods, considering the type and design of the study, which will help in generalising the results.

Conflict of Interest

The authors declare that they have no competing interests.

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