

## Effectiveness of Educational Nutritional Sessions on Quality of Life, Functional and Nutritional status among Elderly Patients with Chronic Kidney Diseases

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### Abstract

**Background:** Elderly patients affected by chronic kidney disease (CKD) and end-stage renal disease (ESRD) are rapidly increasing. Elderly renal patients are frail and more susceptible to impair the nutritional status. Nutrition in elderly patients with chronic kidney diseases is important in decreasing complications and improving their quality of life (QOL). **Study aim:** To detect the effect of educational nutritional sessions on quality of life, functional and nutritional status among elderly patients with CKD. **Design:** Quasi-experimental research design. **Settings:** This was an interventional study that was conducted in the hemodialysis unit at Assiut university hospital. The program was conducted on elderly participants with CKD. **Tools:** Five tools were used to conduct the study. **Tool I:** Structured interview questionnaire: It include socio-demographic characteristics and medical data. **Tool II:** Kidney Disease Quality of Life Short Form Arabic version (KDQOL-SF). **Tool III:** Karnofsky Performance Scale Index. **Tool IV:** Mini Nutritional Assessment Scale. **Results:** the present result revealed that the elderly patients' QOL had improved as high quality of life score increase to more than two fifth in posttest & follow up for study group. Also there was statistically significant difference between pretest and posttest regarding functional and nutritional status  $P= 0.000^*$ . **Conclusion:** The results indicate that the nutritional educational sessions had significant positive effect on elderly patients' QOL, nutritional, and functional status before and after intervention. **Recommendations:** Conduct Periodical educational and training program to elderly and their caregivers about therapeutic nutrition to improve their quality of life, functional and nutritional status.

**Keywords:** Chronic kidney diseases (CKD), Elderly, Educational Nutritional Sessions, Functional status, Nutritional status, Quality of life (QOL).

### Introduction:

The term "ageing" describes a complex process of social, psychological, and physical change. Over time, some aspects of ageing increase in size while others decrease. All human societies experience ageing, which is a necessary aspect of biological changes as well as cultural and societal norms. For the majority of human diseases, ageing is a known risk factor. (Agarwal & Baur, 2021).

Globally, people are living longer. Currently, most people can expect to live into their sixties and beyond for the first time in history. The percentage of Egyptians who are "defined as 60 years of age and more" is predicted to rise from 6.8% in 2022 to 17.9% in 2052. By then, about 20 million Egyptians will fall into the senior category, according to the **Central Agency for Public Mobilization & Statistics (2023)**.

When kidneys are damaged over time, they may not be able to filter blood as well as healthy kidneys. This condition is known as

chronic kidney disease (CKD). Ineffective kidneys can cause the body to retain excess fluid and toxic waste, which can cause high blood pressure, heart disease, stroke, and premature death. An estimated 37 million adults in the United States, or more than one in seven (15%), are estimated to have CKD. People 65 years of age or older have a higher prevalence of CKD (38%) compared to those 45–64 years (12%) and 18–44 years (6%). (CDC, 2022)

Renal function gradually declining is referred to as chronic kidney disease, also known as chronic kidney failure. Urine is the result of the kidneys filtering wastes and extra fluid out of the blood. The body may accumulate hazardous amounts of fluid, electrolytes, and waste products when chronic kidney disease reaches an advanced stage (Ameh et al., 2020).

As one ages, challenges with everyday tasks emerge, and life quality starts to decline.

Elderly people's unmet needs, care, and health conditions all have an impact on their quality of life. Both daily functioning and health-related quality of life (HRQOL) are significantly impacted by chronic kidney disease (CKD). Every year, the number of elderly patients rises, and this has emerged as a major health concern. (Mourão et al., 2022).

Patients with chronic kidney disease (CKD) frequently experience malnutrition, which is linked to increased rates of morbidity and mortality. Malnutrition is a state of poor nutrition brought on by insufficient food intake. Patients with chronic kidney disease (CKD) experience a variety of symptoms, including decreased appetite, catabolism, and persistent inflammation. (Bashar 2021)

A specialized healthy eating program is one of the responsibilities of a gerontological nurse. When it comes to patient care, diet is crucial. Consuming the recommended daily intake of protein, calories, liquids, vitamins, and minerals is crucial. The primary goals of food prescription in chronic kidney disease (CKD) are to prevent metabolic problems including hypophosphatemia and hyperkalemia and to reduce the course of chronic renal failure. Dietary restriction consists of three main parts: sodium, potassium, and phosphorus (Mourão et al., 2022).

### Significance of the study:

The progressive and irreversible loss of kidney function is the hallmark of chronic kidney disease, an increasingly prevalent health issue. Approximately 10-15% of older adults worldwide are impacted by it (Evans et al., 2020).

limiting the prevalence to 15-20% by setting the cut-point for older persons at eGFR<45 ml/min/1.73 m<sup>2</sup> might decrease the need for limiting protein intake. In elderly persons, the prevalence of Stage 3 CKD may reach 25–35%. (Piccoli et. al 2023)

Physical limits, psychological and social well-being, and functional impairment are all experienced by people with chronic kidney disease (CKD). These issues exacerbate with time and frequently have an impact on the health-related quality of life of people with chronic kidney

disease (CKD) (Chang et al., 2020). Therefore, the current study should look into how nutritional counselling can help patients with chronic renal failure live better lives.

### Aim of this study:

#### General objectives:

To investigate the effectiveness of the educational nutritional sessions on quality of life, functional and nutritional status among elderly patients with chronic kidney diseases

#### Study hypothesis:

- The quality of life of elderly patients with chronic kidney diseases will be positively impacted by educational nutritional sessions, according to the study hypothesis.
- The elderly patients with chronic kidney diseases who participate in the educational nutritional sessions will report improvements in their functional and nutritional status.

#### Null hypothesis:

- There will be no discernible impact of the educational nutritional sessions on quality of life, functional ability, or nutritional status, among senior patients with chronic kidney diseases.

### Subject and Methods:

#### Research design: -

This study employed a quasi-experimental research design with a only study group.

#### Setting: -

The study was carried out in the Assiut University Hospital's hemodialysis unit, which serving patients around-the-clock, it is the first unit among Egyptian university hospitals to use a central mixing treatment system. The 1.500 square metre facility can accommodate nine halls and 120 dialysis sets. It is outfitted with the newest medical equipment and includes an intensive care unit, patient-private spaces and 120 dialysis sets. It offers outpatient hemodialysis services.

#### Sample: -

A purposive sample was chosen for this study, which involved 50 elderly patients receiving dialysis during the morning shift at Main Assiut University Hospital. the sample size determined by using EP/Info version 3 and a 95% confidence interval based on estimates from 50 senior patients

who participated in the study as a single group.

Population size (for finite population correlation factor or  $fpc(N)$ ):60

Hypothesized % frequency of outcome factor in the population( $p$ ):50% $\pm$ 5

Confidence limits as %of 100(absolute $\pm$ -%)( $d$ ):

Design effect (for cluster surveys-DEEF):

Sample size=  $[DEFF * Np(1-p)] / [ (d^2 / Z^2) (1 - a/2 * (N-1) + P * (1-p) ) ]$

#### Inclusion criteria:

- elderly patients aged  $\geq 60$  years old of both sexes,
- elderly patients diagnosed as chronic kidney diseases
- elderly patients alert and able to communicate

#### Tools:

#### **There are four tools was utilized to collect data for this study:**

**Tool I: Structured interview Questionnaire Sheet:** It was created by the researchers to gather data. It was divided into two sections:

- **Part one:** - Sociodemographic features such as age, gender, place of residence, marital status, type of family, occupation, and educational attainment.
- **Part two:** - Medical history, both past and present, including chronic diseases in older patients, the history of chronic kidney diseases, and the frequency of weekly dialysis.

**Tool II: Kidney Disease Quality of Life Short Forum (KDQOL-SF) Arabic version** This self-reported health measure was created by **Abd El-Hafeez et al. (2012)** and is particularly important for individuals with chronic kidney diseases. This shortened form of the KDQOL-SF, which assesses patients' quality of life, consists of 36 questions. can save time and money by conducting extensive population surveys in three to five minutes (**Elamin et al., 2019**).

Eight domains of functioning and wellbeing are measured on a 100-point scale by 36 items in the KDQOL-SF-36: physical function (10 items), role limitations due to physical problems (4 items), role limitations due to emotional problems (3 items),

pain (2 items), general health perceptions (5 items), social function (2 items), emotional well-being (5 items), and energy/fatigue (4 items). On a scale of 0 to 10, the respondents are asked to rate their overall health on the final item. (**Abd-elhafez et al., 2012**).

**Scoring:** Each subscale has a score that runs from 0 to 100, where higher numbers correspond to better health (**Elamin et al., 2019**). Thus, two groups can be formed from the patients. If their score was 60% or lower, they had a low quality of life; if it was 60% or higher, they had a high QOL.

#### **KDQOL-SF validity: -**

Excellent conceptual equivalency was shown by the interclass correlation coefficient (ICC) between the Arabic and English versions. The burden of kidney disease subscale had good reliability, and the other four subscales had excellent reliability, according to the ICC between test and retest scores. With a Cronbach's alpha of 0.81, the translated version of the KDQOL-36 demonstrated strong internal reliability. The instrument's five subscales and the DASS-21 (Depression Anxiety Stress Scales) showed strong negative correlations, which suggests strong convergent validity. Excellent conceptual equivalency exists between the current Arabic version of KDQOL-36 and its original English version. For patients with Arab kidney disease, it is a valid and dependable tool (**Elamin et al., 2019**).

#### **Tool III: Karnofsky Performance Scale Index (Crooks, & Waller, 1991):**

One of the earliest performance status scales is the Karnofsky Performance Status (KPS). The assessment is conducted by a healthcare provider and takes one to two minutes to assigns a patient in one of the ten categories (ranging from 0 [dead] to 100 [normal activity, no evidence of disease]). It has been verified to forecast mortality in populations with chronic illnesses and the elderly according to (**Khalid et al., 2018**).

**Scoring: Based on Yildiz çeltek et al., (2019)**, patients were scored into three groups: Normal functional status if achieved (80–100), mild functional impairment if achieved (40–70), and moderate functional impairment if achieved (10–40).

**KPS validity:** It was discovered that KPS has an interior reliability of 0.97. After the KPS's construct validity was examined, it was discovered that the KPS and two additional independent measures of patient functioning had a strong relationship ( $P$  less than 0.001). Lastly, the predictive validity of the KPS is demonstrated by its correlation with

longevity ( $r=0.30$ ) in a group of patients with terminal cancer (Mor et al., 1984). The total score on the Katz ADL scale and the KPS score showed a significant and positive correlation ( $r = 0.895$ ;  $P < 0.001$ ). Furthermore, a significant inverse relationship was observed between the KPS score and the total BADL scale score ( $r = -0.894$ ;  $P < 0.001$ ). The Cronbach's alpha coefficient for the scale scores' dependability was determined to be 0.720.

**Tool IV: Mini Nutritional Assessment (Vellas et al., 2006):** One of the most popular and extensively researched nutrition screening/assessment instruments is the Mini Nutritional Assessment (MNA) Questionnaire. Also it is validated measure that is easy to use and trustworthy for determining whether older adults who are malnourished or at risk of becoming malnourished (Krishnamoorthy et al., 2021).

Six items from the full version of this internationally validated scale can be used in its shortened form to screen older adults for malnutrition. The original version of the short form (SF) for malnutrition was introduced in 2001 with the intention of identifying older adults who may be at risk and assessing them further. It was helpful to clarify that the current version classifies people into three categories: "malnourished," "at risk malnutrition," and "normal nutritional status." Noting that the MNA short form is "the preferred form of the MNA for clinical use" may also be interesting (Krishnamoorthy et al., 2021).

**Scoring of the MNA:** Anthropometric measurements are used to distinguish between two MNASF versions. Two questionnaires are available: the BMIMNASF questionnaire, which includes the first six items in their entirety, and the CCMNASF questionnaire, which substitutes CC for BMI. There is a maximum score of 14. A score of 8–11 denotes "at risk of malnutrition," while a score of 12–14 denotes normal nutritional status.

**Validity of the MNA:** -

The scores on the SF and full form MNA scales showed a significant correlation with each other. according to a comparison of the two curves ( $P = 0.006$ ). Maintaining the MNA full form as the gold standard, BMIMNASF's specificity was greater at 95.6%, but its sensitivity was only 72%. Furthermore, it was demonstrated by

Krishnamoorthy et al., (2021) that the two versions of the MNASF—BMI and CC based—were reliable and appropriate for use as a screening tool to determine an older adult's nutritional status. The Mini Nutritional Assessment had good internal consistency ( $\alpha = 0.80$ ). According to Oumer et al., (2022), a complete MNA has a sensitivity and specificity of 97.3% and 72.2%, respectively, for predicting malnutrition or the risk of malnutrition based on the percentage of IBW (Oumer et al., 2022).

#### **Method of Data Collection:**

##### **I- Administrative stage:**

- The directors of the hemodialysis unit at Assiut University Hospital received formal approval to conduct the study in the form of a letter from the dean of the nursing faculty. The letter clarified the goal and design of the study and granted permission to conduct it.

##### **II- Pilot study:**

- Five elderly patients, or 10% of the total, who were excluded from the study participated in the pilot study before data collection began. The purpose of the pilot study is to gauge the tool's clarity and determine how long it will take to complete. The required changes to the sheets were made in accordance with the findings of the pilot research.

##### **III- Ethical Consideration:**

- The research proposal was approved by the nursing faculty's ethical committee. The research subject was not at risk while it was being applied. The study adhered to clinical research ethics guidelines. Anonymity and confidentiality were guaranteed. Participants were free to decline participation and/or leave the study at any moment, for any reason.

##### **VI- Data collection stage:**

The data collection period spanned six months, from the beginning of June 2023 to the end of November 2023. Patients receiving dialysis care were monitored for two days per week during the morning shift (9.00 am–2:00 pm) before being sent home. The three stages listed below are used to gather the data.

**Preparatory phase:** The authorized persons have provided written official permission and approval for this study to be conducted. Patients were given an introduction by the researchers, who also explained the goal of the study and obtained their

informed consent.

**Planning phase:** During this phase, the schedule and duration of the program were determined, and arrangements were made to conduct the educational sessions. Other facilities, including the classroom and instructional strategies, were examined and set up.

➤ **Teaching time:** The timing of the lesson was determined by taking into account the needs of the elderly and coordinating with the medical team and researchers.

➤ **Teaching methods and materials:** Basic instructional strategies, such as PowerPoint presentations, demonstrations, and discussions, were prepared. Media included images, handouts, posters, and videos.

### **Implementation phase:**

The researcher began gathering data in June 2023 and continued until November 2023. Two days per week, five participants per day, so, ten participants per week were included in our study. The researcher completed a structured questionnaire, and each interview lasted forty minutes. The researcher was on hand in the unit to address any queries or provide more information. The patients in the sample under investigation were sorted into five smaller groups according to their availability and preparedness for presentation. For a month, one group was assigned to receive educational nutritional sessions once a week. The studied sample received four sessions, lasting 1.5 to 2 hours each, with a 10-15 minutes break in between.

### **The educational nutritional sessions**

The development of the educational nutritional sessions was informed by a review of pertinent literature and accessible resources. A brochure was created with basic information about chronic kidney disease (CKD) and therapeutic nutrition summarized for each study participant. An educational booklet was also created to be distributed to elderly participants in the educational program.

### **General objective:**

Improve quality of life, functional and nutritional status of elderly patients with chronic kidney diseases **Specific objectives:**

To ascertain how educational nutrition sessions, affect the nutritional and functional status as well as quality of life of the elderly population under study.

Elderly participants were given an orientation

to the program and its goals prior to the start of the first session. Pretesting was done to evaluate elderly functional abilities, nutritional status, and quality of life prior to the start of the educational program. Every session began with a review of the material covered in the prior session and the goals for the upcoming ones.

### **Time and number of sessions:**

Four sessions comprised the educational nutritional sessions:

**The 1<sup>st</sup> session** participants were given an explanation of the learning objectives and the topic of instruction. They also received permission to participate. The elderly patients with chronic kidney diseases were assessed using tool I (a structured interview questionnaire, tool II (KDQOL-SF) the Kidney Disease Quality of Life Short Form Arabic version, tool III (the Karnofsky Performance Scale Index), and tool IV (the mini nutritional assessment).

**The 2<sup>nd</sup> session** included simple and clear knowledge about the kidney and the chronic kidney diseases as follows (functions of kidney, age related changes of kidney, definition of CK disease, causes, signs and symptoms, stages, complications and management).

**The 3<sup>rd</sup> session** covered the nutritional guidelines for senior CKD patients, which included foods to avoid and diuretics, as well as the normal range and suggested daily requirements of phosphorus, sodium, protein, and fluid intake.

**The 4<sup>th</sup> session** the previous sessions were reviewed, and examples of foods to eat, foods to avoid, and special meals meant for senior citizens with chronic kidney diseases were provided. Additionally, a posttest utilising Tools II, III, and IV.

### **Evaluation phase:**

Two evaluations were conducted in our study: the first one (posttest) was taken place in the fourth week from implantation the educational nutritional sessions. The second one (follow up) took place one month after the posttest. In the evaluation phase the studied sample were assessed by using tools II, III, and IV to determine the impact of the program on the outcomes of elderly patients with CKD.

### **IV- Statistical analysis: -**

The terms "number" and "percent" were used to describe categorical variables, while "mean" and "standard deviation" were used to describe

continuous variables. When comparing categorical variables, the chi-square test is employed. Statistical significance was defined as a two-tailed  $p < 0.05$ . To demonstrate the relationship between the variables, we used Pearson correlation. The IBM SPSS 26.0 program was used for all analyses.

### Results:

**Table 1:** indicate that 56.0% of the participants in the study were over the age of 70. Their mean age was  $67.62 \pm 2.526$ , and more than half (58.0%) of them were female. In terms of place of residence, it was found that 76% of the elderly people in the study came from rural areas. Furthermore, it was observed that sixty percent of the elderly people under study were married, and thirty four percent of them were illiterate.

**Figure 1:** revealed that (78.7%) and (75.5%) of the study group living with diabetes mellitus and hypertension respectively, while (70.0%) suffering from glomerulonephritis.

**Figure 2:** illustrated statistically significant difference between pre, post, & follow up test for study group regarding their quality of life.  $P = 0.0001$ , as high QOL increase 16.0% in pretest to 48.0%, 44.0% in posttest and follow up test respectively.

**Table 2:** shows that there was a statistically significant difference in creatinine, urea, calcium, and phosphorus ( $P=0.000$ ,  $P=0.004$ ,  $P=0.027$  and  $P=0.049$ ) between the renal biochemical parameters of the elderly patients under study before and after the intervention.

**Table 3:** demonstrated a statistically significant difference in the Karnofsky performance scale and mini nutrition assessment score of the elderly individuals under study between the pre-, post-, and follow-up interventions ( $P\text{-value}=0.000$ ). The typical performance level increased from 40% on the pretest to 62% on the posttest and 56% on the follow-up. malnourishment decreases from 10% in the pretest to 4% in the posttest.

**Table 4:** demonstrated statistically significant differences between the mini nutrition assessment score ( $P=0.024^*$ ) and the Karnofsky performance scale ( $P=0.001^*$ ) and the QOL of the studied

sample.

**Table 5:** showed statistically significant differences ( $p\text{-value} = (0.000, 0.000, 0.004, 0.000)$ ) between the demographic data (age, sex, residence, and education) and the quality of life of the elderly patient under study. Additionally, there were statistically significant differences ( $p=0.035^*$ ) between the frequency of dialysis and the quality of life of the elderly patients under study.

**Table (1): Number and percentage distribution of socio-demographic characteristics among the studied elderly patients with chronic kidney diseases. (N=50).**

<b>Socio-demographic data</b>	<b>No.</b>	<b>%</b>
<b>Age (years)</b>		
60-69	22	44.0
≥70	28	<b>56.0</b>
<b>Mean±SD</b>	<b>67.62±2.526</b>	
<b>Sex</b>		
Male	21	42.0
Female	29	<b>58.0</b>
<b>Residence</b>		
Urban	12	24.0
Rural	38	<b>76.0</b>
<b>Marital status</b>		
Married	30	60.0
Un married	20	40.0
<b>Occupation</b>		
Farmer	16	32.0
Technical	5	10.0
House wife	22	44.0
Retired	7	14.0
<b>Level of education</b>		
Illiterate	17	<b>34.0</b>
Read & Write	14	28.0
Basic education	14	28.0
University education	5	10.0
<b>Current occupation</b>		
House wife	27	54.0
Retired	23	46.0
<b>Family type</b>		
Simple	15	30.0
Extended	35	70.0
<b>Frequency of dialysis/week</b>		
3 times/week	37	74.0
Twice/week	13	26.0

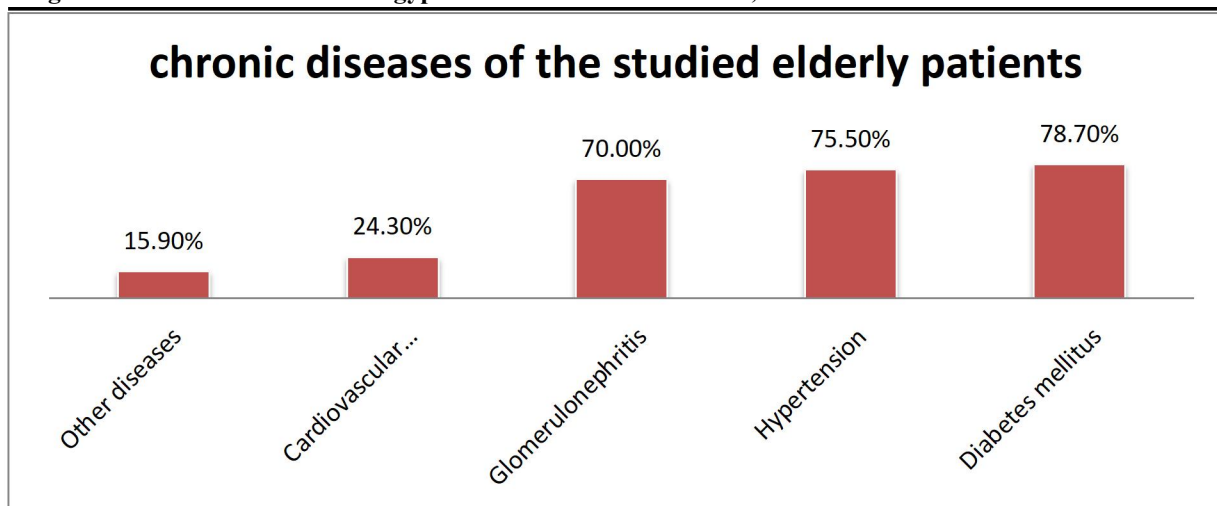


Figure (1): Percentage distribution of chronic diseases among elderly patients with chronic kidney diseases, (N=50).

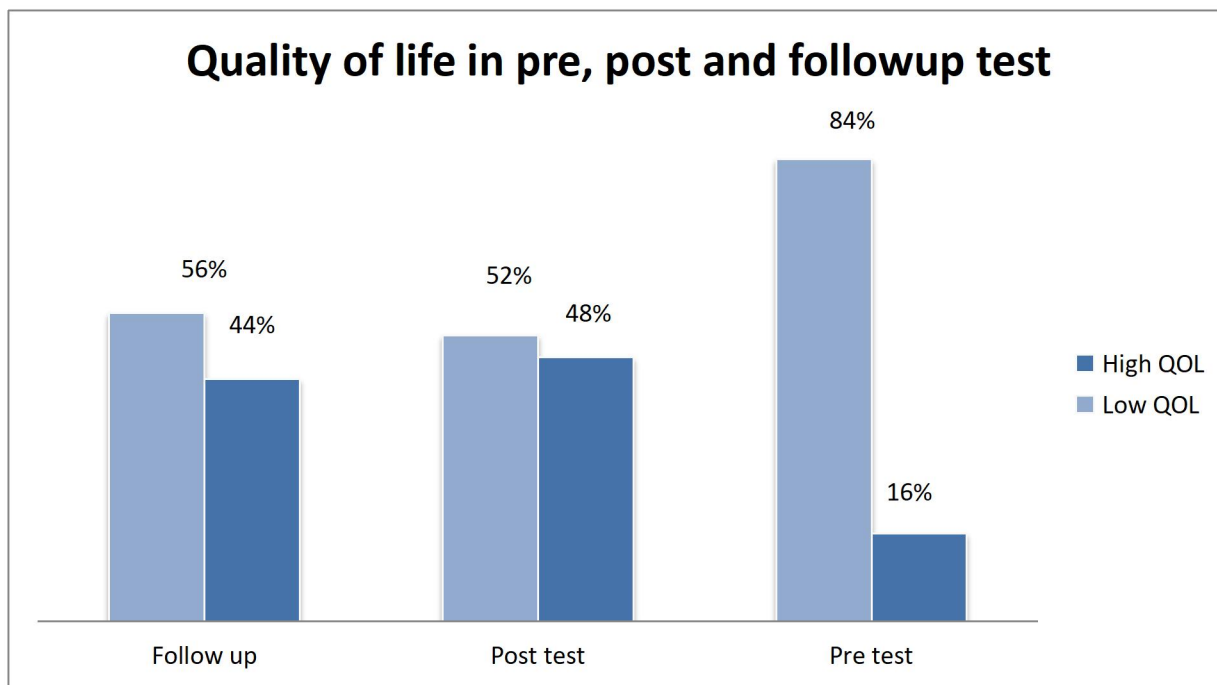


Figure (2): Quality of life in pre, post & follow up test among the studied elderly patients with chronic kidney diseases, (P<0.0001\*\*).



**Table (2): Comparison between the pre and post-intervention biochemical parameters of the studied elderly patients, (N=50).**

Parameters	Pre test (N=50).	Post test (N=50).	P-value
	Mean± SD	Mean± SD	
Creatinine (mg/dL)	9.8+3.2	7.8+2.4	<b>0.000*</b>
Urea (mg/dL)	137.6+35.3	118.7+28.6	<b>0.004*</b>
Calcium (mg/dL)	5.6+1.3	5.1+0.9	<b>0.027*</b>
<u>Phosphorus</u> (mg/dL)	3.2+1.1	2.8+0.9	<b>0.049*</b>
Hemoglobin (g/dL)	10.8+2.6	11.4+2.3	<b>0.2246</b>

Chi-square test, \* Statistically significant difference (p<0.01)

\*\* Highly statistically significant difference (p<0.01)

**Table (3): Relationship between the studied elderly's Karnofsky performance score & mini nutrition assessment score during (pre, post and follow up) phase. (N=50).**

Scale/scores	Pre test		Post test		Follow up		P-value 1	P-value2
	No.	%	No.	%	No.	%		
<b>Karnofsky scale score</b>							0.0647	0.655
Normal (80–100)	20	40.0	31	62.0	28	56.0		
Mild (40–70)	25	50.0	14	28.0	14	28.0		
Moderate (10–40)	5	10.0	5	10.0	8	16.0		
<b>Mean (SD)</b>	66.3+7.6		74.5+8.7		72.6+8.1		<b>0.000*</b>	
<b>Mini Nutritional Assessment scale score</b>							2.714	0.257
Normal (24 to 30 points)	12	24.0	14	28.0	12	24.0		
Risk for malnutrition (17–23.5 points)	33	66.0	34	68.0	35	70.0		
Malnutrition (Less than 17 points)	5	10.0	2	4.0	3	6.0		
<b>Mean (SD)</b>	15.9+3.2		18.7+6.1		17.7+5.4		<b>0.000*</b>	

Chi-square test, \* Statistically significant difference (p<0.01)

\*\* Highly statistically significant difference (p<0.01)

**Table (4): Relationship between Karnofsky scale score, Mini Nutritional Assessment scale score & total quality of life level in posttest phase among elderly patients with chronic kidney diseases, (N=50).**

Scale	Total QOL (n= 50)				X2 test	P-Value
	Low (n=26)		High (n=24)			
	No.	%	No.	%		
<b>Karnofsky scale score</b>						
Normal (80–100)	10	32.3	21	67.7	12.786	<b>0.001*</b>
Mild (40–70)	12	85.7	2	14.3		
Moderate (10–40)	4	80.0	1	20.0		
<b>Mini Nutritional Assessment scale score</b>						
Normal (24 to 30 points)	3	21.4	11	78.6	7.444	<b>0.024*</b>
Risk for malnutrition (17–23.5 -points)	22	74.7	12	35.3		
Malnutrition (Less than 17 points)	1	50.0	1	50.0		

Chi-square test, \* Statistically significant difference ( $p < 0.01$ )

\*\* Highly statistically significant difference ( $p < 0.01$ )

**Table (5): Relationship between socio-demographic data & total quality of life level in posttest phase among elderly patients with chronic kidney diseases, (N=50).**

Socio-demographic data		Total QOL (n= 50)				X2 test	P-Value
		Low (n=26)		High (n=24)			
		No.	%	No.	%		
Age (years)	60-69	6	27.3	16	72.7	9.623	<0.001*
	≥70	20	71.4	8	28.6		
Sex	Male	5	23.8	16	76.2	11.527	<0.000*
	Female	21	72.4	8	27.6		
Residence	Urban	2	16.7	10	83.3	7.897	0.004*
	Rural	24	63.2	14	36.8		
Marital status	Married	16	53.3	14	46.7	0.053	0.817
	Un married	10	50.0	10	50.0		
Education	Illiterate	16	94.1	1	5.9	19.844	<0.000*
	Read and write	6	42.9	8	57.1		
	Basic education	3	21.4	11	78.6		
	University education	1	20.0	4	80.0		
Frequency of dialysis/week	3 times/week	23	62.2	14	37.8	4.426	0.035*
	Twice/week	3	23.1	10	76.9		

Chi-square test, \* Statistically significant difference ( $p < 0.01$ )\*\* Highly statistically significant difference ( $p < 0.01$ )

## Discussion

Research indicates that patients who are informed about End Stage Renal Disease and malnutrition will have better outcomes. Malnutrition affects 40% to 50% of patients with CKD, making it a significant comorbid condition. Given that malnutrition worsens the prognosis in chronic kidney disease (CKD), nutritional status is a significant predictor of outcomes for patients receiving maintenance hemodialysis. An extensive nutritional evaluation based on anthropometric, laboratory, and clinical parameters is required for the assessment of nutritional status. Globally, the number of people with chronic kidney disease (CKD) is rising both in incidence and prevalence. According to some studies evaluating dialysis patients' quality of life (QOL), these patients' QOL appears to be lower than that of the general population (Naseri et al., 2020).

The results of six months of nutritional patient counselling were astounding. The quality of life of the test group of patients receiving counselling has been improving. The study demonstrates that patient counselling can enhance health-related quality of life (QOL) by raising patients' awareness and dispelling their misconceptions about the course of their disease and how to manage it. Dietary compliance was found to be a critical element in raising QOL.

Based on the sociodemographic characteristics of the sample under study, it was discovered that over half of the participants were 70 years of age or older, with a mean age of  $67.62 \pm 2.526$ . This finding may be explained by the fact that ageing increases a person's susceptibility to certain diseases. This result is supported by Rayner et al. (2017), who discovered that 79.8% of the sample under study was between the ages of 60 and 69, with a mean age of  $66 \pm 4.6$ .

Gender-wise, it was shown that women were more likely than men to have CKD, with approximately 75% of the study group being female. This could be because of variations in hormone levels and pregnancy-related issues like hypertension or eclampsia. The findings are corroborated by Sojib et al. (2018), who studied Associations between Body Mass Index and Chronic Kidney Disease in Type 2 Diabetes Mellitus Patients, they found that women made up 64.3% of the sample under study. This is in contrast to Victoria et al.'s 2019 who studied The impact of education on knowledge, adherence and quality of life among patients on hemodialysis, they revealed

that quality of life finding was 60% of the sample under study consisted of men.

In terms of education, it was found that 10% of the study group had a university degree and that over one-third of the group was illiterate. The current study also found a statistically significant relationship between the study group's educational level and QOL  $P < 0.000$ , with 94.1% of the illiterate participants having low QOL levels. This finding may be explained by the fact that educated individuals were more likely than illiterate people to be aware of their health and seek help as soon as possible. This is comparable to Zyga et al.'s (2015) who studied assessment of fatigue in end stage renal disease patients undergoing hemodialysis: Prevalence and associated factors, they observed that there was a statistically significant relationship between the study group's educational level and QOL ( $P = 0.001$ ) and that CKD was more common in elderly persons without formal education (31.7%) compared to those with higher educational attainment. Furthermore, the current study is also consistent with Ebrahimi et al. (2016), who studied Influence of nutritional education on hemodialysis patients' knowledge and quality of life, they found that elderly participants with low levels of education or those who could only read and write were more likely to have chronic kidney disease (CKD).

The current results showed that the study group's high QOL level score increased from 16% in the pretest to 48% in the posttest and 44% in the follow-up, respectively. This is consistent with Zyga et al.'s (2015) finding that post-test scores showed higher QOL than pre-test results. Furthermore, the current study is consistent with Ebrahimi et al. (2016), who found that participants were still looking for health-related information six months after the initial study, indicating an improvement in participants' satisfactory knowledge and an increase in their understanding of health conditions to make health-related decisions

According to the current study, there was a statistically significant difference in the biochemical parameters of elderly patients with renal disease ( $P=0.000$ ,  $P=0.004$ ,  $P=0.027$  and  $P=0.049$ ) between the pre- and post-intervention periods. Weiss et al. (2016) who studied Health-related quality of life in hemodialysis patients suffering from chronic itch, they found statistically significant reductions in the mean values of creatinine, urea, calcium and phosphorus levels

before and after the intervention, which is consistent with our findings. Hemoglobin levels rose, but these changes were not statistically significant.

The current study found that normal Karnofsky increased from 40% in the pretest to 62% and 56% in the posttest and follow-up test, respectively. These findings are consistent with those of **Hegazy et al. (2013)**, who studied the effect of dietary counselling on the improvement of end-stage renal disease patients, they discovered that only 22.0% of patients fell within the Karnofsky functional impairment scale's normal band prior to the intervention, but that percentage significantly increased to 78.4% following the intervention.

The current study's findings demonstrated that, as the percentage of elderly patients who were malnourished decreased from 10% in the pretest to 4% in the posttest, there were statistically significant differences between QOL and the mini nutrition assessment score  $P=0.000$ . These results are consistent with those of **Hegazy et al. (2013)**, who found that the mean MIS score (range 0-8) was 4.6 (SD 1.9) prior to the intervention and 3.1 (SD 1.7) following counselling ( $P < 0.001$ ).

The results of this investigation demonstrated a statistically significant difference ( $P=0.000$ ) between the study group's gender and QOL. This is consistent with the findings of **Maria et al. (2011)**, who studied Quality of life in patients with chronic kidney disease, they found a statistically significant relationship ( $P>0.001$ ) between the study group's sex and their quality of life.

Our results showed a statistically significant relationship ( $P$ -value  $<0.001$ ) between age and quality of life. This could be because older people are less inclined than younger ones to learn more about health issues. These findings are in line with the findings of **Weiss et al. (2016)**, who found that older respondents were more likely to have a low quality of life ( $P$ -value=0.001).

Furthermore, the current study found a statistically significant relationship ( $P$ -value  $<0.004$ ) between residence and quality of life. This finding may be explained by the fact that older people who live in urban areas are more likely than those who live in rural areas to seek medical attention. This is in line with the findings of **Rayner et al. (2017)**, who discovered a statistically significant relationship ( $P$ -value 0.000) between residence and

quality of life.

## Conclusions

Based on the outcomes of the present study, it could be concluded that the majority of the studied elderly had low quality of life in pretest, while after implementation of the educational nutritional sessions for chronic kidney diseases their high quality of life was improved among half of the studied elderly.

Furthermore, following the application of the educational nutritional sessions, there were statistically significant differences in the nutritional and functional status of elderly patients in the pre-, post-, and follow-up phases. which acknowledged the beneficial impact of the educational nutrition sessions on the functional status, quality of life, and nutritional status of the elderly patients.

## Recommendations

Based on the results of the present study, the following recommendations were suggested:

- Use special nutritional assessment tools that assist with determination of elderly with CKD nutritional needs.
- Periodical nutritional education for elderly patients with CKD in early stages.
- Conduct educational and training program to elderly caregivers about therapeutic nutrition to improve the elderly' quality of life, functional and nutritional status.

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