



## The effect of an educational program on quality of life for patients with chronic renal failure

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### Abstract

Quality of life is regarded as a primary aim in renal failure management, approaching quality of life of patients through an educational program is fundamental and active involvement of patients in their management is an essential component to the overall improvement of their quality of life.

**The aim:** This study aimed to evaluate the effect of an educational program on quality of life for patients with chronic renal failure.

**Design:** Aquasi- experimental research design was utilized.

**Setting:** the study was conducted at the dialysis unit at 15 May hospital affiliated to ministry of health.

**Samples:** A purposive sample of 50 adult patients from both genders diagnosed with chronic renal failure

**Tools:** Three tools were utilized for data collection

**Tool (I):** Structured interview questionnaire.

**Tool (II):** Knowledge assessment questionnaire.

**Tool (III):** Kidney Disease Quality of Life-Short Form (KDQOL- SF™1.3).

**Results:** 52.0% of studied patient aged from 40-60 years. There were high statistically significant differences of patients' knowledge and quality of life domains as physical, emotional, social and sexual domains with P value (0.000) in comparison to preprogram implementation. There were high statistically significant positive correlations between quality of life and knowledge scores during immediate post and follow up phases (P= 0.000).

**Conclusions:** There was an improvement of patients' level of knowledge regarding care of their disease which leads to improvement of patients' quality of life.

**Recommendations:** The developed educational program should be implemented on a wider scale and evaluated for further improvement.

**Keywords:** Chronic renal failure, educational program and quality of life

### Introduction

End stage renal disease (ESRD) is considered as a permanent deterioration in renal function. It is considered a deadly and life-threatening disease, in which the survival can only be sustained by hemodialysis (HD) or peritoneal dialysis. Therefore, the therapy options are limited to either dialysis or renal transplant. End stage renal disease is a persistent illness that requires continuity of care that includes renal replacement therapy, education, and restriction of food and fluid intake. It is a dreadful sequel of chronic renal failure. Therefore, it has an immense impact on the affected patients regarding QOL, morbidity, and mortality (Bakarman *et al.*, 2019) [3].

Renal failure has a great effect on the patients' health. The health status among patients suffering from ESRD is very low when compared to the health status of the normal population. This is the reason why health related quality of life (HRQOL) has obtained such high attention (Cha, & Han, 2020) [13]. In patients with renal failure, some health interventions look for improving the QOL more than

treating the underlying pathology and complications. Therefore, the subjectivity of HRQOL evaluation is noted. As HD is a long-term process, patients affected with renal failure need to generate various alterations in how they live their life in order to be able to survive with their illness and manage its complications (Hussien *et al.*, 2020) [12].

Quality of life (QOL) is a broad concept that incorporates all aspects of life and has been used in a variety of disciplines such as: geography, philosophy, medical sciences, social sciences, health promotion, and advertising. The World Health Organization (WHO) defined quality of life as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.

### Significance of the Study

Chronic Kidney disease (CKD) is a universal public health problem that influences more than 750 million people over the world. The burden of kidney disease varies substantially

across the world, and the burden declines disproportionately upon socially disadvantaged and other vulnerable groups. People with lower socioeconomic status have a higher prevalence of CKD, limited access to treatment, and poorer outcomes. Early identification of CKD by screening for kidney disease, followed by risk stratification and treatment, offers the potential to substantially reduce the morbidity and mortality from CKD and its related complications, such as cardiovascular disease. However, at present, there is no accepted systematic strategy for CKD screening and treatment (Shlipak *et al.*, 2021; Curtis, & Komenda, 2020) [9, 4].

Chronic kidney disease is the 5th leading causes of death. This has become a major public health concern in Egypt, the concern of chronic kidney disease has increased by 35.7% in Egypt, and ranking as untreated CKD can progress to kidney failure and early cardiovascular disease. The most recent available estimate for the prevalence of dialysis in Egypt in 2019 and is reported to be 0.61 per 1,000 people with an incidence estimate of 0.192 per 1,000 people. Patients undergoing dialysis in Egypt in 2020 were mostly males (58.7%) and half of them are aged 55 years and older (World Population Review, 2021; Farag, & El-Sayed, 2022) [11, 15].

## Subjects and Methods

### Aim of the study

This study aimed to evaluate the effect of an educational program on quality of life for patients with chronic renal failure through the following: -

1. Assess quality of life for patients with chronic renal failure.
2. Assess knowledge of patients regarding chronic renal failure.
3. Design and implement educational program for patients with chronic renal failure.
4. Evaluate the effectiveness of an educational program on quality of life for patients with chronic renal failure.

### Research hypothesis

At the end of the study the quality of life for patients with chronic renal failure will demonstrate significant improvements after implementation of the educational program as measured by tool III.

### Research design

A quasi-experimental research design was utilized to achieve the aim of this study. Quasi-experimental research design is an empirical study used to estimate the causal impact of an intervention on its target population without random assignment.

### Setting

The study was conducted at the dialysis unit affiliated 15 May modern hospital affiliated to ministry of health, which contains two rooms, each room contain 13 hemodialysis machines.

### Subject

A purposive sample of 50 adult patients from both genders diagnosed with chronic renal failure. Sample size Equation: at 95% confidence, power of the study. The researchers

depended on the following equation to calculate the sample size:

### Tools of data collection

Three tools were utilized to collect the data during the study period:

#### Tool (I): Structured interview questionnaire (Appendix I)

It was developed by the researcher based on literature review (Lewis *et al.*, 2019) [7] and divided into two parts:

##### Part 1: Demographic characteristics of the patients

It included demographic characteristics of the studied patients as age, gender, marital status, occupation, level of education and residence

##### Part 2: Medical history of the patients

This part is concerned with patient's medical history as past history of chronic diseases, type of chronic disease, family history of CKD and present history as duration of disease, type of vascular access, duration of hemodialysis sessions and medical treatment of patients. It composed of (5) items in the form of closed-ended and opened questions

#### Tool II: Knowledge assessment questionnaire (Appendix II)

This questionnaire was developed by the researcher based on literature review (Hinkle & Cheeverk, 2016) [5] to assess patient's level of knowledge regarding chronic renal failure. It contained (18) closed ended questions reflecting three parts:

##### First part: Patients knowledge regarding renal failure

It included 5 questions as meaning of chronic renal failure, causes, sign & symptoms and methods of treatment.

##### Second part: Patients knowledge regarding hemodylsis

it included 5 questions as definition, types, indications of hemodylsis and nutrition management

##### Third part: Patients knowledge regarding hemodylsis problems and management

It included 8 questions as edema, nausea, vomiting, diarrhea, hypertension, hypotension, dyspnea, itching and muscle cramps.

##### Scoring system of knowledge assessment questionnaire

Each item of knowledge questionnaire was scored as 1 degree for correct answer and zero for incorrect answer. Total knowledge scores ranged from zero to 18 degrees and were categorized as:

1. Poor knowledge if the total scores <50%.
2. Fair knowledge if the total scores ranged From 50 to 75%.
3. Good knowledge if the total scores more than or 75%

#### Tool III: Kidney Disease Quality of Life-Short Form (KDQOL- SF™1.3) (Appendix III)

It adapted from (Hays *et al.*, 2005) [14] to assess QOL of patients with CKD. It contained 38 items which include four domains divided as following (Physical domain 14 items,

emotional domain 10 items, social domain 9 items, sexual domain 5 items).

The researcher modified the scoring system of questionnaire from 5 points to 3 points likert scale. Scoring modified by the researcher from (Definitely true, mostly true, don't know, mostly false and definitely false) to (Yes, some times, no).

**Scoring system of KDQOL**

Each item was scored as (0= yes, 1= some times and 2= no) total scores ranged from 0 – 72 and were categorized as:

- Poor quality of life if the total scores ≤65%.
- Good quality of life if the total scores >65%.

**Testing validity**

Content validity was conducted to determine whether or not the instrument measures what it is designed to measure. The tools were checked by a jury of 5 experts as the following; Lecturers and professors of medical surgical nursing from faculty of nursing Helwan University and Ain Shams University, who revised the content of the tools for

comprehensiveness, accuracy, clarity, relevance and applicability.

**Testing reliability**

Reliability of the tool was tested to decide the consistency of the measurement instrument. The Cronbach's alpha was used to test tool reliability. Reliability factor of the knowledge assessment questionnaire was 0.985 and the kidney disease quality of life-short form was 0.927 Statistical equation of Cronbach's alpha reliability coefficient normally ranges between 0 and 1; higher values more than 0.7 denote acceptable reliability.

**Pilot study**

A Pilot study was carried out with 10% (5 patients) of the study sample to test the applicability, clarity and efficiency of the tools, then the tools were modified according to the results of the pilot study, patients participated in pilot study were not included in the sample and were replaced by other patients.

**Result**

**Table 1:** Frequency distribution of the demographic characteristics of the studied patients (N. = 50)

| Demographic characteristics |                | The studied patient (n= 50) |      |
|-----------------------------|----------------|-----------------------------|------|
|                             |                | N                           | %    |
| Age groups                  | 20<40          | 20                          | 40.0 |
|                             | 40-60          | 22                          | 44.0 |
|                             | >60            | 6                           | 12.0 |
| Mean SD                     |                | 43.94 ±15.69                |      |
| Marital status              | Single         | 11                          | 22.0 |
|                             | Married        | 33                          | 66.0 |
|                             | Divorce        | 4                           | 8.0  |
|                             | Widow          | 2                           | 4.0  |
| Occupation                  | Employee       | 21                          | 42.0 |
|                             | Farmer         | 18                          | 36.0 |
|                             | house wife     | 5                           | 10.0 |
|                             | not work       | 6                           | 12.0 |
| Level of education          | Educated       | 5                           | 10.0 |
|                             | Second         | 16                          | 32.0 |
|                             | read and write | 4                           | 8.0  |
|                             | Illiterate     | 18                          | 36.0 |
| Residence                   | Student        | 7                           | 14.0 |
|                             | Urban          | 6                           | 12.0 |
|                             | Rural          | 44                          | 88.0 |

Table (1) shows that, 52.0% of studied patients aged from 40 to less than 60 years, with a mean age (43.94 ±15.69),

66.0% were married, 82.0% were educated, 58.0% were employed and 88% were living at urban areas.

**Table 2:** Frequent distribution of Positive Response of the Studied Patients about Physical domain/ chronic renal failure Quality of Life with Yes Response during study phases (N=50).

| Physical domain |   | The studied patient (n= 50) |    |      |    |                    |    |                      |        |
|-----------------|---|-----------------------------|----|------|----|--------------------|----|----------------------|--------|
|                 |   | Pre                         |    | Post |    | 3 months Follow up |    | Test of significance |        |
|                 |   | N                           | %  | N.   | %  | N.                 | %  | F value              | P      |
| 1               | Must to keep stopping what I am doing to rest | 36                          | 72 | 10   | 20 | 12                 | 24 | 5.48                 | .000** |
| 2               | Sleep badly at night                          | 38                          | 76 | 6    | 12 | 8                  | 16 | 5.71                 | .000** |
| 3               | Feel dependent on others                      | 30                          | 60 | 18   | 36 | 22                 | 44 | 7.00                 | .000** |
| 4               | Feel tired, whatever I do                     | 42                          | 84 | 8    | 16 | 6                  | 12 | 7.28                 | .000** |
| 5               | Find it difficult to walk very far            | 32                          | 64 | 4    | 8  | 20                 | 40 | 10.2                 | .000** |
| 6               | Feel Soreness in your muscles                 | 12                          | 24 | 32   | 64 | 42                 | 84 | 1.42                 | .000** |
| 7               | Have Chest pain                               | 38                          | 76 | 10   | 20 | 18                 | 36 | 4.80                 | .000** |
| 8               | Have cramp in your limbs                      | 42                          | 84 | 12   | 24 | 24                 | 48 | 7.89                 | .000** |

|    |  |    |    |    |    |    |    |       |        |
|----|--|----|----|----|----|----|----|-------|--------|
| 9  | Have Itching skin                      | 28 | 56 | 12 | 24 | 26 | 52 | 9.75  | .000** |
| 10 | Feel Shortness breath                  | 44 | 88 | 6  | 12 | 12 | 24 | 2.38  | .000** |
| 11 | Lack appetite                          | 30 | 60 | 10 | 20 | 10 | 20 | 15.61 | .000** |
| 12 | Feel Faintness or dizziness            | 30 | 60 | 10 | 20 | 18 | 36 | 8.04  | .000** |
| 13 | Have problem with vascular access site | 32 | 64 | 6  | 12 | 12 | 24 | 11.48 | .000** |
| 14 | Ambulate with assistance               | 26 | 52 | 4  | 8  | 6  | 12 | 2.714 | .000** |

Table (2) reveals that, there were statistically significant differences of physical domain scores throughout study phases. (88%) of the studied patients had shortness of breathing preprogram decreased to (12%) and 24% of them post program and follow up program implementation respectively.

**Table 3:** Correlation between score of total knowledge and total quality of life for kidney disease patient during study phases (N=50)

| Variables             | Total knowledge |      |                |        |           |        |
|-----------------------|-----------------|------|----------------|--------|-----------|--------|
|                       | Pre             |      | Immediate post |        | Follow up |        |
|                       | r               | p    | R              | P      | r         | P      |
| Total quality of life | 1.21            | .345 | .675           | .000** | 3.741     | .004** |

Table (3) indicates that, there were high statistically significant positive correlation between total quality of life and total knowledge scores during the immediate post and follow up phases (P= 0.000).While, there was no statistically significant correlation between total quality of life and total knowledge preprogram implementation.

**Table 4:** Correlation between score of total knowledge and physical domain score during study phases

| Variables       | Total knowledge |       |                |        |           |       |
|-----------------|-----------------|-------|----------------|--------|-----------|-------|
|                 | Pre             |       | Immediate post |        | Follow up |       |
|                 | R               | p     | R              | P      | r         | P     |
| Physical domain | 0.144           | .012* | 2.145          | .000** | .293      | .031* |

Table (4) reveals that, there was high statistically significant positive correlation between total knowledge and physical domain scores immediate post program implementation (P= 0.000) and there were statistically significant positive correlations between total knowledge scores and physical domain scores during preprogram and follow up phase (P= 0.012 & 0.043) respectively.

**Table 5:** Correlation between score of total knowledge and emotional domain score during study phases

| Variables        | Total knowledge |      |                |        |           |       |
|------------------|-----------------|------|----------------|--------|-----------|-------|
|                  | Pre             |      | Immediate post |        | Follow up |       |
|                  | r               | p    | R              | P      | r         | P     |
| Emotional domain | 0.291           | .745 | .875           | .000** | .323      | .041* |

Table (5) indicates that, there was high statistically significant positive correlation between total knowledge and emotional domain scores immediate post program implementation (P= 0.000) and there was statistically significant positive correlation between total knowledge and emotional domain scores during follow up phase of program implementation (P= 0.041).

**Discussion**

Regarding the demographic characteristics of the studied patients the study finding showed that, more than one third

of studied patient their age from 40-60, the mean  $\pm$ standard deviation values of age were 43.94 $\pm$ 5.69 years old. More than two thirds were married, more than one third were employed, more than one third were illiterate and majority of them live at Rural, more than half of the studied patients were male, about half of them were female.

Regarding social domain / chronic renal failure Quality of Life with Yes Response during study phases the study result revealed that, social domain for kidney disease was dramatically improved after implementation of educational program with highly statistically significant differences with in comparison to the baseline by using F value. The majority of studied patient agreed on "Unable to join in activities with my family or friends" at preprogram and it was improved to be one-third in immediately post program and more than third of them in follow up program.

In addition correlation between score of total knowledge and total quality of life for kidney disease patient during study phases the study findings indicated that, there was highly statistically significant positive correlation between scores of total quality of life and patient knowledge scores during the immediate post and follow up phases. While there was no statistically significant correlation between scores of total quality of life and patient knowledge scores during the preprogram phase.

The study findings agreed with Mansouri *et al.*, (2019) [6], who reported at their study that there were highly statically correlation between patient knowledge and quality of life immediate after and follow up the educational program. Also Ahmed., Abd Elzاهر.,& Sabra., (2021) [1], showed that there was significant positive correlation between quality of life and patient knowledge regarding chronic renal failure disease during the immediate post and follow up phases

For correlation between score of total knowledge and physical domain score during study phases the study finding revealed that, there was highly statistically significant positive correlation between patient knowledge scores and physical domain scores during the immediate post and there was statistically significant positive correlation between patient knowledge scores and physical domain scores during preprogram and follow up phase.

The study findings similar with Alqahtani *et al.*,(2019) [2], who conducted their study about "Quality of life among patients with chronic renal failure on hemodialysis at the military hospital in southern region of Saudi Arabia" and displayed that there was significant positive relationship between patient total knowledge and their physical function at the (pre, post & follow-up) program phases.

As regard correlation between score of total knowledge and emotional domain score during study phase the result indicated that, there was highly statistically significant positive correlation between patient knowledge scores and emotional domain scores during the immediate post and there was statistically significant positive correlation between patient knowledge scores and emotional domain



scores during follow up phases. While there was no statistically significant correlation during the preprogram phase.

Theses study result congruent with Bakarman *et al.*, (2019)<sup>[3]</sup>, who showed at their study that there was highly statistically significant association between patient knowledge regarding CRFD and quality of life at immediate post program, while there was no correlation at the follow up evaluation.

### Conclusion

Most of the hemodialysis patient with chronic renal failure have moderate QoL in overall domains. Majority of study sample have high QoL level in the social domain and most of the CRF patients undergoing hemodialysis responses present they have low level of independence and physical domain. There are strong relationship between QoL and (gender, level of education, Marital status, and occupational status before disease) of the CRF patients under hemodialysis.

### Recommendations

#### For patients

- Provide CRF Patients undergoing HD with needed pamphlets, posters and booklets including instructions that contain information about hemodialysis therapy, diet schedule, medication, life style changes and etc.

#### For Nurses

- Preparation of qualified nurses to increase awareness toward challenges that result from CRF and hemodialysis for newly patients and their families through participating them to specific educational courses that are related to quality of life aspects.
- The nurse must be emphasized on strengthen of believe to reinforce spiritual level of patient and their families.
- Involve new nurses allocated in hemodialysis unit in training courses regarding dialysis procedure and medications, and how to deal comprehensively with CRF patients, and their families

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### Author's Contribution

Not available

### Conflict of Interest

Not available

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