Quality of Life among Chronic Hemodialysis Patients at Minia City

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Abstract

Background: Chronic kidney disease (CKD) is a world-wide public-health problem. According to the World Health Organization, diseases of the kidney and urinary tract contribute to global burden with approximately 850,000 deaths every year and more than 115 million disability-adjusted life years. **Aim:** The study aimed to assess the quality of life among chronic hemodialysis patients at Minia City. **Study design:** Descriptive research design had used to conduct in this study. **Setting:** This study was conducted at the outpatient clinic of hemodialysis unit at Minia university hospital and in the patients' home. **Subject:** A convenience sampling technique was utilized (100 chronic hemodialysis patients). **Tools:** Two tools were utilized in this study, the **first tool** was an interviewing structured questionnaire sheet was contained two parts: **Part 1:** Socio-demographic characteristics of chronic hemodialysis patients. **Part II:** Assess patient's medical history and the. **Second tool** was the assessment of the quality of life of chronic hemodialysis patient **Results**: the most of the chronic hemodialysis patient had poor quality of life (QOL) and the minority of them had fair QOL. Also there was a statistical significance between the total quality of life score and marital status with, educational level with, number of family members with, and income. **Conclusion:** The most of the chronic hemodialysis patient had poor QOL and there was a statistical significance between the total quality of life score and marital status with, educational level, number of family members, and income. **Recommendation**s: Provide chronic hemodialysis patients with effective health education about hemodialysis therapy, diet schedule, medication, life style changes to improve their quality of life.

Keywords: Quality of Life, Chronic Hemodialysis Patients

Introduction

Chronic kidney disease (CKD) is a progressive condition that affects >10% of the general population worldwide, amounting to >800 million individuals. CKD is a progressive loss in renal function over a period of months or years. All individuals with glomerular filtration rate less than 60 mL/min/1.73 m2 for 3 months or more are classified as having chronic kidney disease. This condition is particularly serious in developing countries where health resources are inadequate. End stage renal disease (ESRD) has many causes that vary from one patient to another. The key risk factors for chronic kidney disease (CKD) are the increasing age of the population, diabetes mellitus and hypertension and medications, such as the use of analgesics regularly over long durations of time resulting in analgesic nephropathy and kidney damage. Polycystic kidney disease is an example of a hereditary cause of CKD, in many Arab countries, obstructive uropathy constitutes a major cause of ESRD (40%). The two most common underlying causes are renal calculi and schistosomiasis **(Gutiérrez-Peredo et al., 2020)**.

Medical management of chronic renal failure includes dialysis to remove waste products and extra water from the blood. There are two types of dialysis; hemodialysis (HD) and peritoneal dialysis. Kidney transplantation involves surgically placing a healthy kidney from a donor inside the patient body that is used when there is no life threatening medical condition other than kidney failure **(Niihata et al., 2017)**.

Hemodialysis is the most common method used to treat advanced and permanent kidney failure. Hemodialysis defined as a medical procedure that uses a special machine to filter waste products from the blood and to restore normal constituents to it again. Chronic hemodialysis has many complications as cardiovascular, nutritional, gastrointestinal, hepatic, endocrinal, complications of arteriovenous fistula (AV), infections, nervous system & sleep disorders. Hemodialysis therapy is time-intensive, expensive and requires fluid and dietary restrictions. Long-term dialysis therapy itself often results in loss of freedom, the burden of coping with an incurable disease, dependence on caregivers, disruption of marital, family, and social life and reduced or complete loss of financial income. Due to these reasons, physical, psychological, socioeconomic and environmental aspects of life are impaired **(Koch-Weser et al., 2021)**.

Assessment of health-related quality of life is a predictive indicator of the outcome of the disease as well as a valuable research tool in assessing the effectiveness of therapeutic intervention, patients' survival and hospitalizations. The impact of hemodialysis on the patient's quality of life has become increasingly recognized as an important outcome measure as patients' perception of their well-being and patient-reported outcomes (PROs) are becoming an integral part of the clinical and social evaluation of chronic illnesses and are increasingly considered a fundamental element for the assessment of the impact of therapeutic interventions **(Ishiwatari et al., 2020)**.

World Health Organization defines 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. The effectiveness of health care and development of health policies are often determined by health related quality of life (HRQOL) assessments. HRQOL is also an important predictor of HD patient's outcomes that should be frequently assessed. The HRQOL measurement indicates the impact of illness on the patient's physical, mental, and social performance. Since hemodialysis is an expensive treatment modality for chronic renal failure patients, it is very essential

to assess the outcome of therapy in terms of quality of life **(Mahadevan, 2019)**.

Community health nurse has an important role in educating the patient and the family caregivers about coping strategies to overcome daily obstacles, resolve stresses, empower them for better coping with daily challenges and manage their informational needs about the complex health system and patients' needs. Moreover, coordinates and collaborates between the family caregivers and government programs, advocacy groups and agencies. Furthermore, works as liaison between family caregivers and support groups to share different experiences which help improving their quality of life **(Shafaii et al., 2017)**.

Significance of the study:

Globally, in 2017, 1·2 million people died from chronic renal disease. The global all-age mortality rate from chronic renal disease increased 41·5% between 1990 and 2017, although there was no significant change in the age-standardized mortality rate (2·8%, −1·5 to 6·3). In 2017, 697·5 million cases of all-stage chronic renal disease were recorded, for a global prevalence **(Bikbov et al., 2020)**.

In Egypt, the estimated annual incidence of ESRD is around 74 per million and the total prevalence of patients on dialysis is 264 per million **(El-Arbagy et al., 2016)**. The prevalence of ESRD patients on maintenance HD in the Sharkia governorate is 442 per million populations (pmp) **(Ahmed et al.,2020)**. The prevalence rate of end Stage Renal Disease in the El-Minia Governorate increased from 250 population per million in 2002 to 260 population per million in 2005, and had become 367 population per million in 2007 **(El-Minshawy, 2007; El Minshawy, 2011)**.

Hemodialysis treatment is time-intensive, expensive, and requires fluid and dietary restrictions; the physical, psychological, socioeconomic, and environmental aspects of life are negatively affected, leading to impaired quality of life **(Eldoushy & Shehata, 2021)**. Evaluation of health related quality of life among Chronic kidney disease patients in Egypt can add new insight in the management of the disease as it allows the quantification of the disease consequences according to the patient's perception and enables adjustment of medical decisions to their physical, emotional, and social needs. It also improves the adhesion to the therapeutic plan, the quality of the health care provided, and patient survival **(Wassef et al., 2018).**

Aim of the study

The study aimed to assess the quality of life among chronic hemodialysis patients at Minia City**.**

Research questions

4. -What is the quality of life of patients on chronic hemodialysis?

Subjects and Method
Research design

A Descriptive research design was utilized in this study.
Setting

This study was conducted at the outpatient clinic of hemodialysis unit at Minia university hospital and in the patients' home.
Subjects

A convenience sampling technique of was utilized in this study. The investigator had selected all cases (100 chronic hemodialysis patients) with age ranged from 20-50 years and diagnosed with disease more than six months who came to the hemodialysis unit at the Urology Hospital at Minia city through six months from 1ˢᵗ February to 31 August 2022.
Data collection tools

Data were collected using two tools and include the following.
Tool (I): Organizational Trust Scale
Tools for data collection consisted of two parts:

- **Part (1):** it was concerned with socio-demographic of the studied patients: It include age, gender, marital status, educational level, occupation, residence, family number, income, phone number and patient address.
- **Part (2)**: **patient's medical history**. This part covering-patient's past and present history of the disease, duration on hemodialysis and number of session/weeks, duration of session, and complications.

Tool II:- World Health Organization Quality Of Life (Whoqol). It was developed by WHO (2012) and adopted by the investigator. The tool contains 50 questions over six broad domains of Quality of Life within which 29 facets are covered to determine the quality of life. These six domains include physical, social, psychological, environmental, level of independence and spirituality. Within each domain, several sub domains (facets) of Quality of Life Summarized that particular domain of Quality of Life. The six main domains are:

1. Physical health including, pain and discomfort, energy and fatigue sleep and rest.
2. Psychological including: Negative feeling, positive feeling, self- esteem, spiritual, religion and personal beliefs.
3. Social relationships including: Personal relationships, social support and sexual activity.
4. Environment including: Physical environment, safety and security, health and social care.
5. Level of independence:- include mobility, activities of daily living, dependence on medicinal substances and medical aids.
6. Spirituality/religion/personal beliefs

Scoring system:-
The response to each dimension summed from 100, depending on the distribution of the grades of each dimension. These scores will be summed and converted into a percent score.
It will be classified into 3 categories:-

- **Poor quality if score < 60%.**
- **Fair quality if score 60 – 75%.**
- **Good quality if score > 75 %.**

Administrative design
- An official letter was granted from the research ethics committee of the Faculty of Nursing, Minia University.
- Approval to conduct the study was obtained from the Dean of the Faculty of Nursing, Minia University.
- Permission and consent were obtained from the director of the hospital.
- Permission and consent were obtained from the head of

the hemodialysis department.

- An official letter was granted from the research ethics committee of the Faculty of Nursing, Minia University.
- The patients were informed that their participation in the study was completely voluntary and there was no harm if they not participated in the study.

Ethical Consideration:
- Oral consent was taken to be included in the study subject.
- Explanation about the study was done to the patients included the aim of the study and the potential benefits,
- The participant was informed about the withdrawal procedures if they decided to leave the study at any time before and during the completion of data collection,
- Confidentiality of data, privacy, identity, voluntary participation, and the right to refuse to participate in the study was emphasized to subjects.

Validity of Tools:
The tool was submitted to a jury of 5 experts in the field of community health from the faculty of nursing at Minia Universities. Tool content validity was done to identify the degree to which tools supposed to be measured. The tools were examined for content coverage, the sequence of items, clarity, relevance, applicability, wording, length, format, and overall appearance. Some modifications were done.

Reliability of Tools:
The Reliability of the tool was performed to confirm the consistency of the tool. The internal consistency measured to identify the extent to which the items of the tool measured what it was intended to measure. The internal consistency of the tool was assessed with the Cronbach's alpha coefficient. Cronbach's alpha coefficient of 0.00 indicates no reliability and a coefficient of 1.00 indicates perfect reliability.

Pilot Study:
Before starting to collect the data, a pilot study was carried out on (10%) of sample to test the feasibility and the applicability of the questionnaire, and to identify the most suitable time to collect data. The results of the pilot study were not included in the study results because some changes were applied to the questionnaire to clarify some questions.

Data collection procedure
- Before starting data collection, an official letter had been taken from the Dean of the faculty of Nursing at Minia University to head manager of Urology of Menia University Hospital, asking for permission to collect data.
- The objectives and aim of the study was explained to the managers of Hemodialysis Unit at Urology Menia University Hospital to gain their cooperation and to allow meeting with patients.
- The investigator attended to the Hemodialysis Unit and give sessions to explain the aim and nature of study and how to fulfill this questionnaire briefly through direct personal communication and oral consent was obtained from the participants before inclusion in the study.
- All questionnaires sheet were fulfilled by the investigator, after asking the patient.
- The questionnaire had taken time from 10 to 15 minutes according to patient's tolerance and every patient was allowed to ask any question to clear any misunderstanding..
- The data were collected through three months from the beginning of August to the ending of October 2021.
- The investigator was visited the Hemodialysis Unit centers two days/week at official work time from 8 Am: 12 Pm.

Data statistical analysis
Upon completion of data collection, the data were scored, tabulated, and analyzed through data entry and analysis by computer using the "Statistical Package for Social Science" (SPSS) (IBM 28). Data were presented using descriptive statistics in percentages, frequency mean, and standard deviation. Inferential statistical tests of significance such as the Fisher exact test, chi square test, t test. A statistically significant level was considered when the p-value was less than 0.05. were used to identify group differences and the relations among the study variables. The p-value > 0.05 indicates a non-significant result, while the p-value < 0.05 is significant, and the p-value $\leq$ 0.01 is highly significant.

Results

Table (1): Distribution of the chronic hemodialysis patients regarding their socio- demographic characteristics (n=100) 2021.

Demographic Characteristics	NO	%
Age		
18- < 28yrs	9	9.0
28- < 38yrs	28	28.0
38 - 48yrs	63	63.0
Mean± SD 40.1±3.2		
Gender		
Male	55	55.0
Female	45	45.0
Marital status		
Single	18	18.0
Married	70	70.0
Divorced	8	8.0
Widowed	4	4.0
Education level		
Illiterate	17	17.0
Reading and writing	9	9.0
Basic education	5	5.0
Secondary school	65	65.0
University	4	4.0
Occupation		

Demographic Characteristics	NO	%
Not working	19	19.0
Worker	25	25.0
Employee	19	19.0
Student	1	1.0
House wife	36	36.0
Residence		
Urban	53	53.0
Rural	47	47.0
Family number		
1 - 3 persons	78	78.0
4 - 6 persons	15	15.0
> 7 persons	7	7.0
Income		
Sufficient	18	18.0
Insufficient	82	82.0

Table (1): shows that 63.0% of the chronic hemodialysis patients' age ranges from (38-48) years with a mean of (40.1±3.2), males constituted 55%, while 70% of the chronic hemodialysis patients were married, regarding educational level, 65% had secondary education. Also, 25% were workers. 53% of them lived in urban areas and 78% of them had families consisting of from1 to 3 persons. 82% of them gain insufficient income.

Table (2) Mean score of chronic hemodialysis patients' quality of life (n=100) (2021)

Quality of life domain	Mean ± SD
Total Physical state score	14.30 ± 3.67
Total Psychological state score	14.75± 2.17
Total Social state score	14.62 ±2.42
Total Environmental state score	7.50 ± 2.33
Total level of dependence states score	25.12 ± 4.99
Total Spirituality/religion/personal beliefs score	16.56 ± 1.19

Table (2):- Shows that the total level of dependence was represent the highest score for chronic hemodialysis patients regarding quality of life with (Mean ± SD 25.12±4.99) and the total environmental state represented the lowest score for chronic hemodialysis patients regarding the quality of life with (Mean ± SD 7.50 ± 2.33).
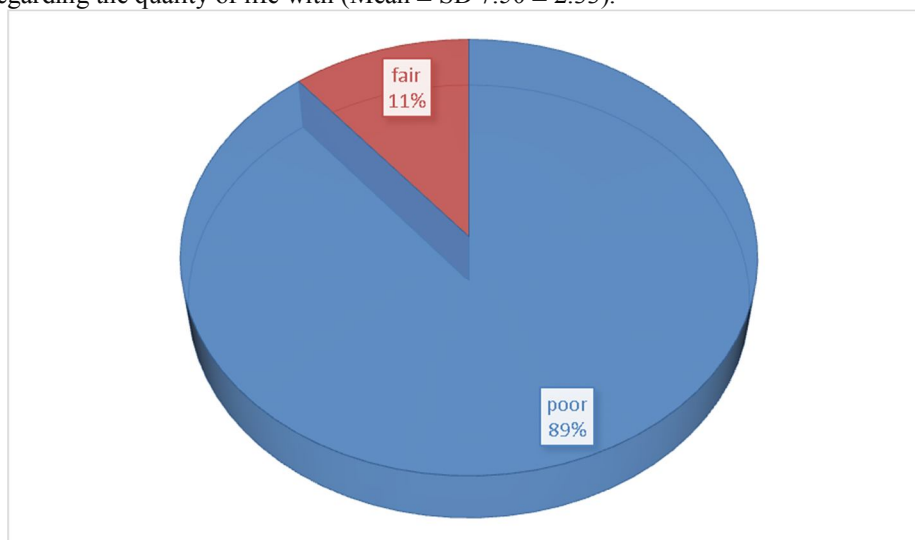

Figure (1):- Distribution of the chronic hemodialysis patients according to their total quality of life level total score (n=100) (2021).

Figure (1): stated that, 89 % of the chronic hemodialysis patients was poor QOL and 11% were fair QOL.

Table (3): Relation between chronic hemodialysis patients' total quality of life score and their socio-demographic data (n=100) (2021).

demographic characteristics	quality of life total score						X^2	P
	poor		fair		good			
	NO	%	NO	%	NO	%		
Age								
18- < 28yrs	8	88.9	1	11.1	0	0.0	.449	.799
28- < 38yrs	24	85.7	4	14.3	0	0.0		
38 - 48yrs	57	90.5	6	9.5	0	0.0		
Gender								
Male	50	90.9	5	9.1	0	0.0	.455	.360
Female	39	86.7	6	13.3	0	0.0		
Marital status								
Single	15	83.3	3	16.7	0	0.0	**15.7**	**.001***

demographic characteristics	quality of life total score						X²	P
	poor		fair		good			
	NO	%	NO	%	NO	%		
Married	67	95.7	3	4.3	0	0.0		
Divorced	5	62.5	3	37.5	0	0.0		
Widowed	2	50.0	2	50.0	0	0.0		
Education level								
Illiterate	16	94.1	1	5.9	0	0.0	26.2	.001*
Reading and writing	5	55.6	4	44.4	0	0.0		
Basic education	2	40.0	3	60.0	0	0.0		
Secondary school	62	95.4	3	4.6	0	0.0		
University	4	100.0	0	0.0	0	0.0		
Occupation								
Not working	17	89.5	2	10.5	0	0.0	4.07	.539
Worker	23	92.0	2	8.0	0	0.0		
Employee	16	84.2	3	15.8	0	0.0		
Student	1	100.0	0	0.0	0	0.0		
House wife	31	91.2	3	8.8	0	0.0		
Others	1	50.0	1	50.0	0	0.0		
Residence								
Urban	46	86.8	7	13.2	0	0.0	.561	.336
Rural	43	91.5	4	8.5	0	0.0		
Family number								
1 - 3 persons	73	92.4	6	7.6	0	0.0	4.45	.050*
4 - 6 persons	16	76.2	5	23.8	0	0.0		
> 7 persons	0	0.0	0	0.0	0	0.0		
Income								
Sufficient	117	61.1	7	38.9	0	0.0	17.4	.002*
Insufficient	8	95.1	4	4.9	0	0.0		

*Statistical significance   **highly statistical significance

Table (3): cleared that there was a statistical significance differences between the total quality of life score and marital status with (p-value =0.001), educational level with (p-value =0.001), number of family members with (p-value =0.050), and income with (p-value=0.002).

Discussion

Hemodialysis therapy is time-intensive, expensive, and requires fluid and dietary restrictions. Long-term dialysis therapy itself often results in a loss of freedom, dependence on caregivers, disruption of marital, family, and social life, and reduced or loss of financial income. Hemodialysis alters the life style of the patient and family and interferes with their lives. The major areas of life affected by ESRD and its treatment includes employment, eating habits, vacation activities, sense of security, self-esteem, social relationships, and the ability to enjoy life. Due to these reasons, the physical, psychological, socioeconomic, and environmental aspects of life are negatively affected, leading to compromised quality of life **(Dembowska et al., 2022)**.

Regarding the socio-demographic data of the chronic hemodialysis patients, the current study showed that, less than two third of the chronic hemodialysis patients' age ranges from (38-48) years with a mean of (40.1±3.2), more than half of them were males, while more than two third of them were married. This result was confirmed with **Hashem et al, (2022)** who studied "Sleep pattern in a group of patients undergoing hemodialysis compared to control" and reported that, the mean age of the patients was 41.59 ± 7.12 years; were male and most of them were married.

Also this result come in accordance with **Fadlalmola & Elkareem, (2020)** who studied "Impact of an educational program on knowledge and quality of life among chronic hemodialysis patients in Khartoum state" and reported that more than half were males and more than two fifth were female. Approximately two fifth of the participants were more than 50 years old. In addition this result supported with **Zamanian et al, (2018)** who studied "Relationship between stress coping strategies, psychological distress, and quality of life among chronic hemodialysis patients" and reported that

The mean age of patients was 51.4 (*SD* = 15.52), less than two third were male and three quarter were married.

But this result come inconsistent with **Parvan, (2013)** who studied "quality of sleep and its relationship to quality of life in chronic hemodialysis patients" who reported that the average age of more than half of them (range 20-87).

Regarding educational level, the current study showed that, slightly less than two third of the chronic hemodialysis patients had secondary education. Also, one quarter of them was workers. More than half of them lived in urban areas and more than three quarter of them had families consisting of from1 to 3 persons. this result come in accordance with **Fadlalmola & Elkareem, (2020)** who mentioned that of participants' educational level indicated they were in secondary school.

But this result differ with **Gerasimoula et al., (2015)** who studied "quality of life in hemodialysis patients" and stated that less than two fifth of them had secondary school education, more than two fifth of them were pensioner and one third had three children. Also this result comes inconsistent with **Bayoumi et al., (2013)** who studied "Predictors of quality of life in hemodialysis patients " and reported that the mean age of the study patients was 47.5 ± 13.8 years, the majority of the patients were married and educated and the most of them not working.

More over this result disagree with **Kamal et al., (2013)** who studied " Health-related quality of life among hemodialysis patients at Minia Hospital, Egypt" and reported that less than half of the chronic hemodialysis patients were male and more than half of them were female and the most of them lived in rural area. In addition **Wassef et al., (2018)** who studied "Assessment of health-related quality of life of hemodialysis patients in Benha City, Qalyubia Governorate" reported that the most of the chronic hemodialysis patients live in rural area.

Regarding the income of the chronic hemodialysis patients the present study illustrated that the most of them (82%) gain insufficient income. this result come in accordance with **Zamanian et al., (2018)** who reported that (47%) had poor economic status. also **Wu et al., (2022)** who studied " Physical Activity and Health-Related Quality of Life of Patients on Hemodialysis with Comorbidities: A Cross-Sectional Study" stated that the majority (90%) of the chronic hemodialysis patients had insufficient income.

Regarding the total mean quality of life of the chronic hemodialysis patients, the current study cleared that, the total level of dependence was represent the highest score for chronic hemodialysis patients regarding quality of life, the total environmental state represented the lowest score for chronic hemodialysis patients regarding the quality of life with (Mean ± SD 7.50 ± 2.33). This result come contraindicated with **Ravindran et al., (2020)** who studied " Assessment of Quality of Life among End-Stage Renal Disease Patients Undergoing Maintenance Hemodialysis" and reported that the highest score was the social relationship.

This result inconsistent with **Visweswaran et al., (2020)** and stated that, the highest mean converted scores for the individual domains were social domain, Also this result disagree with **Dąbrowska-Bender et al., (2018)** who stated that respondents scored highest on the social relationships domain of QOL.

These results disagree with **Al-Baghdadi & Rajha, (2018)** who mentioned that 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.

Concerning the total quality of life, the present study showed that the most of the chronic hemodialysis patients had poor QOL and more than tenth had fair QOL. This may be due to the patients' poor compliance to treatment and adherence to hemodialysis schedule which in turn affect their well-being. One other reason is that the patients had negative feelings and depression that make a barrier to utilize the available resources in their life to help them counterbalance this distress. This result come in agree with **Dąbrowska-Bender et al., (2018)** who studied " The impact on quality of life of dialysis patients with renal insufficiency" and stated that the most of the hemodialysis patient had low quality of life.

The findings are inconsistent with the findings of **Garib et al., (2016)**, in their study to assess the quality of life of patients undergoing hemodialysis in Iran. The findings of their study indicated that most of the patients had usual moderate well-being. Also this result differ with **Al-Baghdadi & Rajha, (2018)** who studied " Quality of Life for Hemodialysis Patients with Chronic Renal Failure" and stated that the most of the chronic hemodialysis patients had moderate quality of life.

Regarding the relation between chronic hemodialysis patients' total quality of life score and their socio-demographic data, the current study showed that there was a statistical significance between the total quality of life score and marital status, educational level, number of family members, and income. These results might be due to higher education level make individuals more capable to encounter stressful situations such as chronic illness, and can result in improved QoL. In addition, higher education level may facilitate patients' treatment adherence and influence subjective well-being consequently in can improve their QoL.

This result come in the line with **Anees et al., (2018)** who studied "Socio-economic factors affecting quality of life of Hemodialysis patients and its effects on mortality" and reported that there were a statistical significance differences between the chronic hemodialysis patients socio-demographic data and the chronic hemodialysis patients quality of life. This result agree with **Gerasimoula et al., (2015)** who reported that there were statistical significance differences between the total quality of life and patient educational level, family number and income.

But this result disagree with **Al-Baghdadi & RajhaA, (2018)** who mentioned that there are strong relationship between quality of life and (gender, and occupational status) of the chronic renal failure patients under hemodialysis. But agree with the same author in reporting that, there are strong relationship between quality of life and level of education and marital status of the chronic renal failure patients under hemodialysis.

Conclusion

Less than two third 63.0% of the chronic hemodialysis patients' age ranges from (38-48) years with a mean of (40.1±3.2), males constituted 55%, while 70% of the chronic hemodialysis patients were married, regarding educational level, 65% had secondary education. Also, 25% were workers. 53% of them lived in urban areas and 78% of them had families consisting of from1 to 3 persons. 82% of them gain insufficient income.

The most (89%) of the chronic hemodialysis patients had poor QOL and the minority of them (11%) had fair QOL. Also there was a statistical significance between the total quality of life score and marital status with (p-value =0.001), educational level with (p-value =0.001), number of family members with (p-value =0.050), and income with (p-value=0.002). Moreover there was a statistical significance between the total quality of life score and primary renal diagnosis with (p-value =0.001), presence of co-morbidities with (p-value =0.001), number of medications prescribed with (p-value =0.002), number of hemodialysis sessions/weak with (p-value=0.001), and Number of hemodialysis session hours /week with (p-value=0.001).

Recommendations

Based on the results of the present study, the investigator came up with the following recommendations:

1. Provide chronic hemodialysis patients with effective health education that contain information about hemodialysis therapy, diet schedule, medication, life style changes to improve the patients' quality of life.
2. Preparation of qualified nurses to increase awareness toward challenges that result from hemodialysis for newly patients and their families through participating them to specific educational courses that are related to quality of life aspects
3. Involve new nurses allocated in hemodialysis unit in training courses regarding dialysis procedure and medications, and how to deal comprehensively with chronic hemodialysis patients, and their families.

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