

Effect of Hemodialysis Long Life Program on the Quality of Life of Patients with End Stage Renal Disease

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Abstract

Background: End Stage Renal Disease (ESRD) is the last stage (5th stage) of CKD. ESRD is irreversible loss of kidney function and associated with severe morbidity, mortality, high cost for management and different impacts on general health and patient quality of life. **Aim:** This study aimed to assess quality of life (physical, psychological, social and spiritual domains) for patients with ESRD on HD. **Design:** Descriptive exploratory design was utilized in carrying out this study. **Setting:** The study was conducted in in hemodialysis unit at Urology and Nephrology center affiliated to Mansoura University. **Subjects:** A Purposive sample of (60) who are diagnosed with ESRD, on HD and met the inclusion criteria. **Tools:** I- Patients interviewing questionnaire II- quality of life scale. **Results:** 45% of the studied patients were at age group between 20-<40 years old and 55% of them were males. There were highly statistically significant positive correlations between physical dimension scale with psychological dimension scale and social dimension scale of the studied patients. **Conclusion:** more than half of the patients had average physical QOL, three quarters of them had average psychological and social QOL, and all patients had good spiritual QOL. **Recommendation:** Further research studies are needed to focus on studying factors affecting QOL for patients with ESRD on long HD program and replication of the study on other areas for more generalization.

Keywords: Quality of Life (QOL), End stage renal disease (ESRD), Hemodialysis Long Life Program.

Introduction:

Chronic diseases have become a major public health problem worldwide and the leading cause of morbidity and mortality. Chronic kidney diseases (CKD) are the main challenges in health systems that impose enormous healthcare costs for societies and governments. CKD is the 12th leading cause of death and 17th cause of disability. The global increase in CKD is being driven by the global increase in diabetes mellitus and hypertension, which, are the main risk factors for CKD (Lv & Zhang, 2019). An irreversible decrease in kidney functions among patients with CKD ultimately progresses to end-stage kidney disease (Zhong, Yang, & Fogo, 2017).

End stage renal disease (ESRD) is the final stage (5th stage) of CKD in which GFR less than 15 mL/min /1.73 m² for a minimal period of 3 months. ESRD is irreversible loss of kidney function, which, without treatment by dialysis or kidney transplantation, is likely to lead to fatal complications. In ESRD, the

kidneys is no longer function well enough to meet the needs of daily life. During this stage, renal replacement therapy (hemodialysis, peritoneal dialysis or renal transplantation) is required to stay live (Benjamin & Lappin, 2021).

Hemodialysis (HD) is a medical procedure to remove toxic nitrogenous substances from the blood and to remove excess fluid and also to correct electrolyte imbalances. This is accomplished by using a machine and a dialyzer, also referred to as an "artificial kidney." HD is used for patients who are acutely ill and require short term dialysis for days to weeks until kidney function resumes and for patients with advanced CKD and ESKD who require long-term or permanent renal replacement therapy. HD is considered as the most widely used therapy and playing an essential role in increasing patients' lifetime (Hinkle & Cheever, 2018).

Unfortunately, HD consists of a complex procedure that require frequent hospital or

dialysis centers visits, mainly 3 times a week and every hemodialysis session from 3 to 4 hours daily, thus including substantial changes in the normal way of patients' living. Moreover, It is a time consuming, and costly treatment and it needs more restrictions for diet and fluid, and long run dialysis causes a loss of freedom, reliance on caregiver, disturbance of marriage, family, social life, and reduction or lack of income. All these factors impair QOL and these patients are assumed to be poorer compared to other healthy people (**Jadhav et al., 2022**).

Patients with HD exhibit a variety of symptoms, including fatigue, weakness which are common physical problem after dialysis, nausea, anorexia, vomiting, leg cramps, headaches, and dizziness, and interruption of everyday life. In addition, HD creates problems such as limitations of consuming liquids and foods. Various physical, psychological, and social pressures, feelings of loneliness and isolation, lack of supportive resources, and dependence on dialysis may lead to uncontrolled and aggressive behaviors. On the other hand, these inappropriate behaviors negatively affect the patient-family relationship and the family caregiver and increase the burden of care (**Hejazi et al., 2021**).

Patients on long term HD(Chronic dialysis) has a great impact on the patients' health-related quality of life (HRQOL), as it affects physical, social, psychological and spiritual well-being of patients and often leading to post-dialysis fatigue, generalized weakness, restless leg syndrome, anxiety and depression. Nevertheless, the high level of religiosity and spiritual coping among these patients may positively impact QoL (**Cruz et al., 2017**).HD-dependent patients with ESRD must cope with severe restrictions such as strict adherence to dialysis and medication regimens, dietary and fluid limitations, and minimal physical activities (**Ahmed et al., 2021**).

Continuous education and providing patient counseling can enhance adherence to therapies and thus can improve the QOL. The careful assessment of health-related QOL (HRQOL) can help guide provision of medical management to optimize their health

experience. HRQOL is recognized as an essential health outcome for studies assessing the quality of healthcare, evaluating the impact of illness, and analyses of cost-effectiveness. Additionally, it has been shown that HRQOL is clinically important for improving dialysis outcome in patients on HD. With this background, the researcher is interested to assess the QOL among ESRD patients who have undergone HD with respect to their all domains including physical, psychological, social and spiritual (**Thenmozhi, 2018**).

Significance of the study

End Stage Renal Disease is a debilitating illness with significant limitations on physical and psychosocial well-being and may interferes with the ability of the patients to live a normal life. Hemodialysis is the most common method of RRT for patients suffering from CKD (**Kalfoss et al., 2019**). There are about 3,730,000 patients with CKD worldwide and the annual growth of this disease is 5–6%. According to the statistics, there are about 2.5 million ESKD patients who receive renal replacement therapy (RRT), and this population is expected to double to about 4.5 million by 2030 (**Bikbov et al., 2020**).

In Egypt, according to Egyptian renal data system 2020; it is estimated that there are about 3393 ESRD patients on hemodialysis program from 80 dialysis units and from 18 Egyptian governorates (cities) participated with their data in ERDS 2020 report. Most patients were males and their age from 55-75 years old (**Hassaballa et al., 2022**). Therefore, the aim of the current study shows significant to assess physical, psychological, social and spiritual domains related to quality of life for patients with end stage renal disease on long life hemodialysis program.

Aim of the Study

This study aimed to assess quality of life for patients with end stage renal disease. This aim was achieved through:

- Assessing physical status of patients on long life hemodialysis program.
- Assessing psychological status of patients on long life hemodialysis program.
- Assessing social status of patients on long life hemodialysis program.

- Assessing spiritual status of patients on long life hemodialysis program.

Research Questions

The current study was formulated to answer the following questions that were developed:

1. What is the physical status of patients on long life hemodialysis program?
2. What is the psychological status of patients on long life hemodialysis program?
3. What is the social status of patients on long life hemodialysis program?
4. What is the spiritual status of patients on long life hemodialysis program?

Subjects and methods:

I. Technical Design:

It included research design, study settings, subject and tools of data collection.

Research Design: A descriptive exploratory research design was utilized to conduct this study. An exploratory descriptive research design was adopted to fulfill the aim of the study and answer the research questions. It help the investigator to describe and document aspects of a situation as it naturally occurs. As well, this design helps to establish a database for future research.

Study Settings: The present study was conducted in hemodialysis unit at Urology and Nephrology center affiliated to Mansoura University. Hemodialysis unit was located in the outpatient building (Gehan building) in the 3rd. floor. It was consisted of 4 halls, every hall contained 6 beds and beside every bed there were one hemodialysis machine, also, the first and third hall contained another one room with one bed (with one machine) with total numbers of beds were 26 beds and 26 hemodialysis machine in the unit),(not all the beds were occupied with patients during 2 shifts, this according to the authority of the center). It also was include three hand washing sinks and two cupboards for linens and covers

Subjects: Purposive sample of (60) patients from both gender with end stage renal disease undergoing hemodialysis program at urology nephrology center in Mansoura University and meeting the inclusion criteria were involved.

Inclusion criteria:

- Patients who were being dialyzed 3times weekly.
- Whose age 18 years old and more.
- Able to communicate verbally.
- Patients agreed to participate in the study and cooperated.

Tools of the study:

Tool I: patient's interviewing questionnaire:

It was developed by the researcher based on the related and recent literatures (**Gemmell, Terhorst & Jhamb, 2019;**

Lemos, Rodrigues & Veiga, 2018 and Atapour, Nasr, Boroujeni, Taheri & Dolatkah, 2016) and it was written in simple Arabic language and filled by the researcher. It is divided in to two parts as follows:

First Part: It was concerned with assessment of socio-demographic characteristics of the study patients such as: age, gender, educational level, marital status, living conditions (alone or with others), employment status and residence area.

Second part: Patient's assessment. It was concerned with the past history of the renal disease, causes of renal failure, period of chronic dialysis, the present medical history, family history and data of current dialysis session.

Tool II: Quality of life scale : It was used to assess the effect of long life hemodialysis program on the quality of life for patients with end stage renal disease regarding the four dimensions (physical, psychological, social and spiritual). It included four parts as following:

Part (1): Assessing patients' physical status related QOL: It was adapted from; Kidney Disease Quality of Life Short Form (KDQOL-SF) as an outcome measure of services for end stage renal failure (**Wight et al., 1998**). It was composed of (5) parts covering the following:

General Health: It was composed of 22 questions. It was used to assess the general health of ESRD patients by measuring how much the patient had been bothered by symptoms as sides effect of HD such as getting

tired easily, frequency of HD, body ache, low blood pressure, muscle cramps, itching, thirst, weight loss, nausea, inability to travel, anuria, maintaining prescribed weight, and vascular access problems.

Scoring system: Each item scored as likert scale, including always, sometimes and never, scored 0, 1 and 2 respectively, maximum score was 44 score and minimum was 0, lower score means bad general health and poor quality of life.

Activities of daily living (ADL): It was composed of (14 questions) which include: basic ADL as eating, dressing, toileting, combing, moving in and out of bed, lifting or carrying groceries and climbing several stairs flights; moderate ADL as moving a table, pushing a vacuum cleaner, playing golf and driving a car; and vigorous ADL, as running, lifting heavy objects and participation in strenuous sports. It was used to assess the ability to perform ADL in dependently.

Scoring system: Each item scored as likert scale, including always, sometimes and never, scored 2, 1 and 0 respectively, maximum score was 28 score and minimum was 0, lower score means lower ability to perform ADL independently poor quality of life.

Exercise: It was composed of 7 questions as exercising regularly, motivation to exercise, fatigue in exercising, rest periods and ability to walk more than a mile. It was used to assess exercise level for patients on hemodialysis.

Scoring system: Each item scored as likert scale, including always, sometimes and never, scored 2, 1 and 0 respectively, maximum score was 14 score and minimum was 0, lower score means lower exercise level and poor quality of life.

- **Diet:** It was composed of 9 questions, question no.1 include another 5 questions with total (9 questions) as healthy diet contain low salt, potassium, phosphorus, high vitamin, small protein, snack between meals, three meals regularly, canned or processed food, drinking more water.

Scoring system: Each item in first and second questions (+ve questions) was scored as likert scale, including always, sometimes and never,

scored 2, 1 and 0 respectively. While, in third, fourth and fifth questions (-ve questions) the scores were inverted as always, sometimes and never, scored 0, 1 and 2 respectively, total maximum score was 18 score and total minimum was 0, high score means more healthy diet.

- **Pain:** It was composed of (5 questions) as body ache after the session, fistula pain, pain relieving medication, non pharmacologic management and adaptation with pain.

Scoring system: Each item in first, second and third questions (-ve questions) was scored as likert scale, including always, sometimes and never, scored 0, 1 and 2 respectively. While, in fourth and fifth questions (+ve questions) the scores were inverted as always, sometimes and never, scored 2, 1 and 0 respectively, total maximum score was 10 score and total minimum was 0, the high score means low pain level and high pain adaptation.

Part (2): Assessing patients' psychological status related QOL: It was adapted from; Kidney Disease Quality of Life Short Form (KDQOL-SF) as an outcome measure of services for end stage renal failure (Wight et al., 1998). It was composed of (10) questions as peace of mind, personal goal, life and personal appearance satisfaction, likelihood of transplanted kidney, calm and peaceful, feeling of low, worn out and so down in dumps.

Scoring system: Each item in questions no.1, 2, 3, 4, 5, 6 (+ve questions) was scored as likert scale, including always, sometimes and never, scored 2, 1 and 0 respectively. While, questions no.7, 8, 9, 10 (-ve questions) the scores were inverted as always, sometimes and never, scored 0, 1 and 2, total maximum score was 20 score and total minimum was 0, low score means bad psychological state, high score means better psychological state.

Part (3): Assessing patients' social status related QOL: It was adapted from; Social Dysfunction Rating Scale (SDRS) (Linn et al., 1969). It was consisted of (21) questions) that cover three subtitles; (Self system, questions 1-4) as adequacy, thinking about future, complacency, and concerning

about the health;(interpersonal system, questions 5-10) as more relationships, love, trust and calm toward others, environment controlling, goal achieving, hope for future;(performance system, questions 11-21) as relationships with family and friends confidence, work satisfaction, leisure time and community activities, financial and physical security, health adjustment.

Scoring system: Each item scored as likert scale, including always, sometimes and never, scored 2, 1 and 0 respectively, maximum score was 42 score and minimum was 0, low score means bad social state.

Part (4): Assessing patients' spiritual status related QOL: It was adapted from; Quality of life index dialysis version III (Ferrans & Powers, 1993). It was included (8 questions) as belief in god and density, praying on time, relation with god, desire to live, hope for recovery and personal belief that give strength to face life difficulties.

Scoring system: Each item scored as likert scale, including always, sometimes and never, scored 2, 1 and 0 respectively, maximum score was 16 score and minimum was 0, low score means bad spiritual state.

Total Scoring system of quality of life

Patient's grades were collected and recorded as follow:

- General health: 0-44 grade
- Activities of daily living : 0-28
- Exercise : 0-14
- Diet : 0-18
- Pain : 0-10
- Psychological dimension :0-20
- Social dimension: 0-42
- Spiritual dimension: 0-16

So, the total score ranged from 0-192, and then the total grades were as follow:

- Poor QOL = 0 - < 50% (0 - < 96).
- Average QOL=50% - < 75% (96- <144).
- Good QOL = 75% and more (144 and more).

II. Operational Design:

It included preparatory phase, content reliability, pilot study and fieldwork.

Preparatory phase:

It included reviewing current and past, local and international related literatures and theoretical knowledge of various aspects of the study using books, articles, internet, periodicals, and magazines to develop tools for data collection and review of literatures.

Content, Face Validity and Reliability:

Content face validity:

Face validity aimed at inspecting the items to determine whether the tool measures what it supposed to measure. Content validity was conducted to determine whether the tool covers the aim. Content validity was conducted to test the tool used for appropriateness, relevance, correction and clearance of the content through group of experts. Juries of seven experts in medical surgical nursing specialty. Three of them were professors and two of them were assistant professors and two lecturers. Required minimal modifications were done. The experts elicited response regarding either by agree, disagree and agree with modification. Content validity (agreement) for the tool was ranged between 85 % to 100%.

Reliability:

Reliability is the consistency of the measurement tool. The degree to which the instrument measures the same way each time, if it is used under the same condition with the same subjects and it was done by using Cronbach's Alpha test. The Cronbach's alpha model which is a model of internal consistency was used in the analysis of patient's quality of life (physical, psychological, social and spiritual) dimensions assessment scales and the results were (0.732, 0.791, 0.808, 0.701, respectively). 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 applied on (10%) of patients with ESRD and on HD (6 patients) in order to test the applicability of

tools, clarity of the designed questionnaires, as well as estimating the time needed to answer the questionnaires. Minimal modifications were done so, patients included in the pilot study were included in the study subjects.

Field work:

Data were collected within 4 months from the beginning of June 2021 until the end of September 2021. The aim and nature of the study were explained by the researcher to all patients who were included in the study and got their oral approval to participate in the study prior to data collection. The researcher was attended to the setting 2 days (Sunday and Wednesday) per week in the morning and afternoon shifts. The researcher started to collect data from patients, patient's medical records and from hemodialysis machine. Patient interview questionnaire which was developed and filled out by the researcher in simple Arabic language, some data as hemodialysis session was taken from hemodialysis machine by the researcher. Tool II (quality of life) was filled in by the researcher, the questionnaire was read, explained, and choices were recorded by the researcher. The time consumed to fill out the questionnaire ranged from 30-40 minutes for each patient.

(III) Administrative design

Before starting data collection, an official permission was issued from the dean of faculty of Nursing Ain Shams University to the director and nursing manager of Urology and Nephrology Center affiliated to Mansoura University in which the study was conducted, explaining the purpose of the study and requesting the permission for data collection from the study group. Meeting and discussions were held by the researcher to explain the aim, the nature and the objectives of the study to patients.

Ethical consideration:

The ethical research considerations in this study included the following: The research approval was obtained from the Scientific Ethical Committee in Faculty of Nursing, Ain Shams University before starting the study. The researcher clarified the objective and aim of the study to the patients included in the study. The researcher assured maintaining anonymity and

confidentiality of the subject data. Patients were informed about their rights to participate or withdraw from the study at any time without any reason. Oral consent was obtained from the patients to participate in the study. Ethics, values, culture and beliefs were respected.

IV. Statistical design:

Data collected from the studied sample was revised, coded and entered using personal computer (PC). Computerized data entry and statistical analysis were fulfilled using the Statistical Package for Social Sciences (SPSS) version 22. Data were presented using descriptive statistics in the form of frequencies, percentages. Chi-square test (χ^2). Spearman correlation measures the strength and direction of association between two ranked variables. Cronbach's Alpha test measures of internal consistency of the tool. Test of significance was used and regarding significance of the results.

Results:

Table 1. Shows that, the mean age of the studied patients was 41.7 ± 14.1 , 55% of them were male, 68.3% of them were married and 60% of them not working at all after illness.

Figure 1. Shows that, 31.7% of the patients were on hemodialysis session from 5 years to less than 10 years, from one year to less than five in 25% of the studied patient, while duration of less than one year was presented in 11.6% of the patients.

Table 2. Shows that, 80% of the studied patients have arteriovenous fistula, the overweight between one dialysis session and the other ranged between $2.5 - < 3.5$ kg for 41.7% of the patients, duration of dialysis session were 4 hours in 88.3% of the patients. 100% of the patients were taking hemodialysis session three times weekly,

Table 3. Classifies that average quality of life in total physical dimension scale, total social dimension scale and psychological dimension scale were seen in 55%, 75% and 75% of the studied patients respectively. While, good quality of life in spiritual dimension scale was seen in all studied patients (100%). It was noticed also that average total quality of life was seen in 85% of the studied patients.

Figure 2. Shows that 55%, 75% and 75% of the studied patients had average quality of life in physical dimension scale, social dimension scale and psychological dimension scale. While, 100% of them had good quality of life in spiritual dimension scale. It was noticed also that total quality of life was average in 85% of patients.

Table 4. Shows that, there were Positive

statistically significant correlation of intermediate strength between Physical dimension scale and Social dimension scale, Physical dimension scale and Psychological dimension scale, Social dimension scale and Psychological dimension scale, while, Correlations of all dimensions with spiritual dimensions are weak and non-significant.

Table 1: Number and Percentage distribution of the socio-demographic characteristics among studied patients (n=60).

Socio-demographic characteristics	No.	%
Age in years		
< 20	3	5
20 - <40	27	45
40 - < 60	21	35
≥ 60	9	15
Mean ± SD	41.7±14.1	
Gender		
Male	33	55
Female	27	45
Educational level		
Neither read nor write	9	15
Read and write	6	10
Intermediate education	35	58.3
High education	10	16.7
Marital status		
Married	41	68.3
Not married	19	31.7
Effect of illness on caring role of family		
Yes	21	35
No	39	65
Work condition before illness		
Working	45	75
Not working	15	25
Work condition after illness (n=45)*		
Not working at all	27	60
Work full time	5	11.1
Work half time	13	28.8
Monthly income		
Sufficient	12	20
Not sufficient	48	80

*Numbers are not mutually exclusive

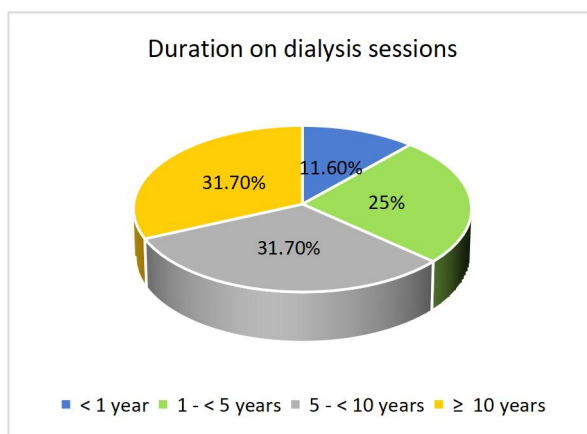


Figure 1: Percentage distribution of the duration of dialysis sessions in years among studied patients (n=60).

Table 2: Number and Percentage distribution of the current dialysis session data among the studied patients (n=60).

Items	No.	%
Vascular access as a hemodialysis method		
Arteriovenous fistula	48	80.0
Synthetic graft	7	11.7
Intravenous catheter	5	8.3
Overweight Between one dialysis session and the other		
0.5 – < 1.5 kg	6	10.0
1.5 – < 2.5 kg	17	28.3
2.5 – < 3.5 kg	25	41.7
3.5 – < 4.5 kg	7	11.7
4.5 kg and more	5	8.3
Duration of the dialysis session in hours		
< 4	7	11.7
4	53	88.3
Blood flow during the session		
150 – < 200 ml / min	2	3.3
200 – < 250 ml / min	3	5.0
250 – < 300ml/min	21	35.0
300 – < 350ml/min	12	20.0
350 ml/min or more	22	36.7
Number of dialysis sessions per week		
Twice weekly	0	0.0
Three times weekly	60	100.0

Table 3: Percentage distribution of the total quality of life (QOL) domains of the studied patients (n=60).

QOL dimension scales	Poor		Average		Good		Mean	SD
	No.	%	No.	%	No.	%		
General health	30	50	24	40	6	10	47.27	18.89
Activities of daily living	3	5	21	35	36	60	70.71	17.07
Exercise	48	80	12	20	0	0	20.94	21.31
Diet	21	35	36	60	3	5	53.06	12.83
Pain	15	25	24	40	21	35	62.00	26.79
Total Physical dimension scale	27	45	33	55	0	0	51.47	7.87
Self-system	6	10	28	46	26	44	66.25	19.97
Interpersonal system	3	5	9	15	48	80	78.33	16.47
Social Performance system	21	35	33	55	6	10	55.00	18.89
Total Social dimension scale	9	15	45	75	6	10	63.81	13.38
Psychological dimension scale	0	0	45	75	15	25	67.50	9.91
Total Spiritual dimension scale	0	0	0	0	60	100	94.38	7.69
Total QOL scale	6	10	51	85	3	5	59.49	7.47

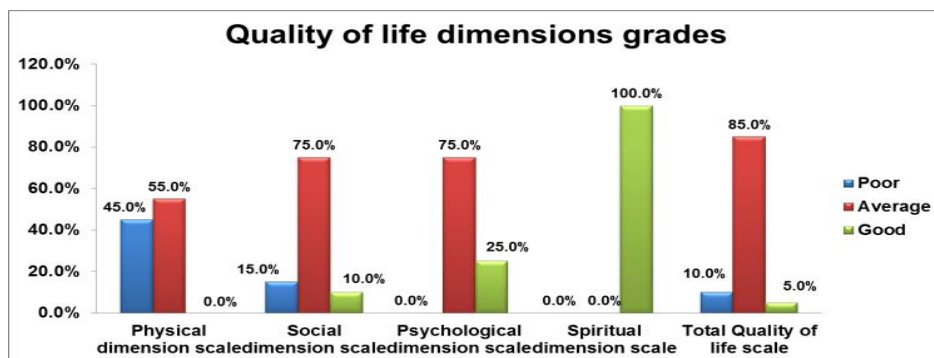


Figure 2: Quality of life dimension scale grades

Table 4: Correlations of the main Quality of life dimensions status

		Physical status	Social status	Psychological status	Spiritual status
Physical dimension status	r		0.631	0.373	-.024
	P Value		0.00000	0.00333	0.85312
Social dimension status	r			0.501	.084
	P Value			0.00004	0.52454
Psychological dimension status	r				.254
	P Value				0.05045
Spiritual dimension status	r				
	P Value				

Discussion:

The present study showed that almost half of the studied patients were at age group between twenty to less than forty years old. It can be explained by the fact that end-stage renal disease affects younger populations because of the influence or the faster progression of known risk factors (high blood pressure and diabetes, etc.).

These results were agreed with the study done in Assiut governorate, Egypt by **El-Arbagy et al., (2018)** stated that age of more than three fifths of the studied patients were from 20-50 years old. As well as, study done in Senegal by **Yaya et al., (2019)**, who reported that less than three quarters of the average age of the patients was between 14 - 43 years.

However, the current study findings were contradicted with a study done in El-Sharkia governorate, Egypt by **Ahmed et al., (2020)**, who reported that, age of more than one quarter of the study subjects ranged between 50-59 years. Also, **Gerasimoula et al., (2016)**, who reported that the most of the patient's age was ranged between 71-80 years old.

As regard to the gender, the results revealed that, more than half of the studied patients were

male, this may be due to differences in lifestyle between genders (i.e. more males may have unhealthier lifestyle as smoking or drinking alcohol), this poor lifestyle may lead to a higher risk factor for hypertension and diabetes which, the most causes of ESRD. These findings were consistent with **Abou-Bakr et al., (2022)**, who showed that three fifths of the patients were male. Also, the study done in Egypt by **Megahed & Ahmed, (2021)**, who reported that two thirds of the studied patients were male.

These findings were contradicted with the study done by **Ali et al., (2020)**, in Aswan governorate in Egypt and stated majority of patients were females. Also, study done by **Yaya et al., (2019)**, clarified that more than half of the study patients were female.

The current study revealed that nearly three fifths of the studied patients had intermediate education and two thirds of them were married This may be due to that the majority of the study subjects were over twenty years and according to the Egyptian society culture, by this age most of people are married.

These findings were in the same line with **Ravindran et al., (2020)**, who stated that two

fifths of the studied patients had secondary education. Also, **El-Metwaly et al., (2017)**, who clarified that more than three fifths of the study subjects were married and nearly half of patients shared in study had intermediate education. However, the current findings were contradicting with a study done by **Al Salmi et al., (2021)**, who stated that two fifths of the patients were not educated or educated only up to the primary level.

Furthermore, more than three fifths of the patients mentioned that the diseases did not affect on the role of caring for their families. These findings were similar to **Ghafourifard et al., (2021)**, who reported that the role of the most patients with ESRD in the family had not changed. In contrary with the study findings conducted by **Finnegan & Thomas (2018)** ; **White & Grenyer (2016)**, all clarified that the role of most patient with ESRD in the family had changed from one of independent to one of dependent (their duties and responsibilities shifted) and their life had impaired completely after disease.

As regard to working condition, the results showed that three fifths of the studied patients did not work at all after the disease, this because physical insufficiency (unable to fulfill employment responsibilities) of patients on HD and conflict between dialysis and work schedules.

These findings were in agreement with **Alosaimi et al., (2020)** and stated that half of the patients were unemployed. In addition **Panma et al., (2019)** stated nearly three quarters of the patients with CRF were unemployed. The current findings were contradicting with a study done by **Al Salmi et al., (2021)**, reported that more than three quarters of the patients were in employment.

As well as, the study showed that four fifths of the sample had insufficient monthly income, this may due to most patients not worked at all after the disease, physical insufficiency, high cost of living and transportation expenses. Also, many factors such as fatigue, tiredness and the disability caused by the disease. These findings were consistent with the study done by **Thenmozhi, (2018)** who stated that majority of the patients had insufficient income to cover cost treatment. Also, **Soliman et al., (2016)**

reported that near one third of patients has very low monthly income. These findings were contradicted with the study done by **Choi, (2020)**, and reported that almost two fifths of the sample had a high income.

The current study revealed that more than one quarter of the patients were on hemodialysis session from 5 years to less than 10 years, also, more than one quarter of them were on hemodialysis session from 10 years and more, majority of the patients had been dialyzed 4 hours per session and all of patients had hemodialysis session three times weekly.

The results of the study are parallel with **Alosaimi et al., (2020)**, stated that years of HD were more than 5 years in more than three fifths of the studied patients. In the same context the study done by **El-Ballat et al., (2019)**, reported that patients were on hemodialysis from 0.25-21 years. Also, **El-Arbagy et al., (2018)**, mentioned that most of the studied patients underwent dialysis three times weekly. Also, **Ahmed et al., (2020)** mentioned that majority of the patients had 4 hours per HD session and nearly all of the patients had dialysis session trice weekly.

These findings were contradicted with **Panma et al., (2019)**, mentioned that most of CRF patients undergoing hemodialysis twice a week. As well as **Nayana, (2017)** reported that more than half of the sample had been dialyzed twice only. In addition to **Zyoud et al., (2016)** reported three fourths of the patients had been dialyzed only 3 hours per session.

The current study revealed that the majority of the studied patients with arteriovenous (A-V) fistula as avascular access for hemodialysis. This may be due to the A-V fistula is considered the best access for HD because of its lower frequency of complications, it uses human own arteries and veins without need for artificial material and provide good blood flow for dialysis, higher access survival rate, and decreased mortality when compared with either arterio-venous grafts or central venous dialysis catheters.

These findings were in agreement with **Megahed & Ahmed, (2021)** who mentioned that the majority of studied subjects having AVF as avascular method for hemodialysis.

Also, **El Metwaly et al., (2017)**, who mention that, the majority of studied subjects were having fistula. These findings were contradicted with **El-Arbagy et al., (2022)**; **El-Zorkany (2017)** who reported that the majority of studied subjects were initiated with a temporary catheter and only one fifth of them were prepared for dialysis with a permanent vascular access (arteriovenous fistula).

Regarding the total quality of life (QOL) domains, the findings of the present study showed that, more than half of the studied patients had average quality of life in total physical dimension; this may be explained by pathophysiology of diseases and some patients had difficulties to perform activity needs. Three fifths of them had average quality of life in social and psychological dimensions; Patients who were supported by their family were less affected because of care given by family, this may be explained by the dynamic adaptation of patient's expectations to HD routine. This could reflect Egyptian people ability to psychologically adapt to their situation over time.

While, all studied patients had good quality of life in spiritual dimension. It may be due to nurses and health care professionals in urology and nephrology center in Mansoura university center were enhanced patients to express their spiritual and religious beliefs and needs. They dealt with problems by teaching, counseling and supporting patients and their families to adapt to the therapeutic regimen of HD. patients spiritual and religious beliefs needs were important and greatly affects their satisfaction with the health services provided. Also, the majority of the studied patients had average total quality of life. This may due to that physical QOL was more impaired than social and psychological and spiritual.

These findings were agreed with **Fradelos et al., (2021)**, who mentioned that, majority of patients had satisfactory total QoL values. Also, **Abu El kass et al., (2020)**, who mentioned that, the highly affected dimensions of satisfaction are the spiritual and overall health of the quality of life of patients undergoing hemodialysis program, while the least affected dimensions of satisfaction are the physical and psychosocial quality of life and

the majority of the them had average total quality of life.

These findings also were matched with **AlcÃ et al., (2018)**, who mentioned that, more than two fifth of the studied patients had average quality of life in total physical dimension, one half of them had average quality of life in psychological and more than three fifths had average quality of life in social dimension scale. **Mishra et al., (2018)** reported that patients with ESRD undergoing HD have average QOL. **Veerappan et al.,(2016)** stated that the overall quality of life of the studied subjects was average score.

Furthermore, these findings were contradicted with **Bagasha, et al., (2021)**; **Kim et al., (2021)**; mentioned that majority of the studied patients with ESRD had lower HRQOL. Also, **Khan& Ahmad, (2020)**, who reported that, CKD patients suffer from psychological status as depression, anxiety, and poor QOL. In the same context the study done in the dialysis unit of Suez Canal University Hospitals by **Bayoumi & El-Fouly, (2017)** who mentioned that, the physical health had the highest score.

Regarding correlations of the main Quality of life dimensions status, the findings of the present study showed that, there were positive statistically significant correlation of intermediate strength between Physical dimension scale and social dimension scale, Physical dimension scale and Psychological dimension scale, Social dimension scale and Psychological dimension scale.

These findings were agreed with **Ravindran et al., (2020)** who stated that a significant correlation among physical, psychological, social, and environmental domains was observed among end-stage renal disease patients undergoing maintenance hemodialysis. **Hamed et al., (2017)**, who reported that, there were highly significant strong positive correlations between the three scales of quality of life of patients on hemodialysis Physical, mental and Social.

Furthermore, the correlations of all dimensions with spiritual dimensions are weak and non-significant. The lack of correlation may reflect the effect of other factors as social

and psychological factor. These findings were contradicted with **Fradelos, (2021)**, who mentioned that, total spirituality have shown strong and positive correlations with all dimensions of QoL.

Conclusion:

Based on the findings of current study, it can be concluded that: Regarding the effect of long life HD program on quality of life for patients with ESRD; more than half of the patients had average physical QOL, three quarters of them had average psychological and social QOL, all patients had good spiritual QOL, majority of the patients had average total QOL. In addition, there were highly statistically significant positive correlations between physical dimension scale with psychological dimension scale and social dimension scale of the studied patients with ESRD and on long HD program.

Recommendations:

Based on the current study findings, the following recommendations are suggested:

- Provide ESRD Patients undergoing HD with needed simplified, illustrated and comprehensive arabic booklet, pamphlets and posters including instructions that contain information about HD therapy, diet schedule, medication, safety measures for maintaining vascular access and life style changes.
- Preparation of qualified nurses to increase awareness toward challenges that result from ESRD and HD for newly patients and their families through participating them to specific educational courses that are related to QOL aspects.
- Further research studies are needed to focus on studying factors affecting QOL for patients with ESRD on long HD program.
- Health education through mass media concerning the knowledge of patients with ESRD on long HD program and methods of improving their quality of life.

References:

Abou-Bakr,A., Hussein, R. R., Khalil, E., & Ahmed, E. (2022): The frequency of periodontitis in end-stage renal disease on

hemodialysis in a sample of Egyptian population: multi-center clinical cross-sectional study. *BMC Oral Health*, 22(1), 1-11.

Abu El Kass, S., El-Senousy, T. A., & Jumaa, N. (2020). Factors Affecting Quality of Life among Patients Undergoing Hemodialysis in Gaza Strip. *International Journal of Caring Sciences*. Volume 13 | Issue 2| Page 1221.

Ahmed, H. A., Zahran, A. M., & Issawi, R. A. (2020): Prevalence and etiology of end-stage renal disease patients on maintenance hemodialysis. *Menoufia Medical Journal*, 33(3),766-71.

Ahmed, R., Ahmed, T., Din, N., Munib, S., Rehman, I., & Haseeb, A. (2021): Health Related Quality of Life Among Chronic Kidney Disease Patients Undergoing Hemodialysis in Pakistan. *Pakistan Journal of Kidney Diseases*, 5(4), 100-104.

Al Salmi, I., Kamble, P., Lazarus, E., D'Souza, M., Al Maimani, Y., & Hannawi, S., (2021). Kidney Disease-Specific Quality of Life among Patients on Hemodialysis. *International Journal of Nephrology*.

Alcã, G., Silva, R. A., Pereira, F. G. F., de Lima Pinto, S., Neta, I. F., Silva, L. A.,... & fio Caetano, J. ã. (2018): Health-Related Quality of Life in Chronic Kidney Disease Patients Undergoing Hemodialysis. *International Archives of Medicine*, 9.

Ali, O., Sayed, A., Mohammed, W, & Mohammed, R., (2020). Cardiovascular System Affection and Its Relation to First-Year Mortality in Patients Initiating Maintenance Hemodialysis. *International Journal of General Medicine*, 13, 379.

Alosaimi, F., Alshahrani, S., Aladhayani, M., Alwethenani, Z, Alsahil, M., & Fadhul, H., (2020). Psychosocial predictors of quality of life among chronic hemodialysis patients. *Saudi Medical Journal*, 41(9), 990.

- Atapour A., Nasr S., Boroujeni M., Taheri D. & Dolatkhanh S.(2016):** A comparison of the quality of life of the patients undergoing hemodialysis versus peritoneal dialysis and its correlation to the quality of dialysis. *Saudi J Kidney Dis Transpl.* 2016;27(2):270–280.
- Bagasha, P., Namukwaya, E., Leng, M., Kalyesubula, R., Mutebi, E., Naitala, R.,... & Petrova, M. (2021):** Comparison of the health-related quality of life of end stage kidney disease patients on hemodialysis and non-hemodialysis management in Uganda. *BMC palliative care*, 20(1), 1-13.
- Bayoumi, M., & El-Fouly, Y. (2017):** Effects of teaching programme on quality of life for patients with end-stage renal disease. *Journal of renal care*, 36(2),96-101.
- Benjamin, O., & Lappin, S. L. (2021):** End-stage renal disease. In *StatPearls [Internet]*. StatPearls Publishing(accessed on 14 April at 11pm).
- Bikbov, B., Purcell, C., Levey, A., Smith, M., Abdoli, A., Abebe, M., Adebayo, O., Afarideh, M., Agarwal, S., Agudelo-Botero, M.(2020):** Global, regional, and national burden of chronic kidney disease, 1990–2017: a systematic analysis for the global burden of disease study 2017. *Lancet.* 2020;395(10225):709–33.
- Choi, Y., (2020):** Income levels and mortality rates in patients with chronic kidney disease in South Korea: Kidney international reports, 5(12), 2266-2272.
- Cruz, J., Colet, P., Alquwez, N., Inocian, E., Al-Otaibi, R., Islam, S. (2017):** Influence of religiosity and spiritual coping on health-related quality of life in Saudi haemodialysis patients. *Hemodial Int.* 2017;21:125–132.
- El-Arbagy,A., Yassin, Y., Boules, B., (2018):** Study of prevalence of end-stage renal disease in Assiut governorate, Menoufia Medical Journal, 29(2), 222.
- El-Ballat, M., El-Sayed, M., & Emam, H. (2019):** Epidemiology of end stage renal disease patients on regular hemodialysis in El-Beheira governorate, Egypt. *The Egyptian Journal of Hospital Medicine*, 76(3), 3618-3625.
- El-Metwaly, A. E., Abd-El Razik, B., Donia, A.F.& Mohammed M. A.(2017):** Effect of Teaching Guidelines on self-efficacy for Patients with End Stage Renal Disease Undergoing Hemodialysis. *Port Said Scientific Journal of Nursing*, 4(2), 267-285.
- El-Zorkany, K. M. (2017):** Maintenance hemodialysis in Menoufia governorate, Egypt: Is there any progress?. *Journal of The Egyptian Society of Nephrology and Transplantation*, 17(2), 58.
- Ferrans E., & Powers J. (1993):** Quality of life of hemodialysis patients. *American Nephrology Nurses Association Journal* 1993;20:575–82.
- Finnegan-John, J., & Thomas, J. (2018):** The psychosocial experience of patients with end-stage renal disease and its impact on quality of life: findings from a needs assessment to shape a service. *American Journal of Kidney Diseases*, vol. 34, pp. 244–266.
- Fradelos, E. C. (2021).** Spiritual Well-Being and Associated Factors in End-Stage Renal Disease. *The Scientific World Journal*, 2021.
- Fradelos, E. C., Alikari, V., Tsaras, K., Papathanasiou, I. V., Tzavella, F., Papagiannis, D., & Zyga, S. (2021).** Assessment of psychological distress in end stage renal disease: is it spirituality related?. *Medicine and pharmacy reports*, 94(1), 79.
- Gemmell A., Terhorst L. & Jhamb M. (2019):** Gender and racial differences in stress, coping, and health-related quality of life in chronic kidney disease. *J Pain Symptom Manage.* 2019;52(6):806–812.
- Gerasimoula K., Lefkothea L., Maria L., Victoria A., Paraskevi T., & Maria P. (2016):** Quality of life in hemodialysis patients. *Materia socio-medica*, 27(5), 305.

- Ghafourifard, M., Mehrizade, B., Hassankhani, H., & Heidari, M. (2021).** Hemodialysis patients perceived exercise benefits and barriers: the association with health-related quality of life. *BMC nephrology*, 22(1), 1-9.
- Hamed, A. F., Ali, R. A. E. H., & Mohamed, E. A. (2017).** A Study of Quality of Life of Patients on Regular Haemodialysis at Sohag University Hospital 2017. *Egyptian Journal of Community Medicine*, 35(2).
- Hassaballa, M., El-Wakil, H., Elsharkawy, M., Khamis, S., El Tantawy, T., Wahby, W., & Gawad, M. (2022):** Egyptian renal data system (ERDS) 2020: an annual report of end-stage kidney disease patients on regular hemodialysis. *Journal of The Egyptian Society of Nephrology and Transplantation*, 22(1), 1.
- Hejazi, S. S., Hosseini, M., Ebadi, A., & Alavi Majd, H. (2021):** Components of quality of life in hemodialysis patients from family caregivers' perspective: a qualitative study. *BMC nephrology*, 22(1), 1-10.
- Hinkle J. & Cheever K. (2018):** Brunner& Suddarth's Textbook of Medical – Surgical Nursing 14th ed., Philadelphia: Lippincott Williams and Wilkins, (2); 4186 – 4192.
- Jadhav, P., Chavan, M. T., Bhingardive, M. R., Shinde, D., Chavan, M. P., Gaikwad, M. A., & Lakhani, R. (2022):** A Systemic Review Of The Quality Of Life Of The Patient Undergoing Haemodialysis. *Elementary Education Online*, 20(1), 5572-5572.
- Kalfoss, M., Schick-Makaroff, K., & Molzahn, A. (2019):** Living with chronic kidney disease: Illness perceptions, symptoms, coping, and quality of life. *Nephrology Nursing J*, 46(3), 277-291.
- Khan, S., & Ahmad, I. (2020).** Impact of hemodialysis on the wellbeing of chronic kidney diseases patients: a pre-post analysis. *Middle East Current Psychiatry*, 27(1), 1-5.
- Kim, S., Nigatu, Y., Araya, T., Assefa, Z., & Dereje, N. (2021).** Health related quality of life (HRQOL) of patients with End Stage Kidney Disease (ESKD) on hemodialysis in Addis Ababa, Ethiopia: a cross-sectional study. *BMC nephrology*, 22(1), 1-6.
- Lemos F., Rodrigues P. & Veiga J. (2018):** Family income is associated with quality of life in patients with chronic kidney disease in the pre-dialysis phase: a cross sectional study. *Health Quality Life Outcomes*. 2018;13(1):202.
- Linn W., Sculthorpe, B., Evje, M., Slater, H. & Goodman P. (1969):** A social dysfunction rating scale. *Journal of psychiatric research*, 6:299–306.
- Lv, J. C., & Zhang, L. X. (2019):** Prevalence and disease burden of chronic kidney disease. *Renal Fibrosis: Mechanisms and Therapies*, 3-15.
- Megahed, A. F., & Ahmed, N. S., (2021):** Characteristics of ESRD Patients who have been on Long-term Hemodialysis Therapy in Egypt: A Clinical Approach. *Recent Developments in Medicine and Medical Research* Vol. 8, 30-41.
- Mishra, S., Mohanty, D., Jena, P., & Mishra, S., (2018).** Assessment of quality of life in end stage renal disease patients undergoing hemodialysis in a tertiary care teaching hospital. *indian journal of applied research*, volume 8, issue 3 pp30-35.
- Nayana, S. A., Balasubramanian, T., Nathaliya, P. M., Hussain, P. N., Salim, K. M., & Lubab, P. M. (2017):** A cross sectional study on assessment of health related quality of life among end stage renal disease patients undergoing hemodialysis. *Clinical Epidemiology and Global Health*, 5(3), 148-153.
- Panma, Y., Yona, S., & Maria, R. (2019).** Relationship between hypertension with quality of life of hemodialysis patients. *Enfermeria clinica*, 29, 885-890.

- Ravindran, A., Sunny, A., Kunnath, R. P., & Divakaran, B. (2020):** Assessment of quality of life among end-stage renal disease patients undergoing maintenance hemodialysis. *Indian journal of palliative care*, 26(1), 47.
- Soliman, S, Salim E, AGhonemy, T, Farag, S, Allam, H.& Elokely A. (2016):** Implementing Teaching Guidelines on Quality of Life and Adaptation on Hemodialysis Patients. ISSN 2320-5407. *International Journal of Advanced Research* (2017), Volume 4, Issue 7, 192-202.
- Thenmozhi, P., (2018).** Quality of life of patients undergoing hemodialysis. *Asian J Pharm Clin Res*, 11(4), 219-223.
- Veerappan,I., Arvind, R.M., & Hayabharthi,V.(2016).** Predictors of quality of life of hemodialysis patients in India. *Indian Journal of Nephrology*; Vol 22, Issue 1.
- White, Y., & Grenyer, F. (2016):** The biopsychosocial impact of end-stage renal disease: the experience of dialysis patients and their partners. *Journal of advanced nursing*, 30(6), 1312-1320.
- Wight P., Edwards L., Brazier J., Walters S., Payne N., and & B.,(1998):** Quality in Health Care. *American Nephrology Nurses Association Journal*.1998;7:209–221.
- Yaya, K., Biao H. B., Moustapha, F., Ibrahim, H., & Tall, L. A. (2019):** Quality of Life in Chronic Hemodialysed Patients: Observational Study in Three Hemodialysis Units in Semi-Urban Areas of Senegal (West Africa). *J Clin Nephrol Ren Care*, 5, 045.
- Zhong, J., Yang, H. C., & Fogo, A. B. (2017):** A perspective on chronic kidney disease progression. *American Journal of Physiology-Renal Physiology*, 312(3), F375-F384.
- Zyoud, S., Daraghme, D. N., Mezyed, D. O., Khdeir, R. L., Sawafta, M. N., Ayaseh, N. A.,... & Al-Jabi, S. W. (2016):** Factors affecting quality of life in patients on haemodialysis: a cross-sectional study from Palestine. *BMC nephrology*, 17(1), 1-12.