Effect of Nursing Intervention on Quality of Life of Elderly Hemodialysis Patients with Uremic Pruritus

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Abstract
Background: The quality of life and successful aging are considered two central concepts in assessment and care of older adults. Further, the oldest patients are the fastest growing subgroup of the dialysis population in developed countries. **The aim** of this study was to evaluate the effect of nursing intervention on quality of life of elderly hemodialysis patients with uremic pruritus. **Research design:** A quasi-experimental pretest-and-posttest design. **Setting:** The study was conducted at the hemodialysis unit at the internal medicine department of Zagazig University Hospital and the hemodialysis unit at Al Ahrar hospital affiliated to the Ministry of Health. **Subject:** This study included 70 elderly patients. **Tools:** Tool I: A Structured Interview Questionnaire which consisted of part 1; demographic characteristics and part 2; health history and clinical data of elderly patients. Tool II: Dermatology Life Quality Index (DLQI). **Results:** There is highly statistically significant improvements in the total mean score of dermatology life quality index among studied elderly patients pre-post the intervention (P=.000). The total mean score of dermatology life quality index of the studied elderly was improved to reach 10.21 at post- intervention compared with 16.36 at pre- intervention. **Conclusion:** Post the nursing intervention, the quality of life among studied elderly patients was greatly improved at post intervention phase. **Recommendation:** It is recommended to replicate this study using a randomized clinical trial design in order to confirm the findings and to provide a higher level of evidence of its findings. Hemodialysis units must involve nursing intervention for improving dermatology life quality for hemodialysis patients.
Keywords: Nursing intervention, Quality of Life, Hemodialysis, Elderly

Tob Regul Sci.™ 2022;8(1): 4130-4148
DOI: doi.org/10.18001/TRS.8.1.310

Introduction

Around the world, populations are ageing. The share of the world's population aged 60 and above is expected to rise from around 12% today to over 20% by 2050 **(Doerr et al, 2022)**. The

population of the older adults in Egypt is fast growing, the national census in 2017 revealed a 2.56% increase in the older adult population from the 2006 census, and these figures are expected to double by year 2031 with a projected increase of 11.5% forecasted **(Odejimi et al., 2020)**.

Chronic kidney disease (CKD) is a growing, global public health priority that is associated with markedly high morbidity, mortality and excess health-care costs **(Carney, 2020)**. Although global age-standardized mortality for most other forms of chronic disease (such as cardiovascular disease (CVD) and cancer) has decreased over the past few decades, CKD is the third fastest growing cause of death globally and is projected to become the fifth commonest cause of years of life lost by 2040 **(GBD Chronic Kidney Disease Collaboration., 2020)**. When CKD progresses to the end stage renal disease, kidney replacement therapy (dialysis or kidney transplantation) or conservative kidney management (planned, holistic, patient centered care for older adults with stage 5 chronic kidney disease) is required **(Zarantonello et al., 2021)**.

Hemodialysis (HD) is the commonest form of RRT in the world, accounting for approximately 69% of all RRT and 89% of all dialysis **(Pecoits-Filho et al., 2020)**. Despite many technological and technical advances in the field of hemodialysis, significant problems remain during and after hemodialysis **(Roshangar et al., 2019)**. Additionally, hemodialysis imposes great stress on the patient, and patients undergoing it usually experience higher levels of psychological than physical stress **(Nobahar, 2017)**. CKD severely impacts QOL of patients with adverse effects observed in case of social, environmental, physical, and psychological domains **(Rondón García & Ramírez Navarrro, 2018)**.

The percentage of predialysis-chronic kidney disease (CKD) patients is greater in older populations; thus, it is not surprising that the number of elderly CKD patients who require renal replacement therapy (RRT) has been increasing **(Inaba et al., 2021)**. Despite improvements in dialysis treatment, mortality rates remain high, especially among older hemodialysis patients. Quality of life (QOL) among hemodialysis patients is strongly associated with higher risk of death **(Ishiwatari et al., 2020)**.

Hemodialysis is the principal treatment for end-stage renal disease. It can partially restore renal function, correct electrolyte disorders, rectify acid–base balance, and actively improve related clinical symptoms and quality of life for patients **(Yu et al., 2021)**. The elderly diagnosed with renal disease are commonly associated with limited life expectancy and remarkable symptom burden. These will eventually affect their health-related quality of life (HRQOL) which is acknowledged as a key to patient-centered outcome among this population **(Shahrin et al., 2019)**.

Skin aging is affected by demographic, environmental, lifestyle factors and skin types (**Zhang & Duan, 2018**). Cutaneous manifestation can be specific in dialysis patients, and are common in all stages of CKD, particularly toward ESRD; cutaneous manifestations in CKD can be due to the etiology of CKD and the complication of CKD or CKD treatment and can affect the quality of life **(Khatri et al., 2022)**. Previous literature established that uremic pruritus leads to

compromised physical and mental wellbeing and poor HRQOL in CKD patients, approximately 20–50% of patients report that UP has a negative effect on their lives **(Rehman et al., 2019).**

Quality of life is composed of numerous domains, including the physical, psychological, social, family and environmental domains. Importantly, QoL has been shown to contribute more to an individual's perception of their wellbeing, health, and life satisfaction than objective measures of life conditions **(González-Blanch et al., 2018).** Assessment of QOL of elderly patients on hemodialysis not only helps to assess the quality of dialysis program but also is useful to guide nephrologists to develop better interventions and plans of care for the future **(Lemos et al., 2015).**

Hemodialysis, therefore, requires specialized nursing care, including establishment of a therapeutic and interpersonal relationship, treatment of physical symptoms, and attention to the functional limitations, mental disorders, and educational needs of these patients **(Stavropoulou et al., 2017).** Nursing interventions including topical therapy, psychological interventions, diet, exercise and continuing care, can improve quality of life and prognosis of patients when used in the care of a variety of diseases including kidney diseases **(Liao et al., 2020).** Therefore, the present study was conducted to evaluate the effect of nursing intervention based on health education on quality of life of elderly hemodialysis patients with uremic pruritus.

Aim of the current study was to evaluate the effect of nursing intervention on quality of life of elderly hemodialysis patients with uremic pruritus.

This aim was fulfilled through the following objectives:

1- Determine quality of life of elderly patients with uremic pruritus pre and post the nursing intervention.
2- Develop and implement nursing intervention to improve quality of life of elderly patients on hemodialysis.
3- Evaluate the effect of nursing intervention on quality of life of elderly patients on hemodialysis.

Research Hypothesis: After implementation of nursing intervention, quality of life of elderly patients with uremic pruritus will be improved.

II. Method

1) Study Design and Settings:

A quasi-experimental pre-test and post-test design was utilized to conduct the current study from the first of February 2021 to the end of August 2021 at the hemodialysis unit at the internal medicine department of Zagazig University Hospital and the hemodialysis unit at Al Ahrar hospital affiliated to the Ministry of Health, Sharkia governorate, Egypt.

2) Sample:

A purposive sample composed of 70 elderly patients from the above mentioned setting who fulfilled the following inclusion criteria: 60 years and older, able to communicate, willing to participate in the study and patients who had an itching in a regular pattern during a period of 3

months. Elderly patients with underlying skin diseases and psychological disorders or any other secondary causes of pruritus were excluded.

3) Sample size calculation:

Based on data from literature **(Karadag et al., 2014)**, considering level of significance of 5%, and power of study of 80%, the sample size can be calculated using the following formula:

$n = [(Z\alpha/2 + Z\beta)^2 \times \{2(SD)^2\}]/$ (mean difference between the two groups)^2

Where

SD = standard deviation

$Z\alpha/2$: This depends on level of significance, for 5% this is 1.96

$Z\beta$: This depends on power, for 80% this is 0.84

Therefore,

$n= [(1.96 + 0.84)^2 \times \{2(15.75)^2\}]/ (7.5)^2=69.1$

Based on the above formula, the sample size required per group is 70.

4) Tools for data collection:

A: Structured interview questionnaire

It was developed by the researchers based on the literature review to collect the necessary data for the study. It consists of demographic characteristics of the elderly which contains 9 questions (age, sex, level of education, marital status, and place of residence, occupation before retirement, work nature, income and living condition).

B: Dermatology Life Quality Index (DLQI):

The Dermatology Life Quality Index (DLQI) is a simple, self-administered and user-friendly validated questionnaire. The DLQI is an instrument that is used to measure the health related QoL of patients suffering from any skin disease. The DLQI was the first dermatology-specific quality of life questionnaire which consists of 10 questions with four possible answers scored from 0 to 3, concerning patients' perception of the impact of skin diseases on different aspects of their health-related quality of life over the last week **(Finlay & Khan, 1994)**. ***r = 0.86 (highly reliable).***

The scoring of each question is as follows: Very much scored 3, A lot scored 2, A little scored 1, Not at all scored 0, Not relevant scored 0. Question 7, 'prevented work or studying' scored 3. The DLQI is calculated by summing the score of each question resulting in a maximum of 30 and a minimum of 0. The higher the score, the more quality of life is impaired.

Pilot study

Before performing the main study, a pilot study was carried out on 7 elderly from the study setting, constituting about 10 percent of the sample calculated for main study. The purpose of pilot was to test the questions for any ambiguity, and to assess the practicability and feasibility of using the structured interview questionnaire sheet for the elderly. It also helped the researcher to determine the time needed for filling out the forms (30 to 45 minutes). The tools were finalized

after doing necessary modifications according to the pilot study results. The pilot subjects were not included later in the main study sample.

D. Fieldwork

The fieldwork included the phases of assessment, planning, implementation and evaluation of baby oil as a nursing intervention.

Assessment phase: This phase involved the pre-intervention data collection for baseline assessment. The researcher introduced herself and explained the purpose of the study briefly to the studied elderly and oral consent for participation was obtained. The data were preliminary analyzed to provide the basis for building-up the baby oil as a nursing intervention according to identified needs.

Planning phase: Based on the results obtained from the data analysis of the assessment phase, and in view of the pertinent literature about cognitive behavioral therapy, the researcher developed the baby oil as a nursing intervention and sessions contents according to the elderly needs and the study objectives. Identified needs, requirements and deficiencies were translated into aim and objectives of the baby oil as a nursing intervention and set in the form of a booklet.

The nursing intervention consisted of eight sessions as follows:

- ***Session 1: (Time: 30:45 minutes)***
  The main objective of this session was to improve elderly's knowledge about chronic kidney disease (CKD), causes of CKD, clinical picture of CKD, complications and prevention of CKD.
- ***Session 2: (Time: 30:45 minutes)***
  The main objective of this session was to improve elderly's knowledge about hemodialysis (HD) process including (definition, mechanism, advantages, disadvantages and complications of HD).
- ***Session 3: (Time: 30:45 minutes)***
  The main objective of this session was to improve elderly's knowledge about uremic pruritus (UP) including (causes, effect of Up on elderly on HD, complication and treatment of UP).
- ***Session 4: (Time: 30:45 minutes)***
  The main objective of this session was to help the elderly practice using 3-5 ml of baby oil on the itchy skin for 15 min three times a week using guidelines and following steps of nursing intervention to get rid of negative effect of UP on quality of life.
- ***Session 5: (Time: 30:45 minutes)***
  The main objective of this session was to help the elderly identify some exercises suitable for elderly people.
- ***Session 6: (Time: 30:45 minutes)***
  The main objective of this session was to help the elderly patients on HD gain knowledge about proper diet and healthy meals.
- ***Session 7: (Time: 30:45 minutes)***
  The main objective of this session was to help the elderly gain knowledge about multiple examples of non-pharmacological therapy.

- *Session 8: (Time: 30:45 minutes)*

The main objective of this session was to help the elderly identify some guidelines and steps that helps elderly to control uremic pruritus.

Implementation phase:

The nursing intervention was implemented for the studied elderly. They acquired pertinent basic knowledge about hemodialysis, proper diet, exercise techniques and cognitive behavioral techniques. The intervention was offered to the studied elderly in the form of eight sessions for small groups to give more chance for discussions, interactions, and practical training. The total sample was divided into small groups (7 to 9 elderly in each group). All groups received the same content using the same teaching methods, media, discussions and the same booklet. Motivation and reinforcement techniques as praise and recognition during the session were used to enhance active participation and foster learning. The sessions were aided by using pictures, posters, as well as the booklet.

Evaluation phase:

The evaluation of the effectiveness of the nursing intervention was done after its implementation. A post-test was carried out after two months of completion of the intervention. This was done using the same data collection tools of the pre-test.

Ethical Considerations:

The study was approved by the Research Ethics Committee (REC) and the Postgraduate Committee of the Faculty of Nursing at Zagazig University, Egypt. Verbal consent was obtained from the participants after a description of the purpose of the study.

Statistical Analysis

Data entry and statistical analysis were done using SPSS 23.0 statistical software package. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations and medians for quantitative variables. Quantitative continuous data were compared using the non-parametric Mann-Whitney or Kruskal-Wallis tests and paired t test. Qualitative categorical variables were compared using chi-square test. Whenever the expected values in one or more of the cells in a 2x2 tables was less than 5, Fisher exact test was used instead. Spearman rank correlation was used for assessment of the inter-relationships among quantitative variables and ranked ones. Statistical significance was considered at p-value <0.05.

RESULTS

Table 1 shows that the mean age of the studied elderly was 67.5 ± 4.92 years, 58.6 % were male, 58.6% were unmarried and 41.4% were married and lived with husband/wife, 70% belonged to rural areas, worked as farmers and handicraft, 71.5% had no current work.

Figure (1) Concerning educational level of the studied elderly **Figure 1** indicates that, 40% of the studied elderly were illiterate, 31.4 % read and write, 21.4 % had intermediate educational level and 7.2% had high education.

Figure (2) Concerning monthly income of the studied elderly **Figure 2** indicates that, 52.9% of the studied elderly had insufficient monthly income, 35.7% had sufficient monthly income and11.4% had enough income and save.

Table 2a shows highly statistically significant improvements in the dermatology life quality among elderly patients throughout the study phases regarding symptoms and feelings and daily activities.

Table 2b shows highly statistically significant improvements in the dermatology life quality among elderly patients throughout the study phases regarding leisure item (P=.000) and statistically significant improvement in the item of work and school (If "No", over the last week how much has your skin been a problem at work or studying?) (P=.003).

Table 2c shows highly statistically significant improvements in the dermatology life quality among elderly patients throughout the study phases regarding treatment and personal relationships items (P=.000), additionally, the item which was (Q9: Over the last week, how much has your skin caused any sexual difficulties?) (P=.004) shows statistically significant improvements.

Figure 3 reveals highly statistically significant improvements in the total mean score of dermatology life quality index among studied elderly patients pre-post the intervention (P=.000). As noted from the figure, the total mean score of dermatology life quality index of the studied elderly was improved to reach 10.21 at post- intervention compared with 16.36 at pre-intervention.

Table 3 clarifies that there were statistically significant relation between dermatology life quality index mean difference of the studied elderly patients and their demographic characteristics regarding residence and current work ($p<0.05$).

Table 1: Demographic characteristics of the studied elderly patients (N=70)

Demographic characteristics	(n=70)	
	Frequency	Percent
Age group: /year		
60-	51	72.9
70-	19	27.1
Mean ± SD	**67.5 ± 4.92**	
(range)	**(60 – 80)**	
Gender:		
Male	41	58.6
Female	29	41.4

Residence:		
Rural	49	70.0
Urban	21	30.0
Marital status:		
Married	29	41.4
Un married [single /Widower/ divorced]	41	58.6
Education:		
Not read & write	28	40.0
Read & write	22	31.4
Intermediate education	15	21.4
University/ postgraduate	5	7.2
Occupation before retiree:		
Employee	13	18.6
Farmer	20	28.6
Handicraft	20	28.6
Housewife	17	24.2
Current occupation:		
Work	20	28.5
Not work	50	71.5
Living with whom:		
With husband / wife	29	41.4
With one of sons	17	24.3
Alone	13	18.6
With family	11	15.7
Monthly Income:		
Sufficient	25	35.7
Insufficient	37	52.9
Saving	8	11.4

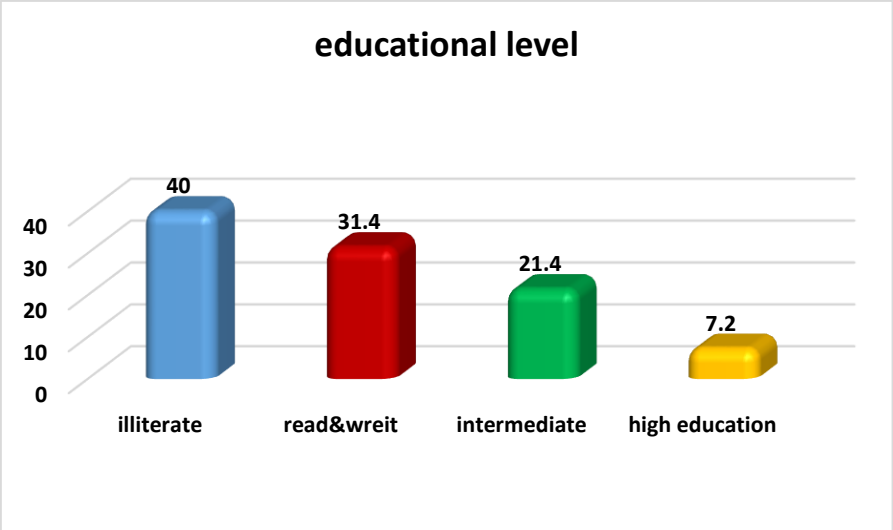

Figure (1): Distribution of the studied elderly according to their educational level

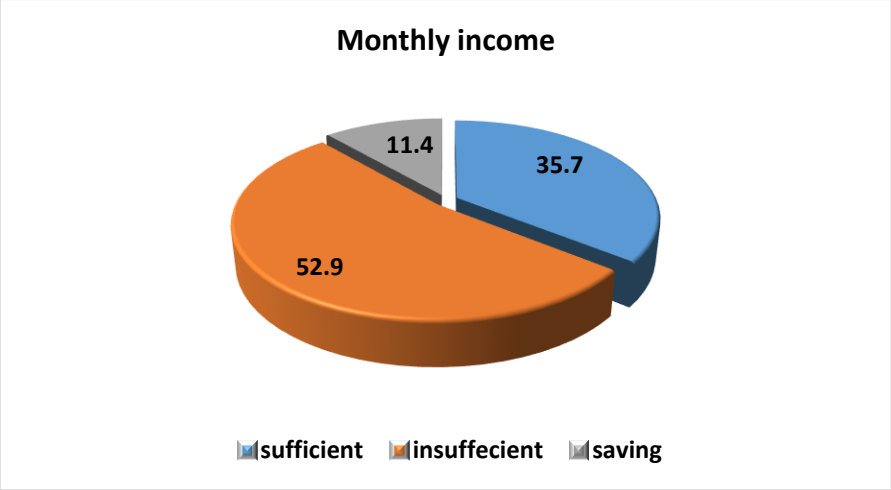

Figure (2) Distribution of the studied elderly according to their monthly income

Table (2a): DLQI of studied elderly patients pre –post the intervention

DLQI		Pre (n=70)		Post (n=70)		X^2	(p-value)
		No	%	No	%		
Symptoms and feelings							
itchy, sore, painful or stinging has your skin been?	Very much	38	54.3	21	30.0	26.86	.000**
	A lot	24	34.3	19	27.1		
	A little	8	11.4	18	25.8		
	Not at all	0	0.0	12	17.1		

embarrassed or self-conscious have you been because of	Very much	26	37.1	13	18.6	18.97	.000**
	A lot	30	42.9	26	37.1		
	A little	11	15.7	18	25.7		
	Not at all	3	4.3	13	18.6		
Daily activities							
Q3: how much has your skin interfered with you going shopping or looking after your home or	Very much	22	31.4	10	14.3	19.37	.000**
	A lot	34	48.6	28	40.0		
	A little	9	12.9	19	27.1		
	Not at all	5	7.1	13	18.6		
Q4: how much has your skin influenced the clothes you wear?	Very much	23	32.9	15	21.3	14.65	.000**
	A lot	27	38.6	21	30.0		
	A little	13	18.6	21	30.0		
	Not at all	7	10.0	11	15.7		

: Significant* *: Highly significant*

Table (2b): DLQI of studied elderly patients' pre–post the intervention

DLQI		Pre (n=70)		Post (n=70)		X^2	(p-value)
		No	%	No	%		
Leisure							
Q5: how much has your skin affected any social or leisure activities?	Very much	38	54.3	24	34.3	29.4	.000**
	A lot	18	25.7	12	17.1		
	A little	10	14.3	18	25.7		
	Not at all	0	0.0	12	17.1		
	Not relevant	4	5.7	4	5.7		
Q6: how much has your skin made it difficult for you to do any sport?	Very much	19	27.1	9	12.9	21.6	.000**
	A lot	15	21.4	11	15.7		
	A little	10	14.3	16	22.9		
	Not at all	0	0.0	8	11.4		
	Not relevant	26	37.1	26	37.1		

Work and school							
Q7: has your skin prevented you from working or studying?	Not relevant Yes No	50 3 17	71.4 4.3 24.3	50 0 20	71.4 0.0 28.6	Fisher	1.0
If "No", over the last week how much has your skin been a problem at work or studying?	Very much A lot A little	4 8 5	5.7 11.4 7.1	0 7 13	0.0 10.0 18.6	9.32	.003*

*: Significant **: Highly significant

Table (2c): DLQI of studied elderly patients pre –post the intervention

DLQI		Pre (n=70)		Post (n=70)		X^2	(p-value)
		No	%	No	%		
Personal relationships							
Q8: Over the last week, how much has your skin created problems with your partner or any of your close friends?	Very much A lot A little Not at all Not relevant	19 26 12 5 8	27.2 37.2 17.1 7.1 11.4	18 12 20 12 8	25.7 17.1 28.7 17.1 11.4	11.88	.000**
Q9: Over the last week, how much has your skin caused any sexual difficulties?	Very much A lot A little Not at all Not relevant	9 14 5 1 41	12.9 20.0 7.1 1.4 58.6	7 11 8 3 41	10.0 15.7 11.4 4.3 58.6	8.63	.004*
Treatment							
Q10: Over the last week, how much of a problem has the treatment for your skin been?	Very much A lot A little Not at all Not relevant	15 23 15 13 4	21.4 32.9 21.4 18.6 5.7	9 14 22 21 4	12.9 20.0 31.4 30.0 5.7	17.54	.000**

*: Significant **: Highly significant

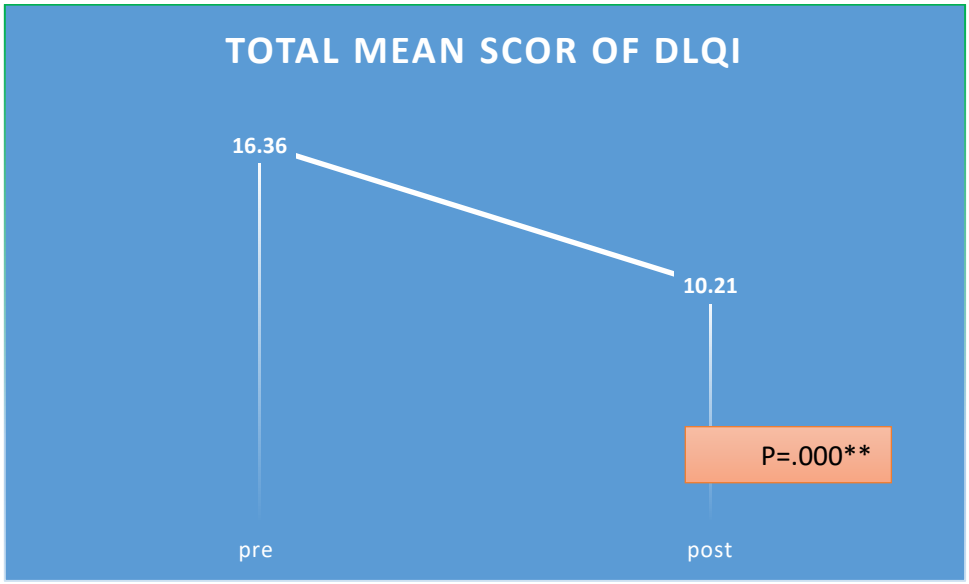

Figure (3): total mean score of DLQI among studied elderly patients pre-post the intervention

Table (3): Relation between DLQI mean difference of the studied elderly patients and their demographic characteristics

Characteristics		DLQI		Mann Whitney Test	P
		Mean	SD		
Age group (years)	60 – 70 –	5.86 6.89	4.00 4.15	565.5	.282
Gender:	Male Female	6.00 6.34	4.06 4.06	636	.619
Residence	Rural Urban	7.1 3.81	4.08 2.82	267.5	**.001***
Marital status:	Un Married Married	6.32 5.89	4.26 3.74	573.5	.801
Education	Not read & write Read & write Intermediate University / postgraduate	7.17 6.36 5.06 2.60	4.13 4.10 3.51 2.61	H=7.189	.066
Current work :	Work Not work	4.13 7.06	3.62 3.96	345.5	**.010***

With whom you live	With husband / wife	6.07	3.85	H=2.989	.393
	With one of sons	7.47	3.79		
	Alone	4.76	3.58		
	With relatives	5.91	5.18		
Income	Sufficient	5.92	4.63	H=5.864	.053
	Insufficient	6.89	3.75		
	Saving	3.37	1.77		

(H) Kruskal Wallis *(*)*

statistically significant at p≤0.05

DISCUSSION

In recent times, many efforts have been made to improve the survival of elderly hemodialysis patients with end-stage renal disease. While hemodialysis has improved the survival rates, concerns regarding a reduction in quality of life (QoL) due to ESRD are worrisome and have been reported by numerous studies **(Satti et al., 2019)**.

Concerning demographic characteristics of the studied elderly (table 1) revealed that the mean age of the studied elderly was 67.5 ± 4.92 years. The increasing mean age of the patients with end stage renal disease may reflect the universal trends of dialysis patients living longer due to improving health care systems and safety standards performed in dialysis clinics. This was in accordance with a study done in Europe, by **Pippias et al. (2015)** who found that the mean age of patients on dialysis was 62.0 years. This finding is also close to the mean reported by **Mohamed et al. (2021)** in Egypt (67.19 years).

According to sex, the present study results revealed that more than half of the studied elderly on hemodialysis (HD) were men. The extent to which differences in lifestyle factors between the sexes influence sexual dimorphism in the progression of chronic kidney disease remains to be elucidated **(Neugarten & Golestaneh, 2019)**. This result is in line with other studies conducted in Egypt and Chili which reported that elderly patients undergoing HD were predominantly males **(Rabie, 2015 & Guerra-Guerrero et al., 2012).**

Also, the present study reported that, slightly more than half of the studied elderly on hemodialysis were currently unmarried. And this may be related to loss of continuity and disrupted personal integrity, which includes changes in the body image and function, changes in intellectual, social and professional functions, and increased dependency. This result was in contrast with other studies which reported that the majority of participants were married **(Semaan et al., 2018).**

In relation to place of residence, this study showed that more than two thirds of the studied elderly on hemodialysis lives in rural areas and worked as farmers and handicraft that is supported by **Stanifer et al. (2014)** who found that chronic renal disease seems to be more prevalent in rural regions compared to urban settings. However, **EL Shahed et al. (2013)** mentioned that, around two-thirds of their studied HD patients were living in urban areas.

According to current work, this study showed that more than two thirds of the studied elderly on hemodialysis had no current work, This result might be due to incapability of the majority of patients to tolerate work load besides their illness and not only because they were aged. This meets the finding of the study conducted by **Ibrahim et al. (2016)** who revealed that only 12% of both groups were working while the majority of patients didn't. Additionally, a study conducted in hemodialysis unit at Kafr El_sheikh governorate General Hospital noticed that the majority of the study subjects were unemployed **(Mohamed et al., 2020)**.

Concerning educational level of the studied elderly, **Figure 1** indicated that, two fifth of the studied elderly were illiterate, about one third of the studied elderly read and write, slightly more than one fifth had intermediate educational level and only 7.2% had high education. This study is in line with other studies conducted at hemodialysis unit in new Mansoura general hospital in Egypt by **Mahmoud et al. (2018) & Abd-Rabouh et al. (2017)** who reported that, about two fifth of elderly patients were illiterate.

Concerning monthly income of the studied elderly, **Figure (2)** indicated that, more than half of the studied elderly had insufficient monthly income, more than one third had sufficient monthly income and11.4% had enough income and save. The high prevalence of financial hardship among patients on maintenance hemodialysis with or without subsidy highlights the need for a more comprehensive approach to address ESRD in resource-limited settings **(Bradshaw et al., 2019).**This study is in agreement with a study done by **Kassa et al. (2020)** in Addis Ababa City and Amhara Region, Ethiopia, who found that only 11% of the patients' income was enough to cover the cost of hemodialysis and the majority of the patients have support from their relatives, friends, and neighbors for coping the cost of the treatment and daily needs.

One of the objectives of the present study was to assess Determine quality of life of elderly patients with uremic pruritus pre and post the nursing intervention. The findings of the current study revealed highly statistically significant improvements in the total dermatology life quality index of studied elderly patients pre –post the intervention (P=.000).The present study results agreed with Turkish study by **Karadag et al. (2014)** who compared scores of the patients in the control and intervention groups before and after the intervention. The results of this Turkish study claimed that, the differences in the change were found to be statistically significant in favor of the intervention group ($P < 0.05$) and concluded that administration of baby oil had positive effects on itching, quality of life, and sleep quality in HD patients who had itching complaints. In harmony with these results, **Döner & Taşcı (2022)** conducted a study at HD centers in Turkey where the patients in the study and control groups received massage therapy with lavender oil and baby oil respectively. In HD patients, massage with lavender oil and baby oil improved the QOL of patients on hemodialysis. There were significant differences between the groups in terms of QOL subscales and total scores at the initial and final follow-ups and added that, this therapy can be recommended to HD patients.

The second objective of the present study was to evaluate the effect of nursing intervention on quality of life of elderly patients on hemodialysis. Figure 3 revealed highly statistically significant improvements in the total mean score of dermatology life quality index among studied elderly patients pre-post the intervention (P=.000). This can be explained by the fact that, the total mean score of dermatology life quality index of the studied elderly was improved to reach 10.21 at post-intervention compared with 16.36 at pre-intervention. This result is in agreement with another study which reported that, nursing intervention using massage with cooled baby oil for 15 min three times a week for 4 weeks reduced itching and improved sleep and QoL for HD patients **(Karadag et al., 2014)**. In the same line, another study conducted at a private dialysis clinic reported that foot and back massage with 3–5 drops of baby oil for 30 min twice a week for 4 weeks reduced reduced severity of HD complications e.g. scratching-induced skin lesions and accompanying disorders such as fatigue, anxiety, depression and insomnia and increased sleep quality in in HD patients **(Unal & Balci Akpinar , 2016).** Additionally, **Malekshahi et al. (2018)** reported that a 10-min massage with body oil three times a week for 4 weeks increased sleep quality and QoL. Additionally, application of lavender and sweet orange oil for 30 min three times a week for 3 weeks reduced RLS severity and increased sleep quality in both study groups of HD patients (**Oshvandi et al., 2021**). Moreover,**Azimpour et al.** (**2019**) found that a hacking massage to the foot area for 10 min three times a week for 4 weeks increased sleep quality of HD patients.

Concerning relation between DLQI mean difference of the studied elderly patients and their demographic characteristics Table 3 clarified that there were statistically significant relation between dermatology life quality index mean difference of the studied elderly patients and their demographic characteristics regarding residence and current work ($p<0.05$).The current study explained that the majority of studied elderly patients lived in rural areas. This may because most areas in Zagazig were rural and the elderly are farmers that may affect their skin leading to pruritus and decreased quality of life of skin. This finding is in accordance with a study conducted in Egypt by **ElHamd et al. (2020)**, who studied skin disorders among 808 elderly patients. In addition differences in humidity, lifestyle and current work that might increase stress can impair quality of life of skin which are extremely common in elderly patients. In this study residence and work is important factor affecting QOL of the HD patients.

CONCLUSION

Based upon the findings of the present study and answers of the hypothesis, it was concluded that the nursing intervention had great impact on the quality of life of elderly patients on hemodialysis which had greatly improved at post intervention phase.

RECOMMENDATIONS

On the basis of the current study findings, replication of this study using a randomized clinical trial design in order to confirm the findings and to provide a higher level of evidence of its

findings. Further research is proposed to examine the effectiveness of multiple-approach nursing interventions in improving the QoL among elderly patients with uremic pruritus on hemodialysis.

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