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Relationship Between Pruritus And Quality of Life of Elderly Patients Undergoing Hemodialysis

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Abstract: *Hemodialysis is the main renal replacement therapy used in the elderly requiring dialysis. Pruritus is one of the most frustrating skin problems affecting 20%–90% of elderly patients undergoing hemodialysis and can negatively affect their quality of life. Pruritus in hemodialysis patients may reduce patients' quality of life as it leads to many physiological and psychological problems. Aim: Determine the relationship between pruritus and quality of life of elderly patients undergoing hemodialysis. Method: A descriptive research design was utilized. Setting: This study was conducted at the hemodialysis units at New Mansoura General Hospital in Mansoura city and its related units in Shohaa and Salamon village affiliated to the Ministry of Health. Tools: Three tools were used for data collection, Tool I: Structured interview schedule questionnaire, Tool II: 5-D Itching scale (5-D IS), Tool III: Quality of life scale. Results: The study revealed that 45.9% of the studied elderly patients undergoing hemodialysis suffered from pruritus for less than 6 hours & about 34.3% of elderly patients described pruritus as rarely delay sleep & the most common body parts affected by pruritus were abdomen, back, toes and arms. Also, two thirds of elderly patients undergoing hemodialysis were unsatisfied with their quality of life. There was a weak negative correlation between pruritus characteristics & quality of life of elderly patients undergoing hemodialysis. Conclusion & Recommendation: Pruritus is common among hemodialysis elderly patients and has an effect on their quality of life. Designing a booklet about interventions that can be tailored to meet elderly patient's needs at hemodialysis unit.*

Keywords: *Elderly, Hemodialysis, Pruritus, Quality of life.*

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I. Introduction

Chronic kidney disease (CKD) is a public frustrating health problem with high incidence and prevalence of renal failure in elderly, with poor outcomes and high costs of treatment (Arora, 2015). The renal system is affected by age related changes such as shrinkage in size of kidneys and diminished ability to filter waste products causing decline in kidney function (American Nephrology Nurses Association, 2011). CKD leads in its late stages to end stage renal disease (ESRD) (Tangri et al., 2011).

The epidemiology of chronic kidney disease (CKD) is on an upward trend worldwide (Boyd and Uhlig, 2011). The prevalence of end stage renal disease (ESRD) in Egypt has risen from 225 patients per million populations (pmp) in 1996 to 483 pmp in 2004 (Afifi, 2008). The estimated number of patients with ESRD in Egypt was about 18,000 at year 2000 and progressed to reach 33,693 in 2008 (USRDS, 2011). The incident rate of starting dialysis is elevated with age, with rates of 113–221 per million age-related populations for 45–64 year olds in comparison to 110–610 for 65–74 year olds and 99–984 for those over 75 years (Stel et al, 2009).

Chronic kidney disease patients often complains persistent itch termed "uremic pruritus"(UP) which is considered one of the most common symptoms of patients undergoing hemodialysis (HD) (Susel et al , 2014).Aging skin is susceptible to pruritic problems as a result of changes that occur to the skin structure with aging such as dryness of skin (Grundman and Ständer,2010). Pruritus may be localized or generalized, in particular, to the abdomen, back, arms, and head (Manenti et al ,2009). Pruritus can cause many problems in several life aspects of elderly HD patients and may lead to physiological problems such as bleeding from lesions of the skin and sleep disorders, psychological problems, such as anger, anxiety–depression, and social isolation which reduce quality of life of elderly patients and make their self-care ability decreased (Kılıç Akça et al, 2011).

Elderly patients on regular hemodialysis(HD) may experience poor quality of life, which comes from the anxiety, the lack of autonomy, the problem in moving three times a week to reach HD centers, the decrease

of health levels, the limitation to perform daily activities, and the lack of comprehension of family members and friends (Lopes et al, 2014). These symptoms may also include general ill-feeling, loss of appetite, headaches, itching & dry skin, nausea, weight loss, drowsiness and lack of concentration (Mousavi et al, 2014).

The control of symptoms caused by hemodialysis(HD) sessions requires a multidisciplinary approach. Health care system poses major challenges as a result, nurses have important role in decreasing and eliminating the severity of these symptoms (Turan et al, 2010) such as massage, acupressure, aromatherapy, reflexology, and music therapy which decrease the symptoms of pruritus caused by HD, fatigue, pain, cramps as well as stress and anxiety levels, provide blood pressure regulation and enhance quality of life of elderly patients (Arzu, 2015).

II. Aim

The aim of this study was to determine the relationship between pruritus and quality of life of elderly patients undergoing hemodialysis.

III. Research Question

What is the relationship between pruritus and quality of life of elderly patients undergoing hemodialysis?

IV. Method

I -Research Design: Descriptive research design was utilized in this study.

II -Study Setting: This study was conducted at hemodialysis units at New Mansoura General Hospital in Mansoura city and its related units in Shohaa and Salamon village affiliated to the Ministry of Health to cover total number of elderly patients included in this study.

III -Study subjects: The study included 207 of elderly patients with end-stage renal disease (ESRD) receiving hemodialysis at the previously mentioned settings. A previous study showed that prevalence of pruritus among elderly patients with end stage renal disease undergoing hemodialysis was 84% (Mathur et al, 2010). To calculate the sample size with precision/absolute error of 5% and type 1 error of 5%: Sample size = $[(Z1\text{-}\alpha/2)^2.P(1\text{-}P)]/d^2$ Where, $Z1\text{-}\alpha/2$ = is the standard normal variate, at 5% type 1 error ($p<0.05$) it is 1.96, P = the expected proportion in population based on previous studies and d = absolute error or precision.

So, Sample size = $[(1.96)^2. (0.84). (1\text{-}0.84)]/ (0.05)^2 = 206.5$

Based on the above formula, the sample size required for the study is 207.

So, the study subjects included 207 elderly patients during this period.

Inclusion criteria:

1. -Age 60 years and above.
2. -Able to communicate.
3. -Willing to participate in the study.
4. -Elderly patients who complains at least 3 times of itching at 2 weeks or less
5. Elderly Patients appearing itching few times per day.
6. Elderly Patients who complained from itching regularly during 6 months.

Exclusion criteria: Elderly patients with underlying skin diseases or any other secondary causes of pruritus such as paraneoplastic pruritus.

Tools of data collection three tools were used to collect data of this study.

Tool I: Structured interview schedule questionnaire this tool was developed by the researcher after review of the literature and consists of two parts:

Part 1 demographic characteristics of the elderly such as, age, sex, residence, level of education, marital status, occupation before retirement, work nature and income.

Part 2 clinical data of elderly patients such as onset of chronic renal failure, duration, causes of the disease, medication taken, presence of other diseases. Data about dialysis such as date of beginning dialysis, number of sessions/week, duration of hemodialysis, medications in use and complications.

Tool II: 5-D Itching scale (5-D IS)

This scale was developed by **Elman et al, 2010.** It is originally designed to assess the level of itching. This instrument has been validated and translated into Arabic language by **Khan et al, 2013.** It includes five domains that detect duration, degree, direction, disability and distribution of itching. The first three domains (duration, degree and direction) were single-item domains. However, the disability section was a multiple-item which measures itching effect on activities of daily living: sleep, leisure/social activities, housework/ errands and work/school. The last section in 5D-IS was the distribution of pruritus on body parts. Sixteen body parts were included and each individual was given an open option to determine the body parts affected by itching.

Scoring system of 5-D Itching scale (5-D IS):

Scores of 5-D IS is pointed from 5 (no pruritus) to 25 (most severe pruritus). Duration, degree and direction of pruritus take values ranging from 1 to 5. The disability domain had four sub items and its score is measured by taking the highest score of any of the four items. The last section was the distribution of pruritus on body parts. Keeping in view the sixteen body parts, affected five scoring bins were constructed. The sum of 0–2= score of 1, sum of 3–5 = score of 2, sum of 6–10 = score of 3, sum of 11–13=score of 4 and sum of 14–16=score of 5.

Tool III: Quality of life scale

This scale was used to determine the level of quality of life of dialysis patients. It was based on bone marrow transplantation version ***Grant and Ferrell, 1998***, which was applied on hemodialysis patients by ***Ahmed***, ***2000***. This scale was modified and translated into Arabic language by ***Abd El-Hamed, 2006***.The scale consists of 75 items grouped into 4 subscales measuring different domains of health-related quality of life (physical functioning well being It contains 41 questions from 1-41, psychological wellbeing that contains 13 questions from 42 to 54, socioeconomic status which consisted of 13 questions from 55 to 67 and spiritual wellbeing that comprised 8 questions from 68 to 75).

Scoring system of Quality of life scale

The quality of life scale comprised 5 levels for the patients to select the most representing his/her state which are :never, low grade, moderate grade, high grade and not applicable to me. For this scale scores of 0, 1, 2 and 3 were admitted to the responses of never, low, moderate and high. The scores of the items were summed-up and the total divided by the number of the items, calculating a mean score for attitude .These scores took a percent score to compute means and standard deviation. The QOL was regarded satisfactory if the percent score was 60% or more and considered unsatisfactory if less than 60%.

Method

1. Official approval to carry out the study was obtained from dean of faculty of nursing and the head of hemodialysis unit at New Mansoura General Hospital in Mansoura city and its related units in Shohaa and Salamon village affiliated to the Ministry of Health.
2. Tool 1 (Structured interview schedule questionnaire) was developed by the researcher after the reviewing of relevant literature.
3. The Arabic version of Tool II (5-D IS) and Tool III (Quality of life scale) were used to collect the necessary data in this study.
4. The study tools were revised by 8 experts from related specialties (gerontological nursing and medical surgical nursing) to test its content validity and feasibility. The necessary modifications were done.
5. A pilot study was carried out on 10% (27) of elderly patients chosen randomly from New Mansoura General Hospital and not included in the study to test clarity and feasibility of the tools. Accordingly the necessary modifications were done.
6. Based on the schedule of hemodialysis unit the researcher attended hemodialysis units 4 days per week from 9 Am to 4 Pm (7 hours per day) to collect the necessary data.
7. Each study subject was interviewed individually by the researcher in the dialysis unit at the beginning or during the session for about 30 minutes to fill data collection sheet.
8. The study was conducted over a period of 6 months starting on 1st January 2017 and ended on 31st June 2017.

Ethical considerations:

- Ethical approval was obtained from Research Ethics Committee, Faculty of Nursing, Mansoura University.
- Verbal consent was obtained from all participants after explaining the purpose of the study.
- Each elderly patient was assured that the collected data will be used only for the purpose of the study and confidentiality was maintained.
- Study subjects were informed about their rights to withdrawn from the study at any time.

Statistical analysis:

Data were analyzed using the statistical package of social science "SPSS" software version 16.0 .The quantitative data were presented as numbers, percentages. The P value of < 0.05 refers to a significant result while, P value > 0.05 indicates a non significant result.

- Independent T test, one way ANOVA , Chi square test & a binomial logistic regression were used in this study.

V. Results

Table 1: Distribution of elderly patients with hemodialysis according to their sociodemographic characteristics

Items	N=207	%
Age		
• 60-64 years	113	54.6
• 65-69years	71	34.3
• 70-74years	15	7.2
• More than 75	8	3.9
Mean age ± SD	65.106 ± 8.917yrs	
Sex		
• Male	117	56.5
• Female	90	43.5
Marital status		
• Married	109	52.7
• Unmarried	98	47.3
Educational level		
• Illiterate	84	40.6
• Secondary education	57	27.5
• Read &write	45	21.7
• University/ Postgraduate	21	10.1
Occupation before retirement		
• Housewife	76	36.7
• Employer	52	25.1
• Handicraft	43	20.8
• Farmer	31	15
• Unemployment	5	2.4
Work nature		
• Not working	163	78.7
• Normal work without effort	44	21.3
Income		
• Not enough	117	56.5
• Enough/Enough and save	90	43.5
Place of residence		
• Rural	135	65.2
• Urban	72	34.8
Living condition		
• spouse	109	52.7
• Offspring	75	36.2
• Alone	23	11.1

This table shows that 54.6% of the studied elderly patients undergoing hemodialysis aged from 60 up to 64 years and 34.3% of elderly hemodialysis patients aged from 65 to 69 years with a mean age of 65.106 ± 8.917yrs. Regarding sex, it was noticed from the table that 56.5% of the sample were males and 43.5% were females. About 52.7% of the patients were married and 47.3% were unmarried. Concerning educational level, 40.6% of the subjects were illiterate while 27.5% had secondary education. Regarding occupation before retirement, it was noticed that 36.7% were housewives and 25.1% were employers. Concerning income 56.5% of elderly patients undergoing hemodialysis described income as not enough, while 43.5% described it as enough and save. According to place of residence, 65.2% of the subject lived in rural areas, while 34.8% lived in urban areas. Regarding living conditions 52.7% of elderly patients live with their families.

Table 2: Distribution of elderly patients undergoing hemodialysis according to their clinical data

Items	N=207	%
Current disease		
• Hypertension	73	35.3
• Diabetes	63	30.4
• Other	43	20.8
• Diabetes &hypertension	28	13.5
Diseases associated with hemodialysis #		
• Cardiovascular	104	50.2
• Diabetes mellitus	87	42.0
• Other diseases	78	37.3
• No diseases	20	9.7
Hemodialysis sessions		
• Three /week	176	85.0
• One- Two/week	31	15.0
Drugs used with hemodialysis #		
• Vitamins	132	63.8

• Analgesia	89	43.0
• Stomach	64	30.9
• Constipation	47	22.7
• others	47	22.7
Hemodialysis complications #		
• Pruritus	207	100
• Nausea /Vomiting	200	96.6
• Dry skin	196	94.7
• Anemia	187	90.3
• Difficult breathing	185	89.4
• Hypotension	171	82.6
• Cramps	134	64.7
• Hypoglycemia/ fatigue	115	55.6
• leg syndrome	67	32.4

 # More than one answer was given

It was observed from the table that, 35.3%, 30.4% and 20.8% of the study subjects had renal failure due to hypertension, diabetes mellitus and other diseases such as glomerulonephritis and shistosomias respectively. In addition to that, 50.2% and 42.0% of the elderly patients undergoing hemodialysis suffered from cardiovascular diseases, and diabetes mellitus respectively. 85% of the elderly patients with hemodialysis receive three HD sessions per week and 63.76% of the sample took vitamins with hemodialysis.

The majority of sample suffered from nausea /vomiting, dry skin, anemia and difficult breathing with percentage of 96.6%, 94.7%, 90.3% and 89.4% respectively.

Table 3: Distribution of elderly patients undergoing hemodialysis according to duration, degree and direction of pruritus.

Item	N=207	%
First: Duration		
• < 6 hrs	95	45.9
• 6-12 hrs	57	27.5
• 12-18 hrs	26	12.6
• All day	15	7.2
• 18-23 hrs	14	6.8
Second: Degree (severity)		
• Mild	92	44.4
• Moderate	72	34.8
• Severe	25	12.1
• Absent	11	5.3
• Intolerable	7	3.4
Third: Direction		
• More improvement but still found	67	32.4
• Less improvement but still found	62	30
• No change	49	23.7
• Worse	16	7.7
• Disappeared	13	6.3

It was noticed that 45.9% of the studied elderly patients with hemodialysis suffered from pruritus for less than 6 hours, while 27.5% of sample still suffer pruritic episode within 6-12 hrs a day. Regarding severity of pruritus it was observed that 44.4%, 34.8% and 12.1% of elderly patients had mild, moderate and severe pruritus respectively. According to pruritus direction, 32.4% of the elderly HD patients described it as improved but still found, while 23.7% of them described no change.

Table 3: Distribution of elderly patients undergoing hemodialysis according to the effect of pruritus on their ability. (Cont.)

Fourth: Ability	N=207	%
Sleep		
• Rarely delay sleep	71	34.3
• No effect on sleep	61	29.5
• Frequent delay sleep	39	18.8
• Delay sleep and induce insomnia	28	13.5
• Delay sleep and induce insomnia frequently	8	3.9
Activity and social contact		
• No	71	34.3
• Little	68	32.9
• Sometimes	43	20.8
• Usually	21	10.1

• Almost	4	1.9
Activities of daily livings		
• No	72	34.8
• Rare	71	34.3
• Sometimes	46	22.2
• Usually	15	7.2
• Almost	3	1.4
Effect on work (n=44)		
• Little	17	8.2
• Sometimes	12	5.8
• No	10	4.8
• Usually	5	2.4

It was observed from this table that 34.3% of elderly patients undergoing hemodialysis described pruritus as rarely delay sleep and 18.8% suffered from frequent delay of sleep, in addition to 29.5% of them reported that pruritus had no effect on sleep. Concerning effect of pruritus on activity and social contact, it is noticed that 32.9% reported that pruritus has little effect while, 20.8% of elderly patients undergoing hemodialysis reported that pruritus sometimes affects activities of daily livings and about 8.2% of working patients described that pruritus have a little effect on their work.

Table 3: Distribution of elderly patients undergoing hemodialysis according to the distribution of pruritus on body parts. (Cont.)

Distribution		
Body parts #	**Present**	
	N	**%**
• Abdomen	103	49.8
• Back	100	48.3
• Toes	96	46.4
• Arm	89	43
• Fingers	80	38.6
• Head	73	35.3
• Chest	62	30
• Legs	59	28.5
• Waist	51	24.6
• Perineum	50	24.2
• Thigh	48	23.2
• Forearm	47	22.7
• Buttock	44	21.3
• Arm	89	43
• Hands	37	17.9
• Face	36	17.4
• Feet	35	16.9

 # More than one answer was given

It was noticed from the table that, the most common body parts affected by pruritus are abdomen 49.8%, back 48.3%, toes 46.4%, arm 43%, fingers 38.6% and head 35.3%.

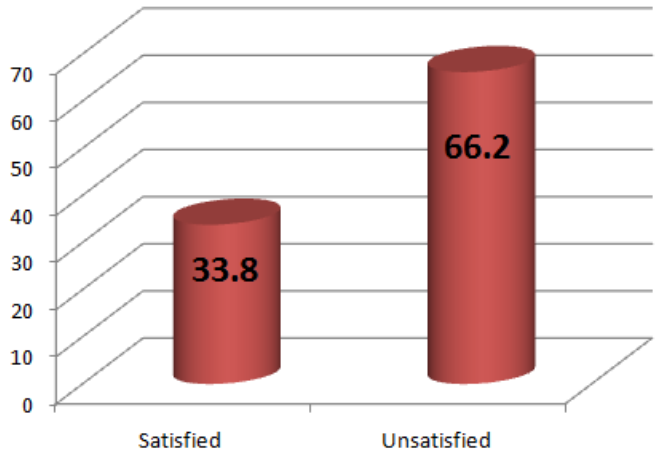


Figure (1): Distribution of elderly patients undergoing hemodialysis according to their quality of life

It was noticed from this figure that, 66.2% of elderly patients undergoing hemodialysis were unsatisfied with their quality of life. While, 33.8% reported satisfied quality of life.

Figure 2: Correlation between pruritus characteristics & quality of life of elderly patients undergoing hemodialysis.

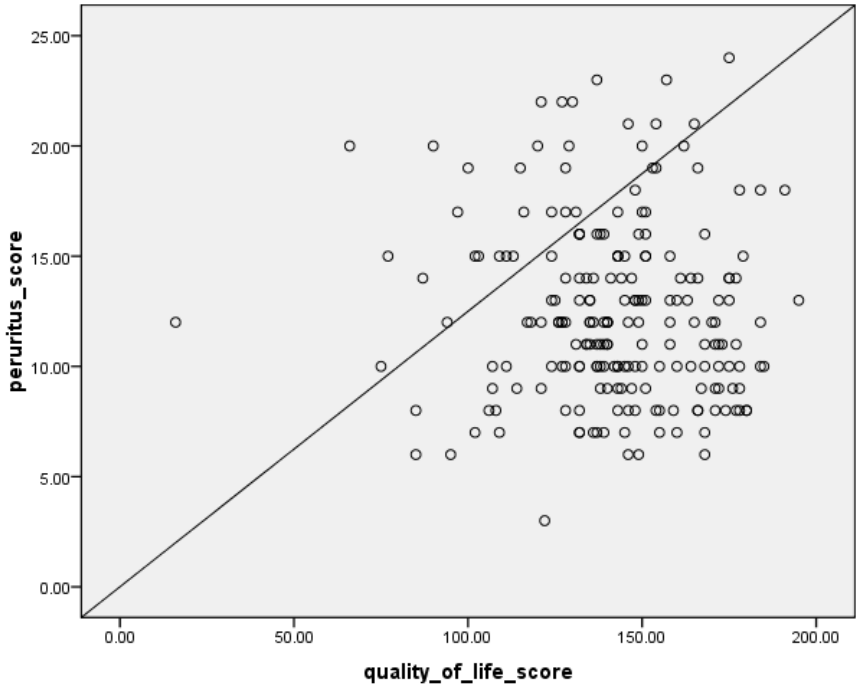


Figure 2 Simple Scatter plot of Quality of life with pruritus

It was observed from this figure that, there was a weak negative correlation between quality of life & pruritus(r = -0.026 & P =0.710).

VI. Discussion

Hemodialysis(HD) is the main renal replacement therapy used in the elderly requiring dialysis **(U.S. Renal Data System, 2013)** and pruritus caused by renal failure, is complex and persistent complication of renal disease in elderly patients with HD that affect their quality of life. It usually occurs about 3–6 months after the start of HD **(Mathur et al 2010).**

Findings of the present study revealed that the majority of the study subjects were at the age of 60 years to less than 74 years with a mean age of 65.106 ± 8.917 years. The increasing mean age of the patients with end stage renal disease reflects 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.

According to sex, the present study results revealed that more than half of elderly patients with hemodialysis (HD) were men. This result is in line with other studies conducted in Chili and Egypt which reported that elderly patients undergoing HD were predominantly males **Guerra-Guerrero et al (2012) & Rabie (2015).** About two fifth of elderly patients were illiterate that is in the same line with **(Bahgat, 2013)** who reported that more than half of the study subjects were illiterate. This finding may be explained by the fact that elderly of today had fewer opportunities for education in the past.

In relation to place of residence, the study showed that two thirds of elderly patients lives in rural areas, that is supported by a study done by **Stanifer et al (2014)** in sub-Saharan Africa who found that chronic renal disease seems to be more prevalent in rural regions compared to urban settings. High prevalence detected in rural regions may be related to decreased awareness for risk factors of chronic renal failure in rural areas.

In relation to economic status, slightly less than three fifths of the study subjects didn't have enough income. This finding is agreement with a study done by **Abd El Hafeez (2014**) in Egypt who reported that, more than half of the hemodialysis patients experienced financial problems.

The present study results revealed that, more than one third of elderly patients undergoing hemodialysis complained hypertension followed by diabetes mellitus. This finding is supported by studies conducted by **Nisar**

et al (2017) ***& Zahran (2011)*** in Pakistan and Egypt respectively. While, the reports from the United States Renal Data System (USRDS) showed that diabetes mellitus was the leading cause of end stage renal disease ***(USRDS, 2013) & (USRDS, 2012)***.

In relation to numbers of hemodialysis (HD) sessions per week it was observed that more than four fifths of elderly patients undergoing HD were scheduled for HD three sessions per week. This finding agrees with a study conducted by **El Ariny (2014)** in Egypt who found that, the majority of elderly patients with HD had three sessions per week. While, this finding is on contrast with another study conducted in Egypt by **Mohamed (2014)** who found that the majority of elderly patients with HD had two sessions per week.

In relation to associated diseases undergoing hemodialysis, about half of HD elderly patients have cardio vascular disease such as hypertension in this study subjects, this finding is congruent with astudy performed in Turkey by ***Karadag et al (2013)*** who reported that, more than three quarters of HD patients had other chronic diseases besides chronic renal failure.

Uremic pruritus is a distressing complication that has a negative impact on the quality of life for dialysis patients **Szepietowski (2011)**. Based on our study it could be suggested that at the last two weeks about less than half of the study subjects of elderly patients undergoing hemodialysis suffered from pruritus for less than 6 hours and more than one quarter of sample suffered pruritic episode within 6-12 hours a day but our study couldn't determine if these hours where at any time of the day (at night or varied during day) ,while, a study done in Turkey by **Malekmakan et al (2013)** found that, in these patients, pruritus occurred more during hours of night in half of patients with HD. Indeed, severe UP has been reported to occur more often at several hours of night (**Snit et al, 2013).**

As for severity of pruritus the study finding revealed that at the last two weeks more than two fifth, more than one third and less than one fifth of elderly patients with hemodialysis had mild, moderate and severe pruritus respectively. This result is in agreement with other several studies **Li et al (2015) & Tessari et al (2009) & Pisoni et al (2006).** In contrast with this study, a study done in Iran by **Akhyani et al (2005),** who reported that, severe pruritus was found in elderly patients with HD in less than two fifth , moderate in less than one fifth, and mild in more than half of pruritic patients. This reflects the fact that the subjective nature of pruritus makes its assessment difficult and the evaluation of pruritus is therefore an intricate task for clinical investigators.

Concerning effect of pruritus on ability of elderly patients undergoing hemodialysis (HD) the present study revealed that, more than half of the study subjects are mainly affected by pruritus causing negative effect on their sleep at the last two weeks. This can be explained by the fact that pruritus can cause disturbance and insomnia coming from irritation and skin itchiness which has negative effects on QOL beyond discomfort, lesions on the skin and bleeding.

Regarding distribution of pruritus on body parts our study cleared that the most common body parts affected by pruritus are abdomen, back, toes, arm, fingers and head. This result is in contrast with another study conducted in Shiraz dialysis centers by **Malekmakan et al (2013)** who found that the most common sites affected by itching was limbs then, abdomen, head and neck. This can explain the fact that pruritus may affect whole body parts not one organ and this increases hemodialysis nurses burdens in assessment process and optimizing proper management.

Quality of life is becoming an important outcome measure after the initiation of renal replacement therapies **(Sathvik, 2008).** In this study, it was figured out that, two thirds of elderly patients undergoing hemodialysis (HD) were unsatisfied with their QOL while one third of study sample reported satisfied QOL. This finding is in line with a study conducted in Philadelphia by **Rosas et al (2003)** and another study conducted in China by **Zhang and Liu (2001)** who found that many of elderly patients with HD were dissatisfied with their life and perceived a low level of QOL. This can be explained by the fact that elderly patients with HD often had negative feelings such as anxiety, depression, hopelessness and most of them felt that they were a burden to their families.

Concerning correlation between pruritus and quality of life (QOL) the present study findings showed that there was a weak negative correlation between pruritus and QOL. This finding is in the same line with other studies conducted in Japan by **Li et al (2015)** and another study performed by **Mathur et al (2010)** who found correlations existing between pruritus, sleep quality, and depressive symptoms in dialysis patients. So, hemodialysis nurses who deal with elderly patients must be taught that proper assessment, timely follow-up and evaluations of pruritus is essential to the care of patients.

VII. Conclusion

The findings of the present study highlighted that about half of the studied elderly patients undergoing hemodialysis suffered from pruritus for less than 6 hours and one third of elderly patients described pruritus as rarely delay sleep , more than two fifth of elderly patients undergoing hemodialysis had mild pruritus and more than one third of elderly hemodialysis patients had moderate pruritus. The most common body parts affected by

pruritus were abdomen, back, toes and arms. Also, two thirds of elderly patients undergoing hemodialysis were unsatisfied with their quality of life. Moreover, it was observed that there was a weak negative correlation between quality of life & pruritus characteristics.

Recommendations

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

- Designing a booklet about interventions that can be tailored to meet elderly patient's needs at hemodialysis unit.
- Further research is needed to study the associated factors with pruritus in hemodialysis elderly patients.

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