

# Hemodialysis Patients Needs Priorities According to Maslows' Hierarchy and Quality of Life

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## Abstract

**Background:** Patients on hemodialysis (HD) therapy increased suffering related to comorbidities, the patients' quality of life (QoL) is an important indicator to reflect patients' needs. Maslows' needs classified to five basic needs as physiological, safety, belongingness, esteem and self actualization.

**Methods:** The study was a cross-sectional study including of all the haemodialysis patient who had referred to haemodialysis centers of King Khalid University Hospital, and security Forces Hospital at Saudi Arabia. Data were collected by using a structured interview questionnaire, needs assessment sheet was developed according to Maslows' hierarchy, and the Kidney Disease Quality of Life scale short form (KDQoL SF).

**Results:** The correlation between the total score of QoL turned to be negatively correlated with patient age, dialysis duration, and positively correlated to the level of education in the hemodialysis patients. Conversely, the total needs score is positively correlated to age and negatively correlated with the education level. All these correlations are statistically significant. The strongest correlation is between QoL and age. The best fitting multiple linear regression model explain statistically significant independent predictors of QoL are age, sex, dialysis duration, and total needs score.

**Conclusion:** Measuring quality of life help to consider patients' needs more seriously, this study indicates statistically significant negative correlation, with decreasing total score of QoL as the total needs score increases.

**Keywords:** Hemodialysis; Maslows' needs; Quality of life; Saudi Arabia

## Introduction

End Stage Renal Disease (ESRD) is a growing problem, and most of the dialysis patient experiencing of many problems [1]. As the numbers of patients presenting with ESRD increases; in Saudi Arabia the annual incidence of treated ESRD by dialysis is 107 per million of population (49-163) and the annual prevalence of treated ESRD by dialysis is 405 PMP (97-506). About 10020 (52.8%) patients on maintenance hemodialysis therapy [2].

Gilbertson et al. [3] reported that from 2000 to 2015, the incidence and prevalence rates per million population will increased by 32 and 70%, correspondingly.

ESRD is a progressive, chronic disease that requires nursing and medical interventions that include hemodialysis (HD), peritoneal dialysis (PD) or kidney transplant. Dialysis affects the quality of life, leading to limitations in activities and high level of disability and impairment in functioning status and psychosocial aspects [4].

Patients suffering from ESRD need renal replacement therapy as a substitute for their own kidneys. The Quality of life is one of the important indicators of the effects of medical treatment [5]. Hemodialysis patients experience various problems that may adversely influence their quality of life [6].

Patient can be self caring and they learn to value the autonomy in their own care. However, some are unable to assume the responsibility for self care [7]. Therefore the need for hemodialysis treatment imposes a significant psychological burden on patients, aside from the time commitment, the increased dependence on family members and anxiety [8].

Overwhelmingly the Maslows' needs helps to understand and analysis the hemodialysis patients' needs and giving positive role

models of coping with treatment by normalizing adherence and increasing patients' sense of empowerment to survive.

## Aim of the Study

To Correlate between quality of life and needs of patients on maintenance hemodialysis therapy.

## Hypothesis

When increase the score of quality of life of patient on maintenance hemodialysis therapy the patients' needs decreases.

## Subjects and Methods

### Design and settings

The study was carried out using a cross-sectional descriptive design. The settings included the hemodialysis (HD) Unit of King Khalid University Hospital, King Saud University, and the Security Forces Hospital, Riyadh, Saudi Arabia. The study was conducted between January 2007 and January 2008.

### Patients

A convenience sample of all prevalent HD patients in the

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forementioned settings during the study period was recruited. Patients with neurological problems and severe co-morbidities were excluded. The total number of eligible patients was 100. Their age ranged between 14 and 70 years, with mean (SD) 47.5(13.8) years, with slightly more males to females (53/47). The majority were married (60%), educated (62%), and not working (63%). Family caregivers were mostly spouse (37%) or children (29%). As regard kidney disease, the etiology for ESRD was mostly hypertension and diabetes (44%), followed by glomerulonephritis (30%). The prescribed hemodialysis dose ranged between 0.8 and 2.5 per session, with mean (SD) 1.5(0.3). The duration of dialysis ranged between two and 360 months, with mean (SD) 77.2 (75.5) months.

## Instruments

### Tool I:

1) **Structured interview questionnaire:** This tool was used to collect background data about patients and caregivers

2) **Tool II:** An interview Questionnaire was prepared and administered in to two sections. The first was concerned with patient's basic demographic data, as well as the details of dialysis. The second section consisted of the Kidney Disease Quality of Life scale short form - KDQOL-SF™-1.3 [9].

The study is focuses on particular health-related concerns of individuals with kidney disease, and on dialysis symptoms and/or problems, effects of the kidney disease on daily life, burden of the kidney disease, work status, cognitive function, quality of social interaction, sexual function, social support, dialysis staff encouragement, and patient satisfaction.

The questionnaire consist of 36 items are categorized into six domains, namely: General health, Physical, Emotional, Social status, Illness impact, and Medical and Financial satisfaction [10]. The scoring of the tool responses was done according to the guidelines of the KDQOL-SF™ [9]. It shows that the scoring direction was done and illustrate the higher scores indicate better QoL.

### Tool III:

1) **Needs assessment questionnaire:** This tool was used for assessment of the needs of patients undergoing hemodialysis therapy. According to Maslow's principles, and includes sections divided to physiological, love and belonging needs, self-esteem, and self-actualization. Development of questionnaire to measure the level of satisfaction of the 5 basic needs described by *Maslows A* [11]. The 33 questions are categorized into these five types of needs as the following; physiological needs contains 18 questions, safety and security contain 13 questions, love and belonging contain 3 questions, self esteem contain 4 questions and self actualization contain 2 questions.

## Operational Design

### Preparatory phase and pilot

During this phase, the researcher worked on developing the research tools. Review of the current and past literature related to various aspects of the problem was done using textbooks, scientific journals, and internet. Patients' needs questionnaire was developed according to hierarchy of Maslows' in Arabic version.

Once the tools were ready, they were reviewed by ten experts from different branches, and then pilot-tested. The pilot study was conducted on ten patients to assess clarity and feasibility of the tools, and to estimate the time required to fill them up. Necessary modifications

were done accordingly. Patients in the pilot study were not included in the main study.

## Scoring

The responses to questions were on a 4-point scale: never, sometimes, frequently, always. These were scored from 1 to 4, respectively. Scoring was reversed for negative items. For each category, the scores of the items were summed-up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into a percent score. A high score indicates less need. The scores were then categorized into low need A (>60%), and present (≥60%).

## Ethical Considerations and Human Rights

The study proposal was approved by the ethics committee in King Saud University. Patients were informed about the purpose of the study and about their rights to refuse or withdraw at any time. The study manoeuvres could not entail any harm to participants. Although the tool included sensitive questions about sexual function, total confidentiality of any obtained information was ensured and secured. The study findings would lead to beneficence in terms of improvement of the quality of care rendered to dialysis patients in the study settings.

## Statistical Analysis

Data entry and statistical analysis were done using SPSS 13.0 statistical software package (SPSS Inc., Chicago, Illinois, USA). Quantitative continuous data were compared using the non-parametric Mann-Whitney or Kruskal Wallis tests as normal distribution of the data could not be assumed. Pearson correlation analysis was used for assessment of the relations between QoL scores, age, duration of dialysis, and Spearman rank correlation for educational level. To identify the independent predictors of total QoL score, multiple stepwise backward linear regression analysis was used, and analysis of variance for the full regression models were done. Statistical significance was set at a  $p < 0.05$ .

## Results

The QoL and patients' needs for 100 patients on haemodialysis therapy was measured and the finding drawn as the following; the baseline demographic data are presented in (Table 1).

Table 2 shows statistically significant relation was revealed between QoL and needs as assessed among patient in the study sample ( $p=0.005$ ). However; all the patients with high needs had low QoL (100.0%), compared to 65.9% of those with low needs (Table 3).

The mean+ standard deviation duration of dialysis for our cohort is 77.2+75.5 months (Table 4). The correlation between the total score of QoL (Table 5) turned to be negatively correlated with patient age and dialysis duration, and positively correlated to the level of education. Conversely, the total needs score is positively correlated to age and negatively correlated with the education level. All these correlations are statistically significant. The strongest correlation is between QoL and age.

Multivariate analysis was carried out and demonstrates (Table 6) that the statistically significant independent predictors of QoL are age, sex, dialysis duration, and total needs score. As evident from the  $\beta$  coefficients, age, dialysis duration, and needs score are negative predictors. Also, male sex is a negative predictor, compared to female sex.

As the standardized  $\beta$  coefficients indicate, the strongest predictors

	No.	%	X <sup>2</sup> Test	p-value
Age (years)				
<40	28	28.0		
40-	48	48.0	2.28	0.32
60+	24	24.0		
Range	14.0-70.0			
Mean±SD	47.5±13.8		3.40	0.07
Sex:				
Male	53	53.0		
Female	47	47.30	2.00	0.16
Marital status:				
Single	40	40.0		
Married	60	60.0	2.68	0.10
Job status:				
Working	37	37.0		
Unemployed	63	63.0	6.22	0.01*
Education:				
No formal education	38	38.0		
Basic/intermediate	45	45.0	0.38	0.83
High	17	17.0		
Caregiver:				
Parent	12	12.0		
Spouse	37	37.0		
Sibling	3	3.0		
Children	29	29.0	19.23	0.002*
Self	9	9.0		
Housekeeper	10	10.0		

(\*) Statistically significant at p<0.05

**Table 1:** Socio-demographic characteristics of hemodialysis (n=100).

High needs (score ≤ 60%):	Frequency/percent
Physical	19
Love	4
Safety and security	1
Self-actualization	1
Self-esteem	3
Total needs:	
High (≤60%)	15
Low (<60%)	85

**Table 2:** Needs of hemodialysis patients (n=100).

Quality of life:	Total needs				X <sup>2</sup> Test	p-value
	High		Low			
	No.	%	No.	%		
High (≥60%)	0	0.0	29	34.1		
Low (<60%)	15	100.0	56	65.9	Fisher	0.005*

(\*) Statistically significant at p<0.05

**Table 3:** Relation between quality of life and needs of hemodialysis patients (n=100).

	Hemodialysis (n=100)		X <sup>2</sup> Test	p-value
	No.	%		
Duration of dialysis (months):				
<12	12	12.0		
12-	42	42.0	23.09	<0.001*
60+	46	46.0		
Range	2.0-360.0			
Mean±SD	77.2±75.5		16.11	<0.001*

(\*) Statistically significant at p<0.05

**Table 4:** Duration of dialysis in hemodialysis patients.

	Pearson correlation coefficient (r)	
	QOL score	Needs score
Age	-0.51**	0.41**
Education (reference: illiterate) <sup>®</sup>	0.41**	-0.40**
Dialysis duration	-0.24*	0.05
Weight gain (kg)	0.04	0.06
Dialysis dose	-0.04	-0.03
haemoglobin level	0.02	-0.08
Hematocrit level	0.01	-0.06

(\*) Statistically significant at p<0.05  
 (\*\*) Statistically significant at p<0.01

**Table 5:** Correlation between the scores of quality of life and needs of hemodialysis patients and their socio-demographic and disease characteristics.

	Unstandardized Coefficients		Standardized Coefficients	t-test	p-value
	β	Std. Error			
Constant	35.013	9.112		3.843	<0.001*
Age	-0.347	0.081	-0.349	4.275	<0.001*
Sex (reference: male)	4.819	2.164	0.176	2.227	0.028*
Dialysis duration (months)	-0.045	0.014	-0.245	3.271	0.001*
Needs score	-0.445	0.113	-0.339	3.949	<0.001*

r-square=0.45  
 Model ANOVA: F=21.58, p<0.001-Variables excluded by model: education, job, marital status, dialysis dose, haemoglobin levels, weight gain

**Table 6:** Best fitting linear regression model for the scores of quality of life of hemodialysis patients.

	Unstandardized Coefficients		Standardized Coefficients	t-test	p-value
	β	Std. Error			
Constant	66.678	6.852		9.731	<0.001*
Age	0.259	0.066	0.342	3.910	<0.001*
Sex (reference: male)	-4.189	1.923	-0.201	2.178	0.032*
Dialysis dose	-6.985	3.128	-0.201	2.233	0.028*
Job status (reference: working)	6.144	2.125	0.285	2.892	0.005*

r-square=0.29Model  
 ANOVA: F=11.15, p<0.001  
 Variables excluded by model: education, marital status, dialysis duration, haemoglobin and hematocrit levels, weight gain

**Table 7:** Best fitting linear regression model for the scores of needs of hemodialysis patients.

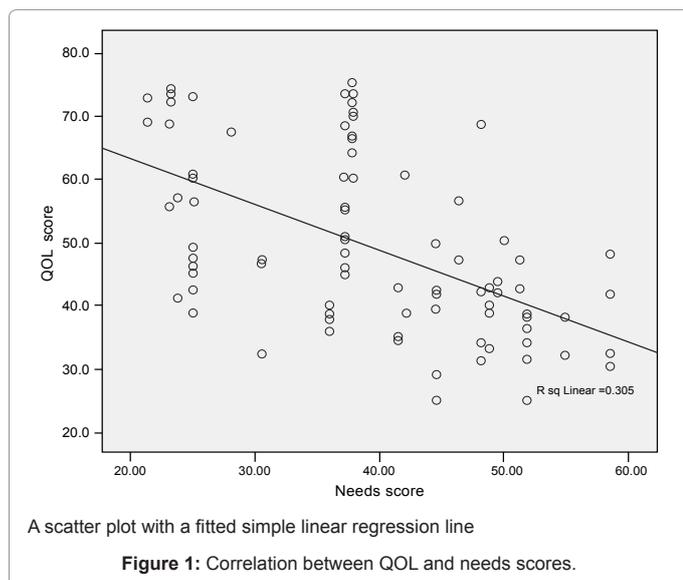
are age and the needs score (Table 7). Finally; the scatter plot indicates a statistically significant negative correlation, with decreasing total score of QoL as the total need score increases (r=-0.55, p<0.01) as demonstrated in (Figure 1).

## Discussion

Chronic kidney disease (CKD) is a worldwide public health problem. Morbidity and mortality rates of the CKD patients on dialysis are elevated [2].

Numerous studies have documented that quality of life in patient undergoing haemodialysis therapy is significantly impaired [12,13]. However; not only the complications associated with hemodialysis such as anaemia, hyperlipidemia, nutritional limitation, renal osteodystrophy and cardiovascular disorders [1]. Can decline the quality of life but the hemodialysis therapy generally leads to immobilization of patients. In addition, social activities, physical performances, and psychological health are affected by dialysis therapy [14].

This national study provides a comprehensive and detailed



description of needs for patient on haemodialysis therapy with using Maslows' hierarchy to tracking the needs so the findings have important implication for nurses and physicians who manage patient with haemodialysis and to improve patients' quality of life.

The present study describe the patients needs and effects on quality of life so the patients with high needs had low quality of life. Dialysis affects the quality of life, leading to limitations in activities and high level of disability [4].

The most important needs reported by the present study is physiological needs; it is consider the highest aspect of needs, nearly to one- fifth of participants complain to physiological needs (19 patients) which is demonstrate the basic patients' needs such as fluid restriction, some elimination problems (constipation), self care deficit related to activity limitations. In conclusion of Thomas et al. focusing that the dietary compliance was observed to be a key factor in improving QoL [1].

The next need in Maslows' hierarchy, the need for safety and psychological aspects. The person needs to feel safe, both in the physical environment and in relationships. The physical safety such as vascular access hygiene is an integral component of haemodialysis care. Ensuring nurses possess sufficient knowledge and utilise recommended guidelines on infection control is essential for safe practice and patient safety [15].

Another physical safety issue is the microbubbles were seen at the bottom of the air trap and could pass the air trap towards the venous line without alarming. The air could pass the venous chamber and, if it passes the safety- system detector for air infusion without triggering an alarm [16]. Once the patient feel unsafe during dialysis session due to alarming and stopping the machine it is consider a disaster and correlate with life threaten. In the present study only one patient feel unsafe this reflects the meticulous nursing care and medical intervention in dialysis unit during sessions.

Medication availability and health assurance are the important aspect, the patient need to feel that medications are available and can found it easy for well being and survival. However the normal haemoglobin level reflects the patients' quality of life so the mean haemoglobin level was observed for our patients undergoing HD who are received Epo-therapy is 11.6 mg/dl. According to similar research

the Epo therapy improve patients' quality of life and associated domains such as physical, social functioning, hobbies and sexual activity ( $p > 0.05$  for each) [17].

Love and belonging are very important issues, the family relationship in Saudi Arabia, culture is showed when the patients in the present study recorded only four patients complain from this issue, it is demonstrate the warmth feeling and collaboration between family members. In similar research the participant suggested eight research priorities, one of this suggestions is improvement in dialysis and caregiver support [18].

The needs for person to feel good about of accomplishment and to achieve that other also hold one in high regard. It gives the individual confidence and independence. The forth human need is self esteem; as mentioned before the culture is also play the important role to draw beliefs and values at Saudi Arabia, only three patients had recoded need to feel self confidence and well accept the achievement and success.

The hemodialysis therapy regimen requiring patients to adapt and to cope with multiple stressors. Stressors can be related to treatment regimen, dietary and fluid restrictions. Psychosocial in nature such as alterations in sexual function, changes in self concept and fear of death. So the coping for individuals with ESRD can be adaptive or maladaptive [19].

Positive emotion is helpful for coping such as the feeling of happiness, relaxation, direct action, problem-focused coping, or positive reappraisal [20]. Coping strategy is turning to religion by hemodialysis patients in Saudi Arabia. The Turkish study described the view the belief as the basic and most important aspect of human life so the belief of affects of coping and it is different from western world [21].

Therefore, patients have learned to 'live with their disease' by developing various coping strategies On the other hand, for dialysis patients, strategies include 'resignation', 'seeing dialysis as a lifesaver' [22].

## Conclusions

The present study highlights on the patients' needs to investigate the issues that affects the hemodialysis patients' quality of life. More research is needed to assess whether interventions to improve coping strategies that will lengthen survival and enhance the quality of life.

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