

Influences on quality of life in peritoneal dialysis patients

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Abstract

Background: Quality of life (QoL) influences the morbidity and mortality in End-Stage Kidney Disease (ESKD) patients on dialysis. Identification of the factors that influence QoL in patients receiving peritoneal dialysis can help in their management to improve the QoL and outcomes for these patients.

Aim of the study: This study was carried out to determine the factors that could predict QoL scores among ESKD patients on peritoneal dialysis.

Methods: This cross-sectional study was conducted in Hemodialysis Units of King Khalid University, King Saud University, and Security Forces Hospitals, Riyadh, Saudi Arabia. 100 peritoneal dialysis patients filled the SF-36 questionnaire form covering 6 domains of QoL, and overall general health. Data analysis was done in terms of scores from 0-100 in each domain. Higher scores indicate better QoL.

Results: The study included 43 males and 57 females. Mean age was 57.0 ± 13.5 years. The duration of dialysis was 34.1 ± 26.9 months. The QoL scores [mean(SD)] were as follows: general health 58.0(9.8), physical role 47.7(23.6), emotional role 61.9(13.5), social function 68(17.5), illness impact 63.9(9.5), and medical and financial satisfaction 68.4(13), with a total of 61.3(12.4). QoL scores had a statistically significantly decreasing trend with increasing age ($p=0.001$). Unemployed and illiterate patients had lower QoL scores ($p=0.03$ and $p=0.001$). No statistically significant relationship could be revealed between QoL score and the duration of dialysis.

Conclusion: The QoL of peritoneal dialysis patients is negatively related to age and is affected by educational level and job status. Special care and support is needed for these patients to ameliorate their QoL, and improve their outcome.

Key Words

peritoneal dialysis, quality of life, end-stage renal disease, Saudi Arabia

by interventions leading to alleviation of symptoms and of the disease. This has been shown in a variety of chronic diseases such as chronic low back pain and homeopathic treatment (Witt et al., 2009), physical activity in Crohn's disease (Crumbrock et al. 2009), and comprehensive anemic care in predialysis chronic kidney disease (Hansen et al, 2009). Moreover, strong correlations were demonstrated between scores of QoL and subjective and objective findings of ESKD patients (Kalantar-Zadeh et al, 2005).

End Stage Kidney Disease (ESKD) is not only a life-threatening chronic condition, but also its management is associated with stressful conditions that might affect patients and their families. However, interventions were tested for alleviation of the psychological and social stresses associated with treatment of ESKD proved to be successful in improving the life of these patients (Auslander and Buchs, 2002).

Therefore, assessment of health related quality of life (HRQoL) could be helpful in monitoring the management of patients with ESKD. It does not just refer to satisfaction with longer survival, but more importantly to enjoying this longer survival with maximum attainable

Introduction

Chronic diseases can alter a patient's life and negatively affect their physical, psychological, mental, social, and spiritual aspects of health. In other words, chronic conditions can have a negative impact on patient's quality of life (QoL). Quality of life has been defined as "individuals'

perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (WHOQOL, 1993). Studies support the relation between various types of chronic diseases and impaired QoL, in addition to QoL improvement

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state of wellbeing (Kalantar-Zadeh et al, 2005). Furthermore, this assessment of QoL could help health care providers in modulation of treatment approaches to respond to identified patient's needs and problems (Barry, 1996; Kutner et al, 2005).

Peritoneal dialysis (PD) is one of the treatment modalities used in ESKD, with lower rates of utilization compared to hemodialysis (HD). It is home-based, and thus the patient is not bound to report frequently to hospital or treatment centers as in HD. Additionally, those patients on PD could be allowed to take rest from PD treatment for one or more days every week, and this has been associated with significant improvement in their QoL (Michiko et al, 2002). Furthermore, Lew and Piraino (2005) found that major depressive symptoms declined among ESKD patients from a predialysis level of 25% to 6% upon start of PD.

The Kidney Disease Quality of Life short form (KDQOL-SF), developed by Hays et al (1994), includes both a generic health status component and a series of kidney disease-targeted QoL domains. Thus, the tool allows assessment of patient's perceived health status as well as concerns about the disease and health condition. It thus reflects the "subjective health status" suggested by Leplège and Hunt (1997) who have also emphasized the importance and legitimacy of patient's perception of outcomes, which should be considered as valid as that of the clinician.

Although much research has been carried out on the QoL of dialysis patients, there is a paucity of such studies in the Kingdom of Saudi Arabia. Therefore, the aim of this study was to evaluate the Kidney Disease Quality of Life short form (KDQOL-SF) for peritoneal dialysis in Saudi Arabia and to identify

the factors affecting it. The study would respond to the research question: what is the level of QoL among PD patients in Saudi Arabia, and what are the factors affecting it?

Subjects and Methods

Design and settings

The study was carried out using a cross-sectional descriptive design. The settings included the hemodialysis Unit of King Khalid University Hospital, King Saud University Hospital, 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 PD patients in the aforementioned setting were recruited into the study, totaling 100 patients. No exclusion criteria were set.

Instruments

An interview form was prepared and included two sections. The first was concerned with patient's basic demographic data, as well as identify who was the main caregiver, and the dialysis duration. The second section consisted of the Kidney Disease Quality of Life scale short form - KDQOL-SFTM-1.3 (Hays et al, 1994). It is disease-targeted and 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 tool has also generic core (Ware et al, 1994) consisting of eight multi-item measures of physical and mental health status.

The same tool was used before at the master and doctorate theses of the researcher and was translated to Arabic (Bayoumi et al, 2002; Bayoumi et al, 2007). The 36 items of the tool are categorized into six domains, namely: General health, Physical, Emotional, Social status, Illness impact, and Medical and Financial satisfaction. The scoring of the tool responses was done according to the guidelines of the KDQOL-SFTM (Hays et al, 1997). A total score of QOL was calculated as suggested by Sadeghieh-Ahari et al (2007). The scoring direction was done so that higher scores indicate better QoL.

Ethical considerations and human rights

The study proposal was approved by the ethics committee in King Saud University. The study maneuvers could not entail any harm to participants. Patients were informed about the purpose of the study and about their rights to refuse or withdraw at any time. 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 peritoneal dialysis patients in the study settings

Data analysis

Data entry and statistical analysis were done using SPSS 13.0 statistical software package (SPSS Inc., Chicago, Illinois). 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. Statistical significance was considered at a p-value <0.05.

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Results

The QoL of 100 patients on peritoneal dialysis for ESKD was measured. Socio-demographic data are illustrated in Table 1. Patients' age ranged between 11 and 79 years, with mean (SD) 51.0(13.5) years. There were slightly more females. The majority were married, educated, and not working. Concerning patients' family caregivers, the children were the caregiver in slightly less than half of cases (41%), and spouse in about one-fourth (22%). Regarding the QoL scores, Table 2 shows that the highest scores, indicating better QoL were in social medical and financial satisfaction domains. Conversely, the physical domain had the lowest score, indicating the poorest QoL.

Examination of the relation between total QoL scores and patients and disease characteristics revealed statistically significant associations with age ($p < 0.001$), job status ($p = 0.03$), and education ($p < 0.001$). As Table 3 demonstrates, the QOL score has a decreasing trend with increasing age, and with decreasing level of education, and is higher for working patients, compared to the unemployed. It is also noticed that the mean total QoL score is higher when the respondent is the patient him/herself. No statistically significant relation could be revealed between years on dialysis and QOL.

Discussion

Chronic renal disease is increasing in prevalence, especially in developing countries. Dialysis remains the mainstay in management, until kidney transplantation is available. Patients in dialysis are confronted with many stressful conditions associated with their treatment that may jeopardize their QoL. Hence, measurement of the QoL of these patients is warranted, and this can help in developing new interventions that can improve QoL (Kimmel and Patel, 2006).

Table 1. Socio-demographic characteristics of peritoneal dialysis patients (n=100)

Demographic data	No.
Age (years)	
<40	19
40-<60	53
60+	28
Range	11-79
Mean(SD)	51(13.5)
Sex:	
Male	43
Female	57
Marital status:	
Single	29
Married	71
Job status:	
Working	21
Housewife/student/not working	79
Education:	
No formal education	34
Primary/preparatory/college	47
University	19
Respondent:	
Parent	3
Spouse	22
Sibling	4
Children	41
Self	24
Other caregiver	6

Table 2. Quality of life scores of peritoneal dialysis patients (n=100)

QoL Domains	Mean(SD)	Median	Interquartile Range
General health	58.0(9.8)	60.00	53.6-62.9
Physical	47.7(23.6)	43.40	26.6-65.8
Emotional	61.9(13.5)	61.30	49.2-73.6
Social	68.0(17.5)	70.30	50.6-82.8
Illness Impact	63.9(9.5)	62.65	56.8-72.6
Medical and Financial satisfaction	68.4(13.0)	65.30	56.0-79.7
Total	61.3(12.4)	62.60	49.4-72.0

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Table 3. Relation between total quality of life score and socio-demographic characteristics of peritoneal dialysis patients

	Mean(SD)	Mann Whitney Z	p-value
Age (years)			
<40	67.7(13.1)		
40-	63.4(11.5)	H=20.31	<0.001
60+	53.0(9.3)		
Sex:			
Male	60.9(12.0)		
Female	61.7(12.8)	0.02	0.90
Marital status:			
Single	61.9(13.8)		
Married	61.1(11.9)	0.01	0.92
Job status:			
Working	66.8(9.0)		
Unemployed	59.9(12.8)	5.01	0.03
Education:			
No formal education	54.1(10.4)		
Basic/intermediate	65.0(12.4)	16.57	<0.001
High	65.2(10.2)		
Respondent:			
Patient	71.5(10.0)		
Other	58.1(11.4)	21.39	<0.001
Duration of dialysis (months):			
<12	63.8(10.5)		
12-	61.0(13.1)	H=0.68	0.71
60+	60.4(11.1)		

(H) *Kruskall Wallis test*

The present study was carried out on a convenience sample of 100 patients with mean duration of dialysis 34.1 ± 26.9 months. The main study findings were that the QoL score was related to patient age and education, with the former having a negative effect, whereas the duration of dialysis had no relation to the QoL score. It was also revealed that the lowest QoL was in the physical domain, whereas the highest was in the social domain. Although these patients could be assumed to be not different from dialysis patients in other centers in the region of Riyadh, or in the Kingdom, generalization of the study findings

should be cautious as the sampling technique used was a non-probability one.

The characteristics of the present study sample are similar to those reported elsewhere. This was evident in regards to mean age and sex distribution (Eryavuz, 2008), as well as the mean length of dialysis treatment (Bilgic et al, 2008; Ginieri-Coccosis et al, 2008).

Patients in the present study had the lowest scores of QoL in the physical domain. The finding is in line with Shrestha et al (2008) whose study demonstrated low QoL scores in the

physical domain among ten ESKD patients on regular continuous ambulatory peritoneal dialysis. Similar findings were also reported by Mittal et al (2001) and Wasserfallen et al (2003).

The highest QoL scores in the present study were in the social domain, which is in agreement with Wu et al. (2004) who attributed the finding that PD was better for finances, and thus had less impact on family and social life. In congruence with this finding, Fan and Sathick (2008) reported that PD patients demonstrated statistically improvements in QoL scores of the social domain after one year of treatment. Although a large percentage of the patients in the present study are unemployed, they mostly do not have financial problems due to subsidies for treatment, in addition to the relatively wealthy community they live in.

Age was found to be a negative predictor of the score of quality of life, suggesting a deterioration of QoL with increasing age. The finding is in agreement with Noojoomi and Afshar (1999) who found a negative correlation between QoL and age. This result might be explained by the increasing responsibilities of patients in older age groups, compared to younger ones, which would lead to more depression and frustration. In fact, depression has been reported as the most widely acknowledged psychosocial factor seen in patients with chronic kidney disease (Einwohner et al, 2004). Therefore, it was recommended that serial and simple measures of both depression and QoL should be obtained routinely in all PD patients (Lew and Piraino, 2005).

According to the present study findings, the duration of dialysis had no statistically significant relation to QoL scores. This was noticed even after adjustment for the confounding effect of age. The finding is in congruence with Ginieri-

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Coccosis et al (2008) who reported that the differences in QoL between patients who recently commenced and those on long-term PD treatment were not significant. On the other hand, Fan and Sathick (2008) found that PD patients and their caregivers had low QoL at the start of dialysis, but the scores of all QoL domains improved after one year. Similar findings were also reported by Wu et al. (2004). The discrepancy between these last two studies and the present one might be explained by the use of a cross-sectional design and prevalent cases in our study, which would not allow assessment of changes in QoL scores prospectively, in addition to differences in study contexts.

In our study, the educational level had a statistically significant relation to the QoL score. Education would make patients more able to cope with chronic diseases, and thus would have a positive effect on their QoL. Nevertheless, unemployment is high among ESKD patients even after successful transplantation, and this would have serious effects on their social and financial life particularly if they are the primary source of financial income (Fitts et al, 1999; Niven, 2000, Painter et al, 2000). Therefore, this issue needs further research.

No difference of statistical significance could be detected between male and female patients of the present study regarding their QoL scores. Although this finding is in congruence with Wasserfallen et al (2003), it contradicts a number of previous studies (Harris et al, 1993; Rebbollo et al, 1998, Turner-Musa et al, 1999) where female gender was associated with lower QoL scores. This difference was attributed to women's multiple domestic tasks and responsibilities that, unlike men, they can circumvent. In further explanation, Courtenay et al (2000) and George (2001) claimed that factors such as

perceived social support and reliance on religion and spirituality may influence health outlook more for women than for men. Men and women may attribute different values to elements of health, such as physical strength or the impact of health on independence or what it means to feel "good" (Leplège and Hunt, 1997). Therefore, Bakeweel et al (2002) recommended that further studies of QoL and gender were needed to analyze more qualitative issues that affect it such as family dynamics, coping mechanisms, as well as, educational and social factors.

Lastly, it was found that the QoL scores reported by patients themselves were significantly higher than those reported by caregivers. Analysis of the data revealed that patients who did not respond by themselves were at both extremes of age and were less educated. This could explain why responding patients had higher QoL. Another possible explanation could be the bias of underestimation of QoL of patients by their caregivers. This issue needs further investigation.

Finally, interpretation of the study findings should be in the light of two main limitations. One is the non-probability sampling method used and its on inference and generalization of the obtained data. The second limitation pertains to the data collection tool used, which was face and content validated only through experts' opinions after translation. This also points to the need for validation of the translated tool.

Conclusion and Recommendations

The study findings suggest a negative independent effect of age on QoL scores in peritoneal dialysis patients with end-stage kidney disease, while the level of education had a positive effect. The study could not detect any effect of the duration of dialysis, which could be

attributed to the limitations of the cross-sectional design used. The implication of the study is that more attention should be given to older age and uneducated patients to help them cope with their disease and life changes. Further research is needed to assess the changes in QoL scores throughout peritoneal dialysis treatment.

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