

## Quality of life during hemodialysis and study dialysis treatment in patients referred to teaching hospitals in Urmia-Iran in 2007

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### Abstract

**Background:** Quality of life (QOL) assessment in patients on chronic Hemodialysis (HD) or peritoneal dialysis (PD) has rarely been carried out. The aim of this study was to assess the quality of life during hemodialysis and peritoneal dialysis treatment in patients referred to teaching hospitals in Urmia, Iran.

**Methods:** All chronic HD and PD patients in Taleghani and Imam Khomeini Teaching Hospitals in Urmia were requested to fill in the validated with a health-related quality-of-life SF36 questionnaire for assessing health status in five dimensions and on a visual analogue scale, allowing computation of a predicted QOL value to be compared.

**Results:** Of the 558 questionnaires distributed to chronic HD patients, 455 were returned (response rate 82%). Fifty out of 64 PD patients (78%) returned the questionnaires. The two groups were similar in age, gender and duration of dialysis treatment. Mean QOL was rated at 60±18 for HD and 61±19 for PD, for a mean predicted QOL value of 62±30 and 58±32 respectively. Results of the five dimensions were similar in both groups, except for a greater restriction in usual activities for PD patients ( $p=0.007$ ). The highest scores were recorded for self-care, with 71% HD and 74% PD patients reporting no limitation, and the lowest scores for usual activities, with 14% HD and 23% PD patients reporting severe limitation. Experiencing pain/discomfort (for HD and PD) or anxiety/depression (for PD) had the highest impact on QOL.

**Conclusion:** The results show that QOL on PD was better, but such studies have not been performed in various areas in Iran and the results may be different because of the involvement of many factors such as geographical, socioeconomic and cultural items. More studies are required to verify the value of the SF36 measurements in predicting the clinical condition of patients with ESRD and their outcomes.

**Keywords:** Chronic renal failure, Hemodialysis, Peritoneal dialysis, Quality of life.

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It is now widely accepted that health-related quality of life is an important outcome of health care and one on which patients based their treatment decisions. It is a multidimensional concept that includes physical social and role functioning, mental health, and general health perceptions (1). In studies of specific conditions, it has become common to measure aspects of quality of life typically affected by the condition and its treatments in addition to general QOL (2). Quality of life measurements are based on a patient's subjective sense of well-being and are commonly used as an important clinical measure for beneficial extent of medical treatments for patients. However, the association between this somewhat subjective outcome and other more objective measures, such as mortality and hospitalization, has not been well studied in these individuals (3). Health economic studies may use quality of life as an indicator of the benefit and utility of certain interventions (such as medical and surgical therapies). Moreover, research on quality of life is also an issue in clinical practice (4).

In recent decades, kidney replacement therapy such as hemodialysis, peritoneal dialysis, and kidney transplantation have lengthened the life of many patients with end-stage renal disease (5).

The very long waiting list for transplantation, most patients with ESRD will require some form of dialysis during their lifetime. Ever since peritoneal dialysis (PD) was introduced as a renal replacement therapy in the mid-1970s, its efficacy and complications have been compared with those of hemodialysis (HD).

The majority of earlier investigations showed that PD was as effective as HD (6). ESRD is a progressive, debilitating, chronic illness that requires nursing and medical interventions that include dialysis, education on lifestyle alterations, dietary, and fluid restrictions. The disease also affects body image because of edema and the presence of arteriovenous fistulae or a central venous catheter. The disease can have an impact on patients' quality of life, potentially affecting their physical and mental health, functional status, independence, general well-being, personal relationships and social functioning (7).

The short form health survey with 36 questions (SF36) is a well-documented scoring system that has been widely used and validated as a quality of life assessment tool for the general population as well as patients on MHD /. It is used both as a stand-alone measurement of quality of life and as a core component of several major assessment tools, including the kidney disease quality of life survey instruments (8). The aim of this study was to determine the patient and technique survival, and the quality of life in patients on PD vs. HD in patients referred to teaching hospitals in Urmia-Iran.

## Methods

This is a descriptive, cross-sectional and analytical study. It was performed to determine the comparison of quality of life in hemodialysis and peritoneal dialysis patients. The study participants included 455 patients who were undergoing hemodialysis and peritoneal dialysis. Inclusion criteria were: age 15-65 years; educational level;

hemodialysis or peritoneal dialysis 3 times a week a duration of about six months. Exclusion criteria were: any illness or malignancy. The selected patients were asked to complete the research scales of the days that they came to the hospital for dialysis. They completed their scales of days where they came either to the clinic or to the nephrologist's office. The SF36, a short-form Quality of life scoring system with 36 items, is a self-administered questionnaire that was constructed to fill the gap between much more lengthy surveys and relatively coarse single-item measures of the quality of life.

It consists of 36 questions, 35 of which are compressed into eight multi-item scales: 1) physical functioning is a ten-question scale that captures abilities to deal with the physical requirement of life, such as attending to personal needs, walking, and flexibility; 2) role-physical is a four-item scale that evaluates the extent to which physical capabilities limit activity; 3) bodily pain is a two-item scale that evaluates the perceived amount of pain experienced during the previous 4 wk and the extent to which that pain interfered with normal work activities; 4) general health is a five-item scale that evaluates general health in terms of personal perception; 5) vitality is a four-item scale that evaluates feelings of pep, energy, and fatigue; 6) social functioning (SF) is a two-item scale that evaluates the extent and amount of time, if any, that physical health or emotional problems interfered with family, friends, and other social interactions during the previous 4 wk; 7) role-emotional (RE) is a three-item scale that evaluates the extent, if any, to which emotional factors interfere with work or other activities; and 8) mental health is a five-item scale that evaluates feelings principally of anxiety and depression. Hence, in the SF36 scoring system, the scales are assessed quantitatively, each on the basis of answers, two to ten multiple choice questions, and a score between 0 and 100 is then calculated on the basis of well-defined guidelines, with a higher score indicating a better state of health. We calculated SF-36 domain scores ranging from 0 to 100 according to published guidelines (9).

In addition to the SF-36, a visual analogue scale (0-5) was used to gather socio-demographic and health data

(physical health renal transplant and hemodialysis information expectation levels) using a 10-item multiple-choice questionnaire, which was constructed for this study (10). The scales of SF36 were summarized into two dimensions. The first five scales made up the "physical health" dimension, and the last five form the "mental health" dimension. The scales vitality and general health were parts of both dimensions. Hence, each dimension included three specific and two overlapping scales. The SF36 also included a question about self-evaluation of change in health during the past year (reported health) that did not belong to any score or dimension or the total SF36 score (11). The scores of the two dimensions and the total SF36 score were based on mathematical averaging of the scale components.

To perform the SF36 measurements in our patients, we reformatted the questionnaire into a more user-friendly style without modifying the content of the original questions or their answers. We also translated the SF36 into Persian language for our patients. All participating patients were able to answer the SF36 questions independently within 7 to 25 mins.

While undergoing hemodialysis treatment. They completed and corrected the inappropriately answered questions after their SF36 forms were handed back to them the same day or the next dialysis session. No patient complained with regard to the clarity, relevance, or other aspects of the SF36 questions or its format. The study process was approved by the university and local hospital medical Ethics Committee. In accordance with the standard ethical procedures, the patients were informed that participation was entirely voluntary and would not affect their future treatment. They were assured of full confidentiality and anonymity. The data collectors were available to the patients and their families to discuss the study and answer any concerns expressed.

The statistical package for social sciences (SPSS) was used for statistical analysis in this study. In comparing the groups, the chi-square tests for categorical variables, and the t-test variables, were used. The statistical significance was set at  $p < 0.05$ .

## Results

From the 558 questionnaires distributed to chronic HD patients, 455 were returned (response rate 82%). Fifty of the 64 PD patients (78%) returned the questionnaire. One hundred sixty nine patients were included in the study, 78 (60%) were female and 19 (52.7%) were female in HD and PD patients, respectively. There were 130 patients (52 male, 78 female) in the hemodialysis group, with the mean age of  $38.83 \pm 8.65$  years. In the PD group, there were 36 patients (17 male, 19 female), with mean age of  $38.36 \pm 7.3$  years. In this study, the two groups were nearly similar and there were no significant differences between HD patients and renal PD patients regarding their age, gender, level of education. However, there was a statistically significant difference in marital status between the two groups ( $p < 0.05$ ), although the majority of them in both groups were married and unemployed. The most common chronic disease in both groups was hypertension, followed by diabetes. Other diseases included heart failure, and GI diseases. The two groups were nearly similar in age, gender and duration of dialysis treatment. Mean Quality of life was rated at  $55 \pm 25\%$  for HD and  $56 \pm 39$  for PD, for a mean predicted Quality of life value of  $56 \pm 14$  and  $52 \pm 28$ , respectively. The results of the five dimensions were similar in both groups, except for a greater restriction in usual activities for PD patients ( $p = 0.05$ ). The highest scores were recorded for self-care, with 45% HD and 49% PD patients reporting no limitation, and the lowest scores for usual activities, with 8% HD and 17% PD patients reporting severe limitation. Experiencing pain/discomfort (for HD and PD) or anxiety/depression (for PD) had the highest impact on quality of life. The SF-36 scores revealed no statistically significant differences ( $p < 0.05$ ) between the PD and the HD groups in all domains, with PD patients reported higher quality of life scores in psychological domain than hemodialysis patients and HD patients reported higher quality of life scores in physical domain than PD patients. However, some significant differences in some aspects of social functioning were observed between the groups: bodily pain and discomfort, positive feeling, and activities of daily living.

## Discussion

This study showed that the generic Quality of life instrument EQ-5D applied to chronic dialysis was well-accepted, easy to use and responsive for both HD and PD patients. Quality of life was substantially diminished in both dialysis modalities, to a degree similar to that described in prior studies (3,8,10). Patients' characteristics, such as gender, age and duration of treatment had no impact on these results. On the other hand, their health status changed over the last 12 months explained 14 and 29% of the variation in measured Quality of life for HD and PD patients, respectively. There was a 10 and a 16% decrease in Quality of life for HD and PD patients for a decrease of one level in the health status over the prior 12 months. The central characteristics such as size, response rate, teaching status or type of funding were not related to the results either in HD or PD patients.

The EQ-5D instrument measures health states along five components reflecting physical, functional and mental dimensions. Altogether, these five dimensions explained a third and half of the observed variance in Quality of life in HD and PD patients, respectively. Four of these five dimensions were statistically significant in HD patients, and two of them in PD patients. Interestingly, the dimensions associated with the highest variation in Quality of life dealt with pain/discomfort and anxiety/depression in both treatment modalities. The prevalence of depression in our population of dialysis patients was similar to the one described in prior studies (1). Although substantial individual variation exist, as reflected by the wide 95% confidence interval this finding is of particular interest and should attract the attention of physicians because a specific treatment is available. If successful, it would be on the average improving the quality of life of these patients by 10–20%. This finding might also explain why a study using the index score of Spitzer (8) found that variance in response was not explained by case-mix variations only, which usually do not include these variables. Thus, pain/discomfort and anxiety/depression might deserve special attention, because they are not always part of the routine clinical assessment.

PD is often presented as the easier and less cumbersome dialysis modality, but is used for a minority of patients. Even if the majority of our PD patients performed automated PD, our results showed that they reported a severe impairment in their usual activities, which was greater than the one described by HD patients. This surprising factor should be kept in mind when information about dialysis modalities is presented to patients with ESRF.

Another interesting finding was that, no major difference was recorded between the different dialysis centres to measure or predict Quality of life, or even in the differences between these two measures. This result is not consistent with the findings by Mozes et al. (8), who noted differences between dialysis centres, which were not explained by the differences in case-mix only. The small size of our centres might explain these discrepant results.

Although the mean measured and predicted values were similar for the whole population, individual correlation between them was low ( $r=0.197$ ). This finding has already been described when the EQ-5D was used in other settings, such as chronic disorders (rheumatoid arthritis, osteoarthritis of the knee) or intensive care stays, or acute conditions such as AIDS. Several explanations have been proposed: first, different raters assign different values to the same health state, and consequently have different preferences for these health states (12); secondly, the predicted values are derived from studies on the general population, whereas, the values measured on 'thermometer' scale reflect the opinion of the patient. If they suffer from chronic diseases, they are likely to alter their expectations and goals to cope with their limitations (13). This might explain why results on patients with chronic diseases were consistent between them and not with those observed on survivors of intensive care hospitalization. Finally, the EQ-5D dimensions were recorded on a three-point scale, which might force responses to the mid-range category, as few patients endorse the 'severe' value, and some limitation was often present, which diverts the answer away from the 'no limitation' value (14). A comparison of the EQ-5D 'thermometer' scale results with those obtained on a five-point rating scale showed results

consistent with this hypothesis (15). On the other hand, such a limitation of the EQ-5D instrument could be viewed as an advantage in itself, as it allowed deriving preferences of both the patients and the general population at the same time, and thus, offered the two most useful perspectives to incorporate into other studies assessing the impact of diagnostic or therapeutic procedures, such as economic analysis for example.

Our study had also limitations. First, its cross-sectional design precluded comparison with Quality of life before dialysis, which had been shown to have an important impact (3–5). Secondly, as it was designed to be anonymous, no systematic link could be made with a case-mix variable or with adequacy of dialysis (16), which was found to have an impact on physical and emotional dimensions in a study using the SF-36 questionnaire or on satisfaction with care (17). Thirdly, any comparison between HD and PD should be made with caution, because we did not exclude therapy selection, or differences in quality of life before dialysis (3). Therefore, our findings of a similar decrease in quality of life within the two groups should be put in perspective with the findings of other studies using the SF-36 questionnaire. Merkus et al. showed a favorable effect on physical quality of life over time in HD patients, as compared with PD patients (4), whereas Diaz-Buxo et al. described no difference in HD patients in this dimension, but a higher score for mental processes in PD patients, after adjustment for laboratory tests results (5).

Further studies should assess how the EQ-5D is compared with other generic or disease-specific instruments such as the SF-36 or the KD- Quality of life (6), or to be used as a predictor of poor outcomes (18), mortality and hospitalization (19), as it was shown for the SF-36 questionnaire.

In conclusion, the EQ-5D appeared to be a promising surveillance instrument for HD and PD patients. It showed that ESRF patients experienced low levels of quality of life with both dialysis modalities, but that some characteristics could be better targeted to improve their quality of life. In addition, the very high response rate observed in this study

was encouraging: it indicated that patients were willing to participate in this kind of survey. As a consequence, EQ-5D could be used more frequently by other dialysis centers in our country or abroad, as it was simpler to administer compared with the more widely used SF-36 questionnaire, and could be linked with other kinds of studies, including economic analyses. In conclusion, the results showed that QOL on PD was better, but such studies had not been performed in various areas in Iran and the results might be different because of the involvement of many factors such as geographical, socioeconomic and cultural items. More studies were required to verify the value of the SF36 measurements in predicting the clinical condition of patients with ESRD and their outcomes.

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