Quality of Life of Patients undergoing
Haemodialysis at B.P. Koirala Insitiute of Health Sciences

Abstract

The quality of life (QOL) needs to be regularly assessed in haemodialysis (HD) setting. Our study describes QOL as well as demographic and clinical variables associated with QOL in Nepalese patients undergoing HD. A descriptive, cross-sectional study was conducted to measure the QOL and association of selected variables with quality of life in haemodialysis patients at BPKIHS. Fifty patients were chosen by purposive sampling technique.

The study results showed that median percentage of physical component summary score (PCS) was 50 (37-75) and mental component summary (MCS) was 56 (46.5-65.5). The lowest score was achieved in the vitality domain i.e. 40(30-52.5) and the highest ones in social functioning domain was 70 (60-75). This study identified various variables that affect the dimensions of QOL in patients undergoing HD and thus would assist in guiding healthcare professionals to focus on these variables so as to improve their overall QOL.

VK Anu*, Parajuli Pushpa*, Sharma Sanjib Kumar**

* College of Nursing, B.P. Koirala Institute of Health Sciences, Dharan, Nepal
** Department of Internal Medicine, B P Koirala Institute of Health Sciences Dharan, Nepal
Corresponding Author: College of Nursing, B.P. Koirala Institute of Health Sciences, Dharan, Nepal
email:

Introduction

The quality of life (QOL) is an important predictor of outcome in end-stage renal disease (ESRD) patient undergoing haemodialysis (HD). In recent years, kidney related health problems have been emerging as a majorpublic health problem in Nepal which, in fact, does not discriminate anyone on the basis of his/her economic or social or professional status. Kidney care experts believe that approximately 2600 new ESRD patients are added every year in Nepal [1]. Limited expertise and growing burden of kidney failure is major concern for resource poor country like Nepal. The development of the disease like kidney failure affects QOL, potentially influencing physical and mental health, functional status, independence, general well being, personal relationship and social functioning. A description of a person's QOL should not reflect the opinions of health professionals or family members. It is neither concerned with the objective measurement of the symptoms and disability. QOL measures the individual's subjective perception of his functioning and well being in his/her day today living. Generally, in relation to health care, QOL is viewed as a multi dimensional concept which encompasses physical, psychological and social functioning and well being [2, 3]. World Health Organization has defined "QOL" as individuals' perceptions of their position in life in the context of the culture and value systems where they live and in relation to their goals, expectations, standards and concerns [3]. The QOL of ESRD is often overlooked by healthcare provider. However, it is a critical issue of overall medical care.

Among the eight nephrology centers of Nepal, B.P. Koirala Institute of Health Science (BPKIHS) is the only HD center in eastern Nepal since 2002 A.D. where the study like this would serve as an initial step

towards the investigation of the concept of QOL in patients undergoing HD.

Adding life to years and not just years to life is as true for HD patients as for any other individuals. So, QOL should be regularly assessed as it is an important predictor of mortality and hospitalizationamong HD patients. And interventions should be carried out to increase it. Apart from the economics burden and psychological stress due to chronic disease experienced by patients on HD, a unique kind of stressor in these population is not shared by others with different disease is the presence of a fistula, graft or catheter used to provide access to the circulatory system and a sense of dependent on machine.Among the several generic questionnaires available, the Short Form 36 Items Health Survey (SF-36) was translated and validated [4, 5] in several languages and applied to different settings [6] and disease.

To the best of our knowledge, there is no study in Nepal which is addressing this issue. In this regard, although it's a small scale exploratory study, but an initial step towards the investigation of the concept of QOL in Nepalese culture, while using a promising assessment tool SF-36.

Material and method

A cross sectional descriptive study was undertaken to assess the QOL of patients undergoing HD at dialysis unit of BPKIHS, using SF-36. Participants

A purposive sampling technique was used and the recruitment criteria included patients on maintenance HD for at least one month and giving full informed consent. Patients were excluded if they were in a vulnerable patients group i.e. critically ill or mentally ill and those who couldn't verbalize their feelings. Instruments

The instruments consist of two sections:-

Section A: - Socio-demographic
Section B: - Questions related to QOL of patients undergoing HD based on modified 36-item Short Form Health survey Questionnaire (SF-36). SF-36 was used to assess eight domains of the QOL: physical functioning, social functioning, role-functioning emotional, role-functioning physical, vitality, bodily pain, mental health and general health perceptions. Two summary scores were obtained: one for the physical component (physical functioning, role-functioning emotional, role-functioning physical and general health perceptions) and one for the mental component (social functioning, vitality, bodily pain and mental health).

Data collection

A list of patients on maintenance HD was obtained from the dialysis record book. Data was collected by the investigator herself using semi-structured interview that is based on SF-36 questionnaire. Data was collected in the dialysis unit of BPKIHS.

Ethical considerations

Permission was obtained from the concerned authority of the hospital where the study took place. Verbal consent was obtained from each respondent. Respondents were assured of the confidentiality of their information. Confidentiality of the data was maintained and used for only research purpose.

Data analysis

Statistical analysis was performed with SPSS 11.5 for windows. Descriptive statistics i.e. percentage, frequency, median and inter-quartile range were used to describe the socio-demographic, clinical and other related variables. Inferential statistics i.e. Mann-Whitney U test and Kruskal Wallis H Test were used to assess the relationship between QOL and selected independent variables. The p value was estimated at 95% confidence level and 5% type I error.

Results

Out of the 50 patients enrolled in the study, 36 were male and 14 were female. Majority of the respondents were above 40 years (52%), Hindu (88%), Married (88%), Farmers (36%) and had monthly income range from Rs.5, 000 to Rs.10, 000 (58%). Table 1 refers to the clinical characteristics of the

respondents. The most frequently occurring diagnosis was hypertensive nephropathy (60%), followed by CKD with ESRD secondary to CGN (16%) and Diabetic nephropathy (16%). Twenty eight percentages of the respondents were diagnosed before the six months of their illness. Exactly the half of the respondents was undergoing HD for less than 3 months. Nearly half of the respondents had adequacy of dialysis.

Table 1.Clinical characteristics of the respondents

Clinical variables	Frequency	Percentage
Diagnosis		
CKD with ESRD secondary to CGN	8	16
Hypertensive nephropathy	30	60
Diabetic nephropathy	8	16
Others (obstructive uropathy, carcinoma of bladder, acute polycystic kidney disease)	4	8
Duration of illness (years)		
≤ 0.5	14	28
0.5-1.0	9	18
1.0-1.5	6	12
1.5-2.0	5	10
2.0-2.5	8	16
≥ 2.5	8	16
Duration of HD (months)		
≥ 3	25	50
3-6	7	14
6-9	2	6
9-12	2	4
12-15	9	16
15-18	0	0.0
18-21	0	0.0
21-24	5	10
Adequacy of HD		
Urea reduction ratio =65%	24	48
Urea reduction ratio<65%	26	52

The eight domains (physical functioning, social functioning, role-functioning emotional, role-functioning physical, vitality, bodily pain, mental health and general health perceptions) scores of the SF-36 range from 0 to 100, with 0 representing worst health-related quality of life and 100 representing best health-related quality of life. Respondents overall scores on the SF-36 are displayed in Table 3. The highest score was attained in the social functioning domain i.e. 70 (60-75). The physical functioning scale 52 (43-60) revealed substantial limitation in physical activity. The lowest score was achieved in the vitality scale i.e. 40 (30-52.50), indicating that these patients reported feeling tired and lacking in energy much of the time.

Table 2.Median and inter-quartile range of two dimensions and eight domains of SF-36

Summary scores	Median	Inter-quartile range
Physical component summary	50	37-75
Physical functioning	52	43-60
Role-functioning physical	40	35-60
Role-functioning emotional	40	40-62.50
General health perceptions	50	40-60
Mental component summary	56	46.5-65.5
Social functioning	70	60-75
Vitality	40	30-52.50
Bodily pain	45	40-72.50
Mental health	50	40-65

Higher scores indicate better physical and mental functioning and freedom from pain.

*Domains score range from 0 to 100.

Univariate association between dimensions of QOL and demographic and dialysis characteristics are shown in Table 3 and 4. Of the demographic characteristics, older age, female gender and lower education level were found to be significantly associated with lower quality of life scores (PCS and MCS) with p value less than 0.05. Dialysis characteristics like adequacy of HD and duration of HD were not associated with quality of life.

Table 3. Association between selected respondents characteristics and Physical component summary scale (PCS) of QOL

| Characteristics	Categories	Median (IQR) of PCS	p-value
Age	< 40 years		0.0001*
	>40 years		
Gender	Male	56 (45-62.75)	0.001*
	Female	35 (27.75-49.25)	
Education	Illiterate	41.50 (27.25-48.0)	0.001**
	Primary	40 (32-53.25)	
	Secondary	58 (53-63)	
	Higher secondary	55.50 (42.50-66)	
	Higher education	62 (58.50-62.50)	
Family income per months (Rs.)	<5,000	45 (38-63)	0.903**
	5,000-10,000	50 (37.50-59)	
	>10,000	56 (33-63.50)	
Adequacy of dialysis	Urea reduction ratio =65%	46 (37.25-54.50)	0.096*
	Urea reduction ratio<65%	57 (37.75-63)	
Duration of HD	< 6 months	49 (37-60)	0.871*
	>6 months	53 (39.50-60.50)	

*Mann Whitney U Test. **Krusal Wallis H Test. Key S= Significant, NS= Non Significant.

Table 4. Association between selected respondents characteristics and Mental component summary scale (MCS) of QOL

| Characteristics	Categories	Median (IQR) of PCS	p-value
Age	< 40 years	58 (52-69.50)	0.01*
	>40 years	47 (47-62)	
Gender	Male	58 (49-69.50)	0.001*
	Female	46 (35.75-58)	
Education	Illiterate	46 (33.25-55.25)	0.002**
	Primary	47 (42-60.50)	
	Secondary	65 (55-72)	
	Higher secondary	62.50 (53.50-68.75)	
	Higher education	62 (54.50-83.50)	0.761**
Family income per months (Rs.)	<5,000	52 (45-62)	
	5,000-10,000	57 (47-65)	
	>10,000	63.50 (39.50-73.50)	0.203*
Adequacy of dialysis	Urea reduction ratio =65%	52 (45.50-61.50)	
	Urea reduction ratio<65%	59 (46-67.75)	0.785*
Duration of HD	< 6 months	56 (47-66.50)	
	>6 months	54.50 (44.50-65.25)	

*Mann Whitney U Test.**Krusal Wallis H Test. Key S= Significant, NS= Non Significant

Figure I shows that respondents less than 40 years scores higher in all domains of QOL except General health perception being 50 with that of the respondents aged more than 40 years. Female respondents score lowest in all domains of QOL except role-physical functioning being 40 with that of the male respondents as shown in figure II.
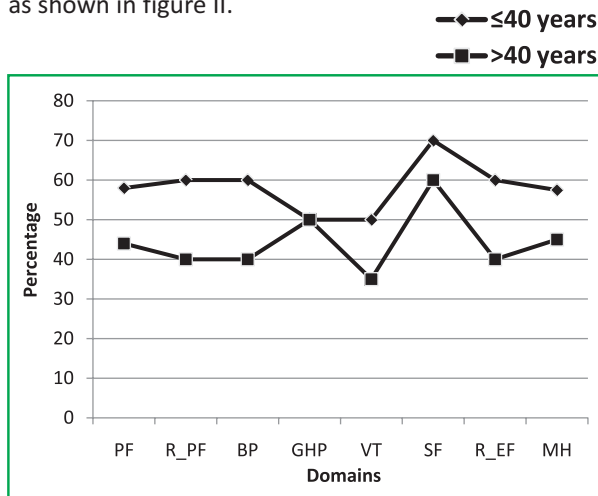
Keys: PF= Physical Functioning; R_PF=Role-Physical Functioning; BP= Bodily Pain; GHP= General Health Perception; VT= Vitality; SF= Social Functioning; R_EF= Role-Emotional Functioning; MH= Mental Health

Figure I. Difference in eight domains of QOL between age groups expressed in median percentage
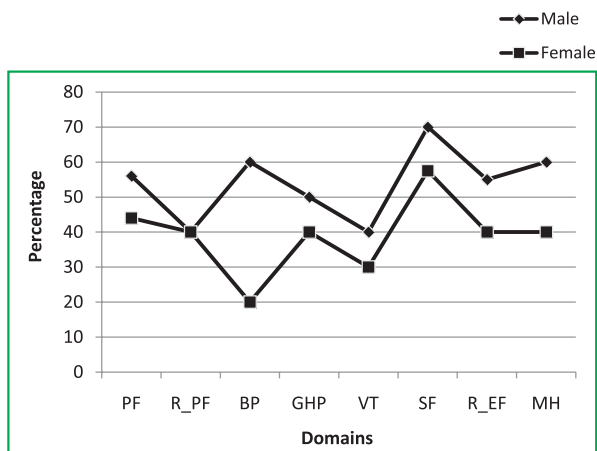
Keys: PF= Physical Functioning; R_PF=Role-Physical Functioning; BP= Bodily Pain; GHP= General Health Perception; VT= Vitality; SF= Social Functioning; R_EF= Role-Emotional Functioning; MH= Mental Health
Figure II. Gender-wise difference in eight domains of QOL expressed in median percentage

Discussion

Majority of the respondents in the study were male (72%), though this may not reflect the true distribution of ESRD in general community as it was a hospital based study. However it still shows that male patients of ESRD seek renal replacement therapy. This reveals the gender disparity in our society in terms of seeking the health care.

The mean age of ESRD patients undergoing HD in most developing countries is much lower, 35-45 years, than that in the developed world, 60-63 years [7, 8]. The reason behind this difference are the delay in detecting renal disease and the failure to institute controlling and preventive renal failure, both of which result in faster deterioration of renal function and progression to ESRD.

Nepal being the predominant Hindu inhabitant may be the reason for about 90% of the subjects following Hindu religion. Five out of 50 respondents had higher education and 24% of the subjects were illiterate. This may be due to the low literacy rate of Nepal.

In contrast to the previous study [9] done in this institute, the most common etiology in this study is hypertensive nephropathy (60%) followed by chronic glomerulonephritis (16%) and diabetic mellitus (16%). This is in accordance with the study [10] done in developing country like India.

The mean duration of HD was 2.5 months; this short duration of HD may be due to the factors like economic constraints and limitations of HD services. Adequacy of dialysis of the patients in the study was calculated by URR (urea reduction ratio). A URR >65% indicates a good adequacy of dialysis and is the recommended cut-off value. And in this study, mean URR was 65.07% indicating borderline adequacy of dialysis. In fact, in the western countries also, the delivered adequacy of the dialysis is generally lower than the recommended one [11]. There are many reasons for this, mainly less duration of HD sessions, poor blood flow rate through the dialyzer and inappropriate dialyzers. Improving the adequacy of the dialysis has shown to improve the QOL of patients with ESRD. This can be achieved by increasing the blood flow rate through the dialyzer (250-500ml/min) and by

increasing the surface area of the dialyzer [9]. Among the so called generic instruments questionnaires, the short Form 36 items health survey because of its comprehensiveness, brevity and high standards of reliability and validity was translated and validated in several countries.6Similarly, it was validated by experts of this institute and translated into Nepali language and then used in the study. The eight domains scores of the SF-36 ranges from 0 to 100, with 0 representing worst health related QOL and 100 representing best health related QOL. The eight domains of SF-36 were compressed into 2 components i.e. physical component summary (PCS) and mental component summary (MCS). Limitations were identified in a number of physical areas including vitality, role functioning-physical and physical functioning. Generally, patients receiving HD reported the least affected dimensions as those associated with social functioning, mental health and general health perception. The strong culture support of familial support in Nepal may be the reason for high QOL with regards to mental health and social interaction. The result of this study is also comparable with those studies conducted in republic of Ireland [12], Romania [13] and descriptive study conducted by S.Sahilendra [9]. The greatest deficit existed for PCS score, indicating that the restriction imposed by HD on the lives of these patients involved their ability to participate in normal daily activities and roles. This can have considerable implication for ability to maintain employment, participate fully in family and community life, thereby potentially altering lifestyles enormously and having psychosocial, employment and financial ramifications. The second objective of this study was to find out the association between QOL and selected variables such as age, gender, education status, adequacy of dialysis and duration of HD.

The study revealed that there was association between dimensions (PCS and MCS) of QOL and age of the patients (p=0.007). Age was found to have a negative correlation with the PCS and MCS of QOL i.e. as the age increases, patients' physical and mental health function decreases. Several other studies [8, 13-16] also goes along with the above findings that the low scores on QOL was related to older age. Regarding the gender factor, female patients were found to have low QOL than those of the male patients (p<0.05). It may be due to the fact that general female population has less physical function as compared to male. Same finding were found in the studies [7, 8, 17] i.e. QOL of women were lower than that compared to men.Similarly, positive association was found between QOL and education status. Possible reason for the findings may be that those patients have better knowledge regarding diseased condition and its management so that they can implicate it on their lives for the better outcomes. The findings contraindicated with the findings of Seica [14] et al where they reported that higher education was associated with lower QOL scores.

Similar to studies done by Merkus [13] and Mingardi [17], we found no association between adequacy of dialysis and dimensions of QOL. In contrast with the study carried out in Ireland [12] revealed that the better dialyzed patients scored significantly lower for only MCS than less well-dialysed patients. We found no association between dimensions of QOL and duration of HD (p>0.05). The finding of Unruh [18] et al showed that shorter duration of HD was associated with lower PCS. According to the study done in the India [19] in 2008 A.D., patients who were on HD for at last 10-12 months reported significantly better QOL scores than did the patients with shorter and longer than 10-12 months duration of maintained HD.

The overall view provided by study findings was that QOL is associated with demographic variables like age, gender and education status. Hence, measures can be focused on the specific areas of life to improve QOL.

Study limitations

The limitations to this study include the small sample size and the use of only one clinical site. Replication using a larger sample from a number of sites with a longitudinal design and better control for extraneous variables is recommended.

Conclusion

The study shows that patients undergoing HD have poor quality of life. Health personnel's aware of this evidence can explore new ways to assess more accurately and identify specific problem areas for individual patients and take action to ameliorate these.

References

1. National kidney center. Health Care Foundation-Nepal. [serial online] 2008 [cited 2009 july 14] Available from: URL://http://www.hecaf.org.np/nkc.htm

2. Al-Arabi S. Quality of life: subjective descriptions of challenges to patients with end stage renal disease.*Nephrol Nurs J*. 2006;33(3):285-92.

3. Testa MA, Simonson DC. Assesment of quality-of-life outcomes. *N Engl J Med*. 1996;334(13):835-40.

4. Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. *Med Care.*1992 Jun;30(6):47383.

5. McHorney CA, Ware JE Jr, Raczek AE. The MOS 36-Item Short-Form Health Survey (SF-36): II. Psychometric and clinical tests of validity in measuring physical and mental health constructs. *Med Care.* 1993;31(3):247-63.

6. Ware JE Jr, Gandek B. Overview of the SF-36 Health Survey and the International Quality of Life Assessment (IQOLA) Project. *J Clin Epidemiol*. 1998;51(11):903-12.

7. Weisbord SD, Fried LF, Arnold RM, Fine MJ, Levenson DJ, Peterson RA, Switzer GE. Prevalence, severity, and importance of physical and emotional symptoms in chronic hemodialysis patients. *J Am SocNephrol*. 2005;16(8):2487-94.

8. Mingardi G, Cornalba L, Cortinovis E, Ruggiata R, Mosconi P, Apolone G. Health-related quality of life in dialysis patients. A report from an Italian study using the SF-36 Health Survey. DIA-QOL Group. Nephrol Dial Transplant. 1999;14(6):150310.

9. Shrestha S. Assessment of QOL of Patients of Chronic Renal Failure attending BPKIHS. *JNMA* 2008;47(169):1-6.

10. Sathvik BS, Parthasarathi G, Narahari MG, Gurudev KC. An assessment of the quality of life in hemodialysis patients using the WHOQOL-BREF questionnaire. *Indian J Nephrol*. 2008;18(4):141-9.

11. Mehta RS. Socio-Demographic and Knowledge Profile of the Renal Failure patients undergoing HD at BPKIHS. 2004.

12. Cleary J, Drennan J. Quality of life of patients on haemodialysis for end-stage renal disease. *J Adv Nurs*. 2005;51(6):577-86.

13. Wu Albert, Fink NE, Marsh-Manzi JV, Meyer KB, Finkelstein FO, Chapman MM, Powe NR.Changes in quality of life during hemodialysis and peritoneal dialysis treatment: generic and disease specific measures. *J Am SocNephrol.* 2004;15(3):743-53.

14. Seica A, Segall L, Verzan C, Duva N, Madincea M, Rusoiu S, Cristea S, Stefan M, Serb?nescu D, Morosanu P. Factors affecting the quality of life of haemodialysis patients from Romania: a multicentric study. *Nephrol Dial Transplant*. 2009;24(2):626-9.

15. Santos PR, Daher EF, Silva GB Jr, Libório AB, Kerr LR. Quality of life assessment among haemodialysis patients in a single centre: a 2-year follow-up. *Qual Life Res*. 2009 Jun;18(5):541-6.

16. Merkus MP, Jager KJ, Dekker FW, Boeschoten EW, Stevens P, Krediet RT.Quality of life in patients on chronic dialysis: self-assessment 3 months after the start of treatment. The Necosad Study Group. *Am J Kidney Dis.* 1997;29(4):584-92.

17. Kalantar-Zadeh K, Kopple JD, Block G, Humphreys MH. Association among SF36 quality of life measures and nutrition, hospitalization, and mortality in hemodialysis. *J Am Soc Nephrol*. 2001 Dec;12(12):2797-806.

18. Unruh M, Yan G, Radeva M, Hays RD, Benz R, Athienites NV, Kusek J, Levey AS, Meyer KB; HEMO Study Group. Bias in assessment of health-related quality of life in a hemodialysis population: a comparison of self-administered and interviewer-administered surveys in the HEMO study. *J Am Soc Nephrol*. 2003;14(8):2132-41.

19. Kalender B, Ozdemir AC, Dervisoglu E, Ozdemir O. Quality of life in chronic kidney disease: effects of treatment modality, depression, malnutrition and inflammation. *Int J Clin Pract.* 2007;61(4):569-76.